

# APPENDIX 5 PROJECT DESCRIPTION

## Appendix 5.1: Outline Construction Environmental Management Plan (CEMP)

### Executive Summary

The Outline Construction Environmental Management Plan (CEMP) is a draft document, to be consulted upon and agreed with relevant statutory consultees prior to construction of the Garn Fach Wind Farm. The document would be managed and maintained as a working document by the Principal Contractor. The purpose of the CEMP is to provide details on how the construction of the wind farm and associated infrastructure will be managed in order to minimise risks and the impact of the environment, including, but not limited to, hydrology, ecology, archaeology.

The Outline CEMP sets out the general management practices to be adopted in sustainably constructing the proposed development and ensuring protection of local environmental assets. Responsibilities and roles are to be identified in the delivery of the provisions of the CEMP, and procedures to be followed in the event of an environmental incident are set out. Prior to construction, all staff will undergo inductions and training, alongside risk assessments, to ensure the requirements of the CEMP are applied, thereby preventing and/or minimising the potential poor construction practices. Measures for monitoring construction practices and any effects to environmental assets are also described.

Relevant environmental assets are identified herein, and the procedures and measures to ensure their protection are identified. Additionally, measures to avoid polluting incidents and management of waste arising from the development are described. [Further details of the mitigation measures for the protection of water resources described in this chapter are described in in Appendix 10-7: Garn Fach Wind Farm Outline Drainage and Surface Water Management.](#) Restoration and reinstatement measures following the completion of construction are also set out, whilst the Habitat Management Plan that accompanies the application will ensure full restoration and any habitat enhancements.

Detailed decommissioning proposals will be established and agreed with relevant authorities prior to commencement of decommissioning activities. It is expected such proposals will adopt many of the provisions set out herein but also in accordance with emergent best practice and guidance at the time of decommissioning.

## 5.1 Environmental Incident and Response

### General Requirements

- 5.1.1 The Contractor is required to prepare a detailed Environmental Incident and Response Plan. This plan will provide emergency response contacts, reporting procedures, and procedures for dealing with all potential pollution incidents during the construction of the wind farm. A pollution incident is any discharge to land, air or water that could cause environmental damage.
- 5.1.2 The Environmental Incident and Emergency Response Plan will:
- Identify key staff and contact details for environmental management and emergency response, including contact details for staff trained in the use of spill kits, booms, etc.
  - Provide contact telephone numbers for the emergency services and the current NRW Pollution Hotline. In the event of a pollutant spillage on site, the material will be contained (using an absorbent material such as sand or soil or commercially available booms) and NRW notified immediately using the incident **hotline number (0300 065 3000)**.
  - Provide detailed procedures to be taken in the event of an incident or emergency (including procedures for positioning and movement of plant, use of spill kits, communication etc).
  - Provide details and evidence of training of site staff/plant operators in emergency response procedures, including the correct use of spill kits and booms, etc.
  - Provide details of fire fighting strategy, including identification of fire fighting techniques/materials to be controlled due to environmental consequences (such as detergents disrupting oil separator action), agreed abstraction sources of firewater, firewater application techniques and firewater runoff management.
  - Procedures contained within the plan should consider preventative measures, containment, clean up, waste disposal of recovered spilled materials or contaminated soils and clean up kits, and reporting requirements.

- 5.1.3 The Contractor will provide a site layout plan that shows:
- all areas that potential pollution sources including the locations of car parks, delivery and fuel / chemical storage areas, oil separator equipment, excavations, and any other high risk areas (oil/chemical storage areas, refuelling areas etc) that could give rise to pollution; and
  - The location of potential sensitive environmental receptors, including locations of public and private water supplies, sensitive habitats or species, surface watercourses, drains or culverts where pollution may travel to.
- 5.1.4 A Communication Plan (to be followed in the event of a spillage) will be provided by the Contactor to EDF-R prior to commencement of the site works.
- 5.1.5 Key Information to be provided in a clear and concise manner (as soon as per a contractually stipulated and formally agreed suitable timescale to comply with EDF’s expectations):
- 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.

## 5.2 Introduction

### Site Environmental Management: Objectives

- 5.2.1 This Construction Environmental Management Plan (CEMP) document provides information on Environmental Management and details on Construction works for Garn Fach Wind Farm. It is provided as Appendix 5-1 to the Garn Fach Wind Farm Environmental Statement (ES) and has been developed in accordance with the Institute of Environmental Management and Assessment (IEMA) Practitioner “Environmental Management Plans”, Best Practice Series, Volume 12, December 2008.

- 5.2.2 This CEMP is provided as part of the ES in order to demonstrate the level of information and procedures that will be put in place during construction of the wind farm to protect the environment; as well as to monitor and mitigate any potential adverse effects. This document aims to define good practice as well as specific actions required to implement mitigation requirements as identified in the Environmental Statement (ES).
- 5.2.3 The CEMP is considered to be a live document which will be developed further and / or amended where necessary subsequent to development consent to take account of planning condition requirements and any information which may be made available from additional consultations, site surveys etc.
- 5.2.4 It is expected that the CEMP will eventually form part of the appointed civils construction works contract. The appointed Principal Contractor (the Contractor) will take account of the content, methods and requirements contained within the various sections of this CEMP when developing further environmental plans and other related construction method statements as required. The Contractor will provide relevant information as detailed in this document. The Contractor will submit the required information and related documents to EDF-R and relevant authorities for acceptance. Works shall not be allowed to commence until such information is confirmed as acceptable by EDF-R.
- 5.2.5 This version of the CEMP accompanies the ES and provides a framework for good practice. An updated version should be agreed with the relevant authorities post consent. Should consent be granted and where avoidance or further minimisation of risks to the environment can be demonstrated through use of alternative methods or improvements to current practices the Contractor should implement these wherever possible.
- 5.2.6 EDF Renewables (EDF-R) commits to protecting the environment through the identification, avoidance and mitigation of the potential negative environmental impacts associated with the development, construction, operation and decommissioning of the Garn Fach Wind Farm.

### Roles, Responsibilities and Structure of the CEMP

- 5.2.7 The Contractor will appoint an appropriately competent person(s) (e.g. Environmental Manager) to undertake relevant environmental responsibilities as detailed and any other information submitted as part of the planning consent prior to, during and upon completion of the construction works.

- 5.2.8 The Contractor will be responsible for obtaining any additional or necessary consents, licences and permissions<sup>1</sup> for their activities as required by current legislation governing the protection of the environment.
- 5.2.9 The Contractor will consider all of the mitigation measures and best practice construction methods detailed within this document and the ES in their design and in any detailed environmental plans as required.
- 5.2.10 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 the Contractor will submit a complete copy of the final set of documentation to EDF-R for their records. This information will include data, field records and correspondence which are gathered over the course of the construction.

### 5.3 Project Information

#### Site Location and Scheme Description

Table 5.3.1 - General Project Information and Scheme Description

<b>Site Name:</b>	Garn Fach Wind Farm
<b>Location:</b>	The Garn Fach Wind Farm lies south of Newtown, Powys, E304057, N280929.
<b>Scheme Description (As per Application)</b>	<p>A wind energy electricity generating station including:</p> <ul style="list-style-type: none"> <li>○ Up to 17 wind turbines each sited on a concrete foundation with a crane hardstanding, external transformer, turbine tip height: up to 149.9m;</li> <li>○ A network of subsurface cables;</li> <li>○ A network of access tracks connecting the wind turbines and other works including where necessary any watercourse crossings;</li> <li>○ An electricity sub-station compound, including transformers and a metering and control building to house electrical switchgear and control equipment and office accommodation facilities;</li> <li>○ Energy storage facility;</li> <li>○ Two temporary construction compounds; and</li> </ul> <p>Up to 4 borrow pits for the extraction of stone for use in construction</p>

<sup>1</sup> e.g. SAB Consent, protected habitat or species licences.

### Development Consent Requirements

- 5.3.1 Following receipt of Development Consent, Table 5.3.4 below will be updated to summarise the Requirements (Conditions) for the site and the relevant document section or additional information which may be prepared and submitted by EDF-R to the appropriate regulatory authorities in accordance with the Development Conditions.

Table 5.3.2 – Relevant development consent requirements and related documentation as specified by Welsh Government

Requirement	Document/Section
<b>Subject to Conditions</b>	To be completed following consent, if granted.

### 5.4 Correspondence and General Communication

#### Roles and Responsibilities

- 5.4.1 Table 3 provides a list of all contacts relevant to the construction of the wind farm including, EDF-R, Contractor and relevant third party details. This table will be updated and kept current by the Contractor for the duration of the construction phase.

#### Correspondence, Records & Reports

- 5.4.2 The Contractor will provide a complete record of all relevant communication and reports associated with the implementation of this document. As a guide, the following records will be maintained:
  - Minutes and attendance of commencement meeting (on-site meeting prior to start of construction works). Attendance required by a representative(s) of EDF-R, the appointed Contractor, the appointed ECoW and all other relevant personnel responsible for environmental management during the project.

- Weekly rolling Environmental Action and Risk Record including a look ahead of the activities with required mitigation. This is required to be discussed and minuted on the weekly construction meeting agenda. This will cover all environmental sensitivities, including ecology, archaeology and water quality.
- Water Quality Monitoring Records.
- Waste Management Plan Records.
- Licensing and Consents: copies of all permissions, consents, licenses and permits and related correspondence.

5.4.3 General Correspondence: all other relevant internal and external communication records relating to environmental management issues and implementation of the CEMP.

### Risk Assessments and Method Statements

5.4.4 The Contractor will provide risk assessments and method statements for all works and tasks. These documents will take into account and address the environmental aspects of the works and tasks and include proposed mitigation measures.

5.4.5 The Contractor's risk assessments and method statements will be signed off by the Contractor's appointed environmental representative.

**Table 5.4.1 – Contact Sheet (Table to be completed by EDF-R and Contractor prior to commencement. This table will be updated and kept current by the Contractor for the duration of the Contract)**

Company	Position	Name	Tel/Mobile No.	Address
EDF-R	Project Manager	TBC		
EDF-R	Site Manager	TBC		
EDF-R	Civil Engineering Manager	TBC		
EDF-R	Environmental Manager	TBC		
EDF-R	Ecologist	TBC		
TBC (as required)	Ecological Clerk(s) of Works (EcoW)	TBC		
TBC (as required)	Archaeological Clerk of Works (AcoW)	TBC		

Company	Position	Name	Tel/Mobile No.	Address
TBC (as required)	Independent Environmental Consultant for Water Quality	TBC		
TBC- Forestry Contractor	Pre-Construction Felling Contractor	TBC		
TBC – Contractor	Project Manager	TBC		
TBC – Contractor	Site Agent	TBC		
TBC – Contractor	Foreman	TBC		
TBC – Contractor	Environmental Manager	TBC		
TBC – Contractor	Person Nominated for Site Responsibility for Environmental Management	TBC		
NRW	Environment Protection Officer	TBC		
Cadw		TBC		
Local Authority	Planning Monitoring Officer	TBC		
Private Water Supply Landowner / Tenant		TBC		
Subcontractors (specify)		TBC		

## 5.5 SITE INDUCTION

### Responsibility

5.5.1 The Contractor will ensure that all contractor employees, sub-contractors, suppliers, and other visitors to the site are made aware of the content of this document that is applicable to them.

Accordingly, environmental specific induction training will be prepared and presented to all categories of personnel working and visiting the site.

5.5.2 As a minimum, the following information will be provided to all inductees:

- Identification of specific environmental risks associated with the work to be undertaken on site by the inductee.
- Summary of the main environmental aspects of concern at the site, in particular:
- Environmental Incident and Emergency Response Procedures.
- Any areas of environmental sensitivity (ecological, archaeological, or hydrological) as demarcated on site;
- Species and / or habitat protection;
- Ground stability and peat slide risk;
- Pollution prevention (e.g. silt mitigation and protection of the water environment); and
- Waste minimization and management.

### Tool Box Talks

5.5.3 During construction, in order to provide ongoing awareness training, the above topics, along with any other environmental issues which arise on site, will be discussed at regular tool box talks.

5.5.4 Toolbox talks will be delivered by specialist personnel on site (e.g. EcoW, AcoW, Contractor's Environmental appointed person, etc.) as required, in liaison with the Contractor.

5.5.5 The Contractor shall submit with their environmental plan a monthly schedule for tool box talks. The proposed schedule –to be considered as a live document- shall be consistent with the programme of works. A minimum of two talks per month will be the norm. However, 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.

5.5.6 Details of the proposed training will be provided to EDF-R as part of the CEMP prior to commencement of construction works. A record of all tool box talks and attendees will be maintained, recorded and signed by all personnel.

## 5.6 Pollution Prevention and Mitigation

### Responsibility

5.6.1 All Contractors will be responsible for pollution prevention and until such time as permanent measures, such as permanent drainage and silt mitigation controls, are deemed to be adequate and appropriately constructed.

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

5.6.3 It is the responsibility of the Contractor to contact NRW and other statutory and non-statutory bodies (e.g. Cadw, RSPB) 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.

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

### Contractor Requirements

5.6.5 The Contractor will ensure that all staff and subcontractors working on site will be familiar with measures as detailed in this document and the accompanying ES; this includes subcontractors, EDF-R's direct contractors and other EDF-R representatives working on the site.

5.6.6 The Contractor will provide, as a minimum, and prior to construction works commencing, an Environmental Risk Register. This will identify all potential environmental risks that may arise during construction works and specify required mitigation for each risk. The Register will be accompanied by site specific procedures and site drawings / plans detailing how the Contractor intends to avoid and/or manage risks associated with:

- Chemical and silt pollution;
- Fuel handling and storage, including the locations of both periodic and regular fuelling points (this information may be provided as part of the Environmental Incident Response Plan);

- Waste management (management and mitigation of these risks may be covered within the WMP);
- Responsibilities and details for monitoring and training in relation to pollution prevention and mitigation measures;
- Risk to known resident wildlife and flora on the site based on ECOW Pre-construction survey information and EIA stage surveys.

5.6.7 Works may be suspended at the request of EDF-R, the EcoW, Planning Monitoring Officer, NRW, or HSE at any time where a potential risk from pollution is identified and resulting harm may be caused to land, water, human health or flora and fauna, or where construction methods and mitigation measures are not as specified within the construction method statements and relevant plans as submitted and agreed at the commencement of the works.

### General Pollution Prevention Measures

5.6.8 The following points (not exhaustive) indicate general pollution prevention measures in accordance with those highlighted within the guidelines referenced in this document and the ES. Pollution Prevention measures relating to specific tasks are also detailed in the respective sections of this document.

- Precautions will be taken to ensure the protection of watercourses and groundwater against pollution, silting and erosion during watercourse crossing construction operations.
- Any material or substance which could cause pollution, including silty water, will be prevented from entering surface water drains or watercourses by the propitious use of and appropriate placement of (temporary) silt fences, cut-off drains, silt traps and drainage to vegetated areas where appropriate.
- Any silty water generated on site will ideally be settled out as much as possible through drainage mitigation measures (silt traps, etc.) and channelled into vegetated areas at least 25 metres from watercourses, to allow the settlement of solids.
- All refuelling will be carried out at least 25 metres from watercourses. Where this buffer distance cannot be achieved a minimum distance will be agreed with the EcoW or NRW where relevant. A map will be provided by EDF-R identifying

designated locations where refuelling may take place which will be agreed with the NRW. Outside these areas, refuelling will not be permitted. Irrespective of the buffer distance and location of refuelling, interceptor drip trays (or similar – open metal drip trays are not acceptable) will be available in accordance with standard best practice across the construction industry. Spill kits will be available within each plant vehicle on site and at sensitive locations (water course crossings, fuel storage areas etc).

- Areas of waste oil / fuel / chemical storage will be located 50m away from watercourses or drainage paths. Where this is not possible, a minimum distance will be agreed with the EcoW or NRW. Such storage areas will be appropriately sited, and specifically temporary works designed, to prevent the downward percolation of contaminants to natural soils and groundwater.
- Should fuel, oils and chemicals be stored on site, they must be stored on an impervious base within a bund able to contain at least 110% of the volume stored. Rainwater will not be allowed to accumulate within the bund and in any way compromise the required 110% volume capacity.
- All stockpiled materials will be stored in designated areas and isolated from any surface drains and a minimum of 50 metres away from watercourses.
- All works will be carried out in accordance with best practice (for example PPG01: General guide to the prevention of water pollution; GPP5: Works and maintenance in or near water; PPG06: Working at construction and demolition sites; and GPP21: Pollution incident response planning, and The Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations 2016) and will aim to prevent deterioration in the ecological status of surface waters and to avoid compromising the restoration potential of such waters.
- In the event of a pollutant spillage on site, the material will be contained (using an absorbent material such as sand or soil or commercially available booms) and NRW notified immediately using the incident **hotline number (0800 80 70 60)**.

## Forestry Activities

5.6.9 Prior to works commencing involving forestry works (harvesting/forwarding), the Contractor will ensure, in liaison with the appointed site ECoW/ Environmental Consultant, that all required wildlife habitat/protected species pre-construction surveys are undertaken and the findings with any associated restrictions required are fully understood and in place by the Contractor and also that pollution prevention measures as agreed with relevant consultees (e.g. NRW) have been put in place. These may include, but are not limited to:

- Exclusion zones required to protect wildlife (nesting birds, endangered fauna/flora species and their habitats)
- Mitigation earthworks (silt traps etc) completed as required in advance of felling activities;
- Spill kits in place (as a minimum at sensitive surface water crossings, re-fuelling locations and with all plant active within sensitive catchment areas);
- Flow attenuation measures (check dams etc) to be put in minor watercourses and ditches to catch any sediment; and
- Booms in place where feasible (in ditches/burns and river where feeding Water Treatment Works or Drinking Water reservoirs).

5.6.10 Plant operators will inspect plant and machinery (including storage containers where applicable) prior to use. Potential problems will be raised and attended to immediately. Site staff must not use machinery or containers which are liable to cause pollution.

5.6.11 Re-fuelling will be undertaken at designated points only. These will include a designated area within the construction compounds and track locations during tree felling works. Re-fuelling will be supervised at all times by the plant operator.

5.6.12 All forestry personnel shall also be aware of the locations of spill kits (and other pollution control equipment where applicable) and shall be trained in its use.

## Water Environment

5.6.13 The removal of established vegetative cover can lead to the loss of large quantities of soil particles and suspended silt to watercourses which can then cause significant pollution of water.

Therefore, any earth moving works or other similar operations giving rise to contaminated drainage must be carried out in accordance with BSI Code of Practice for Earth Works, BS6031:1981.

5.6.14 Site drainage and surface run off contaminated with silt will not be allowed to directly enter any watercourse; as such, appropriate sedimentation and silt mitigation measures will be implemented on site in order to treat contaminated waters.

## Runoff and Sediment Management Control Measures During Construction

5.6.15 The following measures should be implemented during the construction process to mitigate any potential impacts on the water quality of the sub-catchments through erosion during construction. These measures are discussed in more detail within the Surface Water Management Plan and outline drainage design available as Appendix 10.6 of the Environmental Statement.

5.6.16 To reduce the risk of transport of pollutants and the impacts of increased surface water flows, vegetation cover should be retained for as long as possible during the construction phase to minimise the potential for soil stripping. Where bare ground is unused this should be vegetated as soon as possible following construction.

5.6.17 Areas of temporary tracks should be completed as soon as possible and surfaced appropriately to protect soils from runoff. Temporary fences or markers should be used to ensure minimal disturbance of the surrounding land.

5.6.18 The site should be developed in stages and surface water runoff should be initially managed through sediment treatment measures and temporary Sustainable Drainage Systems (SuDS) to reduce runoff rate and volume of discharge to the existing drainage network.

5.6.19 Sediment control measures (silt fences, designed settlement/attenuation ponds etc.) will be installed at the onset of the construction phase prior to excavation. Ponds are to be sited downslope of main construction areas including all turbine bases to sufficiently capture and treat runoff from these areas. Silt fencing will be placed transversally across the construction area to break up preferential flow paths and divert and filter runoff. Silt fences will also be placed

perpendicular to the flow direction of existing overland flow paths to reduce the risk of scour downslope.

- 5.6.20 V shaped ditches should be placed on the upslope of areas of construction to convey surface water runoff from upslope to piped crossings below the construction area. On steep slopes and areas with small amounts of vegetation cover, a geotextile sump upslope of each crossing should be used to provide further treatment and mitigation. Where the ditches are long, check dams are recommended to interrupt flows and provide additional treatment, these should be located where the longitudinal slope of the ditch exceeds 3%.
- 5.6.21 Buffer strips will be included downslope of construction areas with widths of 5m to improve water quality, vegetation should be dense along these buffer zones.
- 5.6.22 The movement of construction traffic will be controlled to minimise soil compaction and disturbance. Vehicle movements (to include HGVs and plant machinery) outside the defined tracks and hardstanding areas will be avoided where possible.
- 5.6.23 Temporary peat stockpiles will be stored on a geotextile membrane and covered. Stored soils will be placed and sealed to minimise the potential for erosion and be located in flat areas away from watercourses.
- 5.6.24 Trenching or excavation activities in open land will cease during periods of intense rainfall and temporary bunding will be provided as required, to reduce the risk of sediment transport to the natural drainage system.
- 5.6.25 Construction of the pluvial run-off route track and cable crossings will take place during low flow conditions where reasonably practical. If required, the pluvial run-off route will be dammed and water will be over pumped to isolate the construction zone. The construction period would be minimised as much as is reasonably practicable. Additional sediment control measures should be deployed along areas of pluvial run-off route crossings.
- 5.6.26 Access track construction materials will be free draining, strong, durable and well graded.

## Watercourse Crossings

- 5.6.27 All Watercourse Crossing works are required to be carried out in accordance with NRW's Engineering in the water environment: good practice guide - river crossings<sup>2</sup>.
- 5.6.28 A number of mitigation measures are required to reduce environmental impact during the Watercourse Crossing works. These are outlined below:
- Following best practice and industry standard approaches, and other relevant industry best practice publications, including GPP5: Works and maintenance in or near water, and Guidance for Pollution Prevention, Works and maintenance in or near water (February 2018) Natural Resources Wales, Northern Ireland Environment Agency and the Scottish Environment Protection Agency;
  - On-site inspection and advice from the ECoW plus the Environmental authorising authority as/if required;
  - Appropriate emergency response and oil spill response during construction works, including the use of drip trays / spill kits etc;
  - Buffer zones and silt mitigation measures adjacent to water courses, including installation of adequate splash boards on bridge crossings to prevent mud and run-off from construction traffic; and
  - Stockpiling of any excavated materials away from watercourses.
- 5.6.29 Where water crossings of the track are required these will be designed to accommodate peak flows within the watercourses and where possible buried culverts will be used to allow the natural channel bed to remain unaltered and prevent changes to the baseline environment.

## Construction Pollution Prevention, Water Quality Monitoring and Emergency Response Plan

- 5.6.30 The potential impact on the water quality of the sub catchments draining the site through chemical pollution, would be mitigated through the implementation of the Outline Surface Water Management Plan. The outline water management plan includes sections dealing with pollution

<sup>2</sup> Engineering in the water environment: good practice guide. River Crossings. Second Edition, November 2010. Scottish Government and NRW.



prevention measures, water quality monitoring and procedures in the event of a spill. Contractors and subcontractors on site are required to follow the Guidance for Pollution Prevention produced by NRW. The following pollution control measures should be deployed within all sub catchments.

- 5.6.31 No refuelling or storage of equipment, materials or chemicals will occur within the zones of contribution shown within the GWDTE Assessment (Appendix 10.4 of the Environmental Statement). Equipment to contain and clean up any spills will be readily available at all times in this area.
- 5.6.32 Equipment will be provided to contain and clean up any spills in order to minimise the risk of pollutants entering the watercourses, surface water features, GWDTE or flush areas.
- 5.6.33 Trenching or excavation activities in open land will cease during periods of intense rainfall. Temporary bunding will be provided as required, to reduce the risk of oil or chemical spills to the natural drainage system.
- 5.6.34 Sulphate-resistant concrete (as detailed in the Code of Practice for Concrete Design BS 5328) will be used for the construction of turbine bases to withstand sulphate attack and the resultant alkaline leaching into groundwater.
- 5.6.35 Refuelling of vehicles and plant machinery will be confined to the designated fuelling areas and will be carefully controlled and placed away from areas with high groundwater dependency.
- 5.6.36 Vehicles, plant machinery and equipment will be cleaned at designated washout areas located conveniently and within a controlled area of the Site.
- 5.6.37 All fuel and chemicals will be stored within appropriately specified containers and within specifically designed stores / storage areas and shall include appropriate measures to avoid spillages in line with the relevant legislation and as set out in the Pollution Prevention Plan.
- 5.6.38 Drip trays will be placed under standing machinery.
- 5.6.39 All solid and liquid waste materials will be properly disposed of in controlled and fully licenced manner. Where appropriate, recycling of waste material is to be optimised for the Garn Fach site.
- 5.6.40 Routine mechanical maintenance of vehicles will be carried out off-site or in a suitable designated area of the site.
- 5.6.41 There will be no unapproved discharge of foul or contaminated drainage from the Site either to groundwater or any surface waters, whether direct or via soakaway.

- 5.6.42 A programme of surface water quality monitoring would be undertaken before and during the construction phase to provide assurance as to the absence of water quality impacts.

### Operational Pollution Prevention, Water Quality Monitoring and Emergency Response Plan

- 5.6.43 An operational pollution prevention, water quality monitoring and emergency response plan would be established to address the potential significant long-term impact of sediment and chemical pollution. The plan will include provision for the following:
  - 5.6.44 Equipment to be provided to contain and clean up any spills of fuel or lubricants and to address burst oil cooling of power cables as required.
  - 5.6.45 Regular inspection of the track and turbine bases to ensure no unacceptable erosion is taking place, with appropriate practicable remedial action taken, should erosion be noted.
  - 5.6.46 Regular inspection of the land drain crossings to ensure no erosion is taking place, with appropriate practicable remedial action taken, should erosion be noted. The crossing will also be kept clear of debris.
- 5.6.47 If required, floating access tracks on peat may settle with time and therefore on-going repair and maintenance may be required. The exact nature of the repairs would depend on the issue that occurs, however repairs are mostly commonly related to replacing or repairing geogrids. The methodology to undertake repairs will; identify the area that needs maintenance and strip back the aggregate to expose the geogrid, lay the new geogrid over the existing one and backfill, and compact.
- 5.6.48 Vehicles, plant machinery and equipment will be cleaned at designated washout areas located conveniently and within a controlled area of the Site.
- 5.6.49 All fuel and chemicals will be stored within appropriately banded containers and within specifically designed stores / storage areas and shall include appropriate measures to avoid spillages and leakages in line with the relevant legislation and recognised good practice.
- 5.6.50 Drip trays will be placed under standing machinery.
- 5.6.51 Routine monitoring of surface water quality will be undertaken to demonstrate the absence of any ongoing impact arising from the operation of the Proposed Development.

## Water Abstraction and Dewatering Activities

5.6.52 Suitable mitigation measures will be installed to minimise the volume of silt contained within pumped waters and to avoid or minimise the impact of the pumped water discharge on the water environment. These may include, but are not restricted to, the following techniques:

- In order to prevent disturbance from the base of excavations or from the bed of water courses during abstraction, any pump intakes will be protected from sediment by raising the intake using a floating rose and a 'Terram' filter;
- No water from foundation dewatering operations will be discharged directly into a watercourse or existing drain (e.g. forest drains or furrows). All dewatering would be in accordance with CIRIA and NRW guidance, and where necessary, settlement tanks, systems such as Siltbusters or settlement lagoons shall be constructed / installed. The dewatering and de-silting system will be designed and installed before the foundation excavation commenced;
- If necessary, in order to prevent surface run-off reaching the excavation, cut off ditches will be installed around the top of the excavation. This water will be taken to the treatment system before being discharged. Care will be taken in siting the cut off ditches, to ensure that the stability of the excavation is not compromised. Once the foundation has been completed and backfilled, the cut off ditches will be filled in with the excavated material;
- Prior to discharge, any silty water will be treated.

## Dust Suppression

### General Philosophy & Potential Sources of Dust

5.6.53 The prime sources of dust on the site are:

- All vehicles, including haulage vehicles both on-site and road licensed;
- Handling of soils;
- Un-seeded topsoil and subsoil mounds;
- Loading of vehicles;
- Processing/Screening plants;

- Excavation areas; and
- Blasting operations.

5.6.54 These sources can produce high levels of air-borne dust, particularly in periods of prolonged dry weather. Operatives should be especially watchful in such conditions, and should either avoid actions likely to cause a dust problem, or alternatively call the appropriate dust suppression measures to be activated as a matter of priority.

5.6.55 All parties on Site have a duty to ensure that neighbours and passers-by are not inconvenienced by construction activities, and it is therefore of particular importance to take extra care when working anywhere near sensitive areas. The Works Manager should be informed immediately if it is considered that conditions or work practices could give rise to dust-blow outside the site boundary. Extra care should also be taken whenever pedestrians are seen to be in the vicinity of infrastructure corridors or excavation areas on site.

5.6.56 The following applies to the proposed dust management procedures, to ensure that:

5.6.57 Regular inspections of operational plant and equipment, in so far as they could give rise to environmental problems, are conducted;

- Operations are carried out in accordance with the terms of the development consent (if granted);
- Sufficient spraying units are available at all times to dampen roads and other areas (e.g. spoil heaps) subject to traffic and that these units are used expediently during periods of dry weather;
- Site speed limits will be reduced as required, to wholly or partially mitigate air bourn dust.
- All dust suppression equipment is in good working order and used when required;
- Adequate supplies of water are available at all times for the dust suppression units;
- All loaded vehicles are washed and are adequately sheeted prior to leaving site; and
- A periodic review of environmental performance is undertaken, allowing the Environmental Management System to be improved and upgraded (as appropriate).

5.6.58 Where required, water may be extracted from local watercourses or groundwater. In these instances, the Contractor will liaise with NRW beforehand to agree abstraction locations, rates and authorisation requirements.

### **Dust Suppression Management**

5.6.59 Facilities provided for the suppression and controls of dust are:

- Tractor-drawn vacuum tanks with spray bar/sprinkler; and
- Stand-by bowzers to be used when the main units are broken down, and as supplementary units in periods of dry weather.

5.6.60 The Site Manager is responsible for the overall management of the site; for ensuring the adequate dust suppression facilities are available in good working order at all appropriate times, and for maintaining a record of conditions, complaints and actions. 566B

5.6.61 The Contractor is responsible for the day to day running of the site (including the processing area), for ensuring that dust suppression facilities are in place and in working order, and for reporting all complaints or occurrences of dust-blow to the Site Manager.

5.6.62 All Operatives have a duty to assist the Site Manager in ensuring that dust emissions are properly controlled. In particular, operatives should take all reasonable precautions to prevent dust generation, for example by:

- avoiding obvious dust patches;
- reducing travelling speeds in potentially dusty conditions;
- taking care in loading or stockpiling materials;
- reporting any occurrences of dust-blow;
- reporting any deficiencies in dust suppression equipment;
- making sure that any complaints are brought to the attention of the Site Manager; and
- observing any instructions issued by the site management.

## **Welfare facilities**

### **Drinking Water**

5.6.63 All welfare facilities will be provided for site operatives under the Construction (Design and Management) Regulations 2015 including sanitary conveniences, washing facilities, drinking water, changing rooms and accommodation for clothing not worn during working hours and rest facilities. Drinking water for the site will be sourced from a registered supply and will be brought in by mains feed or mobile bowser and stored in a potable supply tank where no mains feed is available. Abstraction and treatment from an appropriate local watercourse or groundwater borehole may be an alternative requirement.

5.6.64 The Contractor will ensure that appropriate training, signage and physical measures are in place to ensure that only potable water is supplied to the potable water tank and that no pollution of potable supplies, such as a groundwater borehole, occurs as a result of construction works.

### **Toilets & Sewage**

5.6.65 Where water supply for toilet cisterns is proposed to be extracted from local watercourses or groundwater, abstraction locations and rates will be agreed with NRW beforehand.

5.6.66 There will be training, signage and physical measures to ensure that abstracted river water is not supplied to the potable water tank and that measures are implemented to ensure that abstraction activities do not cause pollution of water courses used for supplying potable water.

5.6.67 Disposal of sewage from the site will be carried out by a licensed contractor.

5.6.68 Wind farm sites are generally remote and therefore connection to a main sewer may not be feasible during the construction stage; therefore, sustainable septic systems (waterless toilets or septic tanks) must be installed and maintained appropriately. The feasibility of soakaways will be assessed post consent. The preferred identified option for sewage disposal during construction works will be discussed with and approved by EDF-R and NRW. All sewage collected from within septic systems will be tankered from site at an appropriate frequency and disposed of by an appropriately licensed contractor into the local foul water sewer system.

## Concrete Pollution Prevention Measures

5.6.69 Cement is alkaline and highly toxic to aquatic organisms. Measures will be implemented to prevent the direct release of any cement or cement contaminated run-off into water courses.

### Base Pours

5.6.70 Accidental spillage and potential burst-out of concrete may occur during pouring of concrete for the turbine bases.

5.6.71 Foundation excavations are generally below the level of the surrounding ground, and therefore the risk of concrete spills exiting the base area is considered to be low. However, where the topography allows, foundation excavations are generally designed to be gravity draining in order to control ingress/egress of surface water from the excavation. It will therefore be stipulated that, prior to commencement of each base pour, the Contractor will assess the local gradient and the potential risk of concrete run-off exiting the base area and subsequently entering natural watercourses or otherwise impacting on sensitive habitats.

5.6.72 Concrete pours will not take place if the base is underwater and in the midst of prolonged wet weather period. Measures to control water during a pour will be in place for each of the 17 bases.

5.6.73 Where a potential risk is identified, cut off ditches and diversion dams will be installed in order to channel potential spillages and run-off water to a suitable collection area (pre-constructed pond or other area suitable for temporary containment of spillages). In the event of a major spill, treatment of the contained material would be agreed with the Environmental Manager and in accordance with CIRIA and NRW guidance. Depending on the volume of effluent, treatment may involve settlement and evaporation and/or neutralisation of the collected effluent prior to ground soakaway, or pump-out and disposal off-site. Residual solidified concrete within the containment area would be broken up and disposed of off-site prior to reinstatement of the area.

### Concrete Wash Out

5.6.74 Washout of concrete trucks will only be undertaken in designated areas. Designated wash out areas will be located at least 25m from any open watercourse, field drain or sensitive habitat area. No surface run-off from within the wash out area will be permitted to leave the area and directly enter any drain or water course. Each wash out area should be located away from main construction traffic area or access areas to prevent disturbance or tracking. A sign should be

installed adjacent to each washout facility to inform concrete equipment operators to utilise only the designated washout areas.

5.6.75 The number of wash out areas should be kept to a minimum. At the designated wash out areas, wash water will be contained within a specially constructed containment lagoon. Lagoons should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations. The supernatant from the wash pit may be reused for truck washing in the same controlled manner as outline above.

5.6.76 When temporary concrete washout facilities are no longer required for the work, any hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

## Monitoring & Controls

5.6.77 The Contractor will carry out regular inspections, including checks of oil/fuel storage areas and plant, to confirm the appropriate use of mitigation measures identified within the Contractor's environmental plans relating to pollution control. Records of these inspections will be maintained.

5.6.78 Regular on site meetings will be held to confirm the appropriate use of mitigation measures identified within the Contractor's environmental plans relating to pollution control. These meetings will highlight any further issues / measures which may be relevant either prior to commencement or during the works.

5.6.79 All employees, subcontractors, suppliers and visitors to the site will be notified via a site induction of the requirements on site for pollution prevention.

5.6.80 To ensure compliance of the works with this document and pollution prevention requirements, the ECoW will regularly monitor the Contractor's works. Measures agreed at such consultation meetings will be disseminated to the relevant employees, subcontractors, suppliers and other appropriate persons via tool box talks and formal communications (email / memo), particularly where required for record purposes (e.g. variations, auditing and monitoring records).

## 5.7 Waste Management

### Implementation and Records

- 5.7.1 In accordance with Welsh Planning Policy and the Waste (England and Wales) Regulations 2011, space for collection segregation, storage and possibly treatment of waste should be allocated within the application boundary. The Welsh Government also support the use of Site Waste Management Plans (SWMP) which EDF-R will prepare and implement via the Contractor on the Garn Fach wind farm construction project.
- 5.7.2 The SWMP will provide details on how waste reduction is to be implemented at the site and also how this is to be monitored throughout the construction phase.
- 5.7.3 The Contractor will ensure that all relevant information is taken into account in preparing his/her SWMP (for example supply chain assessments, local recycling facilities, anticipated waste volumes, current best practice techniques, options appraisals etc).
- 5.7.4 The Contractor will provide details of their proposed waste contractors (carriers, transfer station, waste recipient etc) to the EDF-R.
- 5.7.5 The SWMP will include the following as a minimum:
- Identification of the person(s) who drafted the SWMP and the person(s) who will be responsible for its implementation, monitoring and review during and upon completion of construction works.
  - A waste inventory and procedures to address the following:
    - A description of each waste type expected to be produced in the course of the project with the relevant European Waste Code assigned to it;
    - An estimate of the quantity (tonnage) of each different waste stream / type of waste expected to be produced during each construction activity;
    - A written statement demonstrating what actions are to be taken to minimise the volume of each type of waste produced prior to commencement of the activity generating the waste.
- Identification of the waste management actions proposed for each different waste type, including re-using, recycling, recovery and disposal.
    - A site plan showing all waste disposal and recycling locations.
  - Identification of the requirements of the waste contractor, as a minimum, to provide:
  - Waste Transfer Notes (WTN) for all materials removed from site comprising the following information:
    - European Waste Code (EWC);
    - Description of waste removed from site;
    - Date and time waste removed from site;
    - Weight (in tonnes) of waste removed from site;
    - Name of Waste Contractor Operative;
    - Location of waste disposal site which is to be used; and
    - To weigh waste/recyclable material therefore plant with weight measurement capabilities or a weighbridge will be required.
  - Provide services to segregate recyclable material from waste if necessary.
- 5.7.6 Details of the Contractor's proposed waste contractor (carriers, transfer station, waste recipient etc) shall be provided to EDF-R according to the provisions of the contract for approval.

### Monitoring & Auditing

- 5.7.7 Site progress will be monitored against the estimate set within the Contractor's detailed SWMP and changes will be implemented in order to revise site activities based on performance where necessary.
- 5.7.8 The Contractor's Environmental Site Representative shall check the contents of the site waste and recycling skips on a regular basis (but at least weekly) to ensure waste is being correctly segregated. Non-compliance will be highlighted at regular meetings (e.g. as part of weekly progress meetings) and appropriate actions taken e.g. a toolbox talk to all site operatives.

## Anticipated Construction Waste Streams

5.7.9 A number of difference waste streams are likely to arise during construction of the wind farm.

Waste streams that typically arise during construction of an on-shore wind farm include:

- Waste from Welfare Facilities, e.g. food waste, paper, plastics, glass and other typically domestic refuse, and sewage.
- Concrete.
- Waste chemicals, fuel and oils.
- Packaging, e.g. cardboard, paper, plastics and wood.
- Waste Metals.
- Cleaning Activities, e.g. vehicle and wheel washes.

## 5.8 Temporary Drainage Management

### Requirements

5.8.1 This section details the temporary drainage works to be put in place during the construction phase.

5.8.2 The temporary drainage design will be installed in conjunction with the construction activity i.e. not retrospectively following completion of other elements of construction.

5.8.3 The Contractor will provide a **Mitigation Register**, which will include drawings of intended and installed drainage measures and information on ongoing maintenance, based on the information contained in this document. The purpose of this register and associated plans is to identify potential risk areas and design bespoke drainage and mitigation measures specific to that particular locality or works activity.

5.8.4 The Drainage Mitigation Register will be based on a detailed pollution risk assessment for the site and will incorporate the following minimum requirements:

- Procedures and methods for planning, design and management of appropriate sediment and silt control measures. The control measures will be designed appropriately to comply with the Contract for a minimum of a 1 in 200 year + climate

change rainfall event. This should allow for sufficient drainage channel dimensions, and capacity for siltation management solutions;

- There will be no direct discharge from constructed drainage measures into watercourses or flush / wetland areas. As such, sedimentation and silt mitigation measures will be adequately designed and positioned such that no silty water or pollution of any kind is permitted to enter watercourses or flush / wetland areas directly from constructed drainage measures;
- There will be no stockpiling of materials within 50m of a watercourse or a private water supply. Where this is not possible, less than 50m (but no less than 20m) may be permitted with the express permission of the ECoW; and
- Reinstatement of temporary drainage and silt mitigation measures will be undertaken as required as soon as possible after the completion of excavations.

5.8.5 Should formal discharge of contaminated site drainage be required (for example where sedimentation and silt mitigation measures are not possible or are of insufficient capacity to deal with site drainage), NRW will be contacted in order to determine possible and appropriate licensing requirements as determined by the quality and quantity of effluent to be discharged, the location of the effluent discharge point and the receiving water.

5.8.6 All mitigation measures put into place will be listed within the Drainage Mitigation Register and checked weekly to assess the requirement for maintenance. The register will be available for inspection at any time and will be discussed at each weekly meeting.

5.8.7 The Contractor will submit the detailed Drainage Mitigation Register to EDF-R and the Ecological Clerk of Works (ECoW) for approval prior to any construction works commencing in any area of the site.

5.8.8 Proposed drainage measures (turbine excavations, access track alignments, etc.) shall be inspected by the Contractor, ECoW and ACoW prior to the on-set of construction in that area. The regularity of inspections (hourly, daily, weekly, as appropriate) shall be determined in advance for each particular section, based on anticipated ground conditions, known ecological or archaeological sensitive receptors, prevailing weather conditions, and anticipated rate of progress.

## Sensitive Areas

- 5.8.9 The following areas are considered to be particularly sensitive with respect to potential impacts from pollution which may result from inadequate drainage control:
- All water course crossings.
  - Access tracks / infrastructure and borrow pits within 50m of a water course.
  - Any historical forestry drains and ditches within the main wind farm area.

## Temporary Drainage Mitigation

### Clean Water Diversion

- 5.8.10 Where possible at all construction works areas, green field run-off (i.e. non-silty surface water flow that has not yet passed over any disturbed construction areas) will be kept separate from silty water or other potentially contaminated water. Where appropriate, interceptor ditches and other drainage diversion measures should be installed – in advance of any excavation works – in order to collect and divert green field run-off away from construction disturbed areas. This will reduce the flow of water onto any exposed areas of rock and soil, thereby reducing the amount of potential silt laden run off requiring treatment.
- 5.8.11 Green field run-off can still pick up silt during periods of high flow or from newly constructed cut off / diversion ditches. Silty run off should be treated sufficiently prior to discharge into an area of vegetation for dispersion or infiltration. Silt traps selected granular fill, sand bags, silt fencing and anchored straw bales may be required at the discharge point in order to prevent erosion at the outlet, alleviate flow and aid in flow dispersion across a wider area of vegetation to prevent potential scour and remobilisation of deposited silt.
- 5.8.12 Discharge points (for clean run-off water) will be located at sufficient distance (minimum of 50m) from any watercourses to allow adequate infiltration or settlement of suspended solids prior to any discharged surface run-off potentially entering the watercourse.
- 5.8.13 All drainage channelling and silt treatment methods and discharge points will be discussed and agreed with the ECoW to mitigate potential impacts on ecologically sensitive areas.

## Silt Mitigation

- 5.8.14 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 control structures.
- 5.8.15 Additional filtration measures may include flow attenuation measures such as weirs, rock bars and / or anchored and embedded straw bales within ponds or between series of ponds. Additional flow dispersal and silt mitigation may be required at the outlet points in order to prevent erosion at the outlet, and alleviate flow and aid in flow dispersion across a wider area of vegetation to prevent potential scour and remobilisation of deposited silt.
- 5.8.16 The use of synthetic liners within settlement ponds will be avoided, where practical, in order to reduce the impacts from disturbance of silt during liner removal and reinstatement of ponds on completion of construction. Any introduced or artificial materials required for temporary erosion or silt mitigation controls, such as silt fencing, straw bales, sand bags, etc. are required to be removed upon completion of construction works.
- 5.8.17 Final discharge from any settlement pond will be over vegetated ground (with exceptions, e.g. blanket bogs) and away from surface water bodies (minimum distance 50m). Silt fences or other flow attenuation measures may be required at the discharge point in order to aid dispersal and prevent build up of settled solids, which could be subject to remobilisation.
- 5.8.18 Settlement ponds will be designed and constructed with sufficient capacity to allow settlement and allow contingency for unexpected increased rainfall events. Contingency measures may include additional capacity within an existing pond, or identification of additional areas within the vicinity which may be suitable for creation of additional ponds.
- 5.8.19 In the event that the natural or excavated ground profile in any area of the site does not lend itself easily to construction of an adequate settlement pond(s), water should be directed towards a sump area prior to being pumped away to a suitable settlement pond(s) or vegetated area with adequate silt mitigation measures well away from sensitive habitats or watercourses.
- 5.8.20 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.). Additional temporary silt mitigation measures may be required during maintenance and reinstatement activities.

5.8.21 The Contractor will discuss and agree the location of lagoons and other drainage mitigation measures with the ECoW prior to associated works taking place.

### Drainage

5.8.22 All constructed drainage channels will be as wide as practical to allow wildlife to safely enter/exit the channel.

5.8.23 Where possible, drains should be constructed so that it maintains slow flows, prevent erosion of the drain base and sides, and encourage establishment of terrestrial and aquatic vegetation where possible.

5.8.24 Temporary or permanent check dams (flow barriers or dams constructed across the drainage channel) will be installed at regular intervals within any clean water or dirty water cut off 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. Reduction in flow velocity will also prevent scouring of the drainage channel itself.

5.8.25 Should check dams be utilised they must ideally be constructed of clean hard rock aggregate (ideally gravel or cobble sized depending on the volume and velocity of flow and size of the channel), although sand bags and anchored and embedded straw bales may also be deployed in the short term.

5.8.26 Straw bales and sand bags may only be used as a temporary flow attenuation measure and all bales and bags will be removed and replaced with permanent measures upon completion of construction works. Straw bales will be monitored regularly for effectiveness in flow attenuation and decomposition. Decomposing or fragmenting straw bales will be removed and disposed of appropriately and alternative flow attenuation measures replaced as required.

## Tracks and Watercourse Crossings

### Cut tracks

5.8.27 Where there is topsoil overlying freely draining subsoil, or where there is a shallow depth of soft ground (e.g. peaty soils – which is defined as more than 30cm depth of organic soil - though where this exceeds 50cm, floating tracks will instead be used), the topsoil and turf would be stripped to expose suitable subsoil/bedrock. Where appropriate, geogrid reinforcement would

be laid to reduce the volume of stone required. The track would then be built up on the geogrid by layering and compacting crushed rock.

5.8.28 Soils and turf removed from the excavated area would be stored separately in stock piles adjacent to, or near the tracks. Reinstatement work will be carried out as track construction progresses to minimise the storage time of the soils and turf, and to improve levels of natural recovery of the turves/grasses affected.

5.8.29 Silty and clean water drainage will be channelled separately to vegetated areas at least 50 metres from watercourses to allow the settlement of 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, silt traps or settlement lagoons will be utilised and monitored to ensure stored surface water is kept to a minimum.

5.8.30 Particular care will be taken to control silt laden drainage within the vicinity of any water courses or existing drainage ditches. Splash boards and run-off diversion measures, including silt fencing adjacent and parallel to water courses beneath bridges and at culvert crossings, will be used at all crossings to prevent direct siltation of watercourses. Silt mitigation measures will be installed manually where possible to minimise disturbance.

### Floating tracks

5.8.31 Where it is not possible to avoid areas of soft/wet ground access ‘floating’ access tracks would be utilised. Floating tracks are constructed directly on the top surface of the soft ground and rely on the strength of underlying material for its support. Equilibrium is established between the weight of the track and the in-situ strength of the underlying material.

5.8.32 However, should further site investigation and design determine they are appropriate or necessary, the following would apply:

5.8.33 The aggregate size at the base of the track foundation should be such that it is permeable to at least the extent of the underlying organic soil / peat to allow flow through of water and, if necessary, there should be a geotextile layer to prevent fines from blinding the foundation layer. Thus, although there may be some compaction there will be no impediment to lateral seepage below the full length of the road.



5.8.34 The final design of drainage associated with floating roads will be determined prior to commencement of works in any area of the site in agreement with the ECoW and NRW as required.

5.8.35 The following negative environmental effects must be minimised: erosion of the road surface; silt dispersion across a wide area of peat; and silt entry into peat gullies and natural hydrological channels. These effects can be avoided by constructing road camber and raised verges such that surface flow is directed towards constructed silt traps and other silt mitigation measures as required.

### Borrow Pits

5.8.36 Overburden will be stripped and stored appropriately, sealing in all mineral material, preventing soil structure damage and minimising silt run off by tamping down, seeding, and / or covering with peat turves or geotextile as appropriate to the stored material properties.

5.8.37 Consideration should be given to minimising erosion and run off from the overburden or aggregate stock piles. A silt fence should be installed on the down-gradient side of the stockpile.

5.8.38 Where deemed to be required, an interceptor ditch should be installed around the borrow pit in order to collect green field run-off and prevent it from entering the borrow pit. This will reduce the flow of water onto the exposed rock and soil faces and into the worked floor, thereby reducing the amount of potential development run-off to be treated. For health and safety reasons, and to avoid significant erosion of ditches on steep gradients, where the up-gradient perimeter and sides of borrow pits are on steeply sloping ground, the cut off ditch may only be installed where safe and practicable.

5.8.39 Due to the exposed soil and rock faces and worked borrow pit floor, development run-off should be expected from within the confines of the borrow pit and also from the access track leading down to the borrow pit.

5.8.40 Development run-off will be captured and directed via berms or ditches towards specially constructed sediment control structures. Sediment control structures may comprise a series of settlement ponds with additional incorporated filtration measures where required.

5.8.41 In the event that the natural or excavated ground profile does not lend itself easily to capture and diversion of run-off towards the settlement pond area, run-off within the borrow pit should be directed towards a sump area prior to being pumped into the ponds.

### Turbine Foundations and Crane Hardstandings

5.8.42 Foundation excavations for turbines are generally below the level of the surrounding ground and hence surface water ingress from up slope or groundwater seepage may occur, leading to standing water within the base of the excavation.

5.8.43 Prior to commencement of each foundation excavation, the Contractor will:

- Assess the local gradient and the potential risk of silty run-off exiting the base area and design appropriate sediment control and silt mitigation measures accordingly.
- Consider the site investigation details for all recorded soils, especially the potential presence of clay, silt and mixed unconsolidated sediments as these are most likely to generate significant volumes of suspended solids within run off once excavated.
- Assess the potential for groundwater ingress and potential mitigation measures, e.g. clean water diversion, pumping into a separate lagoon, additional drainage measures.

5.8.44 An interceptor ditch should be installed around the limits of the earthwork to reduce the volume of green field run-off entering the excavation.

5.8.45 Overburden will be stripped and stored appropriately on the up-gradient side of the turbine base and crane hardstanding, sealing in all mineral material with a covering of peat turves or geotextile to minimise erosion, run off and wash out of silt. If necessary, a silt fence should be installed on the down-gradient side of the bund.

5.8.46 Where the topography allows, temporary foundation excavations will be dewatered by means of gravity draining. Where this is not possible, a sump should be created from which water can be pumped into an appropriate sediment control structure.

5.8.47 Diversion dams / berms will be constructed accordingly in order to channel development run-off into a drainage system for discharge into a suitable sediment control structure.

### Construction Compounds, Substation and Control Buildings

5.8.48 During construction works, large areas of soil may be exposed at the site of the construction compounds, substation / control building and energy storage facility construction footprints. As

with tracks and borrow pits, green field run-off and development run-off will be kept separate and appropriate silt mitigation measures will be deployed.

### Peat and Soil Storage

5.8.49 **Peat storage should be undertaken in line with the Peat Management Plan.** Consideration should be given to 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. Consideration should also be given to the impacts of poor drainage control in any areas where peat is used in reinstatement, for instance track verges, reinstatement of construction compound, restoration of borrow pits etc.

5.8.50 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.

### Groundwater Management

5.8.51 Within the water environment, “groundwater” is considered to be that water that is encountered below the ground surface in the solid and drift geology, as opposed to that running over it (i.e. surface waters).

5.8.52 The information contained within the ES will be supplemented and reviewed with the results from the detailed intrusive site investigation (ground investigation) that would be scheduled post-consent.

5.8.53 Notwithstanding this, the measures identified above, to control surface drainage and run-off relating to infrastructure construction, are considered adequate to ensure that pollution of groundwater is avoided.

### Private Water Supplies (PWS)

5.8.54 In line with the proposals identified in the ES, the following mitigation measures shall be implemented:

- All works, other than approved watercourse crossings and associated features (including stockpiles), will be located at least 50m from surface watercourses upstream of where a private water supply is sourced.
- Prior to the on-set of construction in proximity to known private water supply sources, and throughout the period of construction in that general area, regular liaison with the relevant landowners / tenants will be undertaken. Where required works may necessitate the provision of an alternative, temporary, water supply this shall be provided.

## 5.9 Watercourse Crossing Plan

5.9.1 This section concerns the proposed operations required for watercourse crossings works in areas of the consented wind farm site. The information contained herein, along with the legislative controls and sources of information shall be used to inform the detailed design of all water course crossings at the Site.

5.9.2 The Contractor is responsible for liaising with and obtaining from NRW all relevant consents, licenses and authorisations relating to construction of water course crossings at the site.

### Establishment of Working Areas

5.9.3 Prior to the commencement of watercourse crossing works an on-site meeting shall be held where deemed necessary. This meeting shall be between the Contractor, ECoW and consultees where appropriate, including NRW, Powys County Council etc. The purpose of this meeting is to agree specific requirements and working practices at key locations, or for particular structures (bridges or culverts). During the watercourse crossing construction operations, both regular and periodic consultation may be made with the consultees as required / agreed at this commencement meeting.

### Design Philosophy

5.9.4 General good practice<sup>3</sup> in watercourse crossing design will ensure that various conditions will be taken into account during the works, and which are summarised below:

<sup>3</sup> Engineering in the water environment: good practice guide. River Crossings. Second Edition, November 2010. Scottish Government and NRW.

- 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 will allow safe passage for wildlife, such as fish, water voles, otters etc (i.e. Capacity well in excess of the design flow);
  - When constructing culverts, care should be taken to ensure that the construction does not pose a permanent obstruction to migrating species of fish, or riparian mammals (i.e. provision for fish and wildlife migration);
  - Culvert design should 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);
  - It is preferred that a culvert with a single orifice be used rather than a series of smaller pipes, likely to become blocked with flotsam and create erosion (i.e. does not constrict the channel);
  - Ease and speed of construction are important to minimise disruption to the watercourse and surrounding habitat;
  - Designed for the life of the project;
  - Low maintenance; and
  - Visually in keeping with the surroundings.
- 5.9.5 In accordance with the guidelines laid down each watercourse crossing shall be designed on a case by case basis to be appropriate for the width of watercourse being crossed, and the prevailing ecological and hydrological situation (i.e. the “sensitivity” of the watercourse). A number of factors, both environmental and engineering will influence the selection of structure type and the design of the crossing.
- 5.9.6 As part of the design mitigation, all watercourses on the site have been identified from OS mapping and site reconnaissance. This has influenced the ES site layout and the road alignments. It is anticipated that a number of small watercourses or historic land drains are likely to have water flows only during periods of heavy sustained rain, or are seasonal (“ephemeral”) and are not shown on maps. Where possible these will all be identified prior to construction, or on an on-going basis during construction, and suitably sized culverts installed.

- 5.9.7 Prior to any watercourse crossing works commencing on site, a site walkover will be carried out with the consultees to agree the most appropriate design solution for each identified culvert location. All watercourse crossings shall include splash boards and run-off diversion measures to prevent direct siltation of watercourses.

### Culverts

- 5.9.8 There are 6 water crossing that will need detailed culvert design, 2 of which are new crossings. Designed circular (pipe) culverts will be used where a small watercourse or stream needs to be crossed.
- 5.9.9 Medium to large box culverts will be used where a culverted solution is desirable or where a piped culvert is not appropriate for environmental or channel-size reasons. The advantage of a box culvert over a circular culvert is that a more natural river bed can be reinstated and maintained.
- 5.9.10 A natural stone headwall will be provided upstream and downstream to protect the road embankment where necessary. Further protection will be provided to the banks using soft engineering techniques as much as possible. Culverts will not be constructed under high flow conditions.

## 5.10 Water Quality Monitoring

### Responsibilities

- 5.10.1 Responsibility for the water quality monitoring programme, and co-ordination thereof, will be expected to lie with an independent environmental consultant appointed at the start of the programme. The environmental consultant will be responsible for drawing up a detailed programme of water quality monitoring for baseline, during and post construction water quality monitoring, with reference to The Water Supply (Water Quality) Regulations (Wales) 2018.
- 5.10.2 Where a decrease in water quality resulting from construction works is observed by the independent monitoring or site observations, the Contractor will undertake remedial measures and will bear the costs of all associated sampling and investigation. The Contractor may wish to undertake additional confirmatory sampling and analysis at any point during the works at their own cost.

- 5.10.3 Field monitoring of water quality parameters and collection of samples may be undertaken by the Ecological Clerk of Works (ECoW) or other nominated person(s) based at the site. The ECoW or nominated site person(s) will be appropriately trained on the required monitoring methods and the use, calibration and maintenance of all monitoring equipment used. Training will be provided by the independent consultant appointed to undertake the water quality monitoring programme.
- 5.10.4 Laboratory analysis of water samples will also be undertaken as part of the monitoring programme by an independent and appropriately certified laboratory to be appointed by the environmental consultant. Co-ordination of the sampling and analytical programme will be undertaken by the environmental consultant. Under the direction of the environmental consultant, the ECoW or other nominated site person(s) will be responsible for field collection of the samples required for laboratory analysis. Samples will be despatched for analysis under chain of custody procedures. Laboratory analytical results will be sent directly to the environmental consultant for interpretation and reporting.
- 5.10.5 Interpretation and reporting of the field and laboratory data will be the responsibility of the environmental consultant. This responsibility extends to overall coordination of both field and laboratory aspects of the monitoring programme, provision of training and liaison with the ECoW and/or other nominated site person(s) as required.

### General Sampling Scope

- 5.10.6 The text provided herein represents an initial indication of the scope of works that would normally be expected to be undertaken on a site such as Garn Fach. The site specific detailed water quality monitoring plan will be drawn up by the independent environmental consultant post consent.
- 5.10.7 Three distinct periods of water quality monitoring are expected to be required: Pre-construction (baseline), during construction, and post-construction. Each of these periods will require a different monitoring scope and frequency which should be flexible and adaptable in response to changes in construction activities or assessment of water quality monitoring data.
- 5.10.8 Results will be assessed and compared to threshold / trigger values which will be derived from water quality environmental standards (for example the Water Framework Directive (Directive

2000/60/EC) and the Freshwater Fish Directive (Directive 2006/44/EC, Annex 1) as well as baseline monitoring results from the site.

### Water Quality Monitoring Locations

- 5.10.9 The water quality monitoring locations will be defined on development consent and will include locations upstream and downstream of main works areas and in particular where works will be occurring at water course crossing points and within the vicinity of surface water abstractions / private water supply sources.

### Monitoring Frequency

#### Baseline

- 5.10.10 It is expected that a minimum of two rounds of baseline monitoring over 10 weeks would be required prior to any enabling or construction works on site. Monitoring would ideally be event driven and carried out during a dry period of low flow and a wet period of high flow. All of the monitoring locations would be selected and monitored in order to provide an understanding of the range of water quality across the site, including the PWS locations.

#### During Enabling Works and Construction

- 5.10.11 Monitoring of watercourses and private water supplies during enabling and construction works is likely to proceed on a daily and weekly basis throughout the enabling and construction activity period. The frequency and scope of monitoring will be refined following baseline monitoring results, although generally more frequent (e.g. daily) monitoring will be undertaken at locations up gradient of vulnerable receptors. The monitoring frequencies of additional monitoring locations will be dependent on enabling and construction activities being undertaken within the catchment and if trigger levels are exceeded. Monitoring results will be continually reviewed in order to confirm as much as is reasonably possible that the water quality conditions have not deteriorated from the baseline measurements.

#### Post Construction

- 5.10.12 Post construction monitoring of watercourses and private water supplies will be expected to continue on a monthly basis over a 3 month period at selected locations.

### Field Monitoring Scope

5.10.13 Field monitoring will be undertaken on a variable schedule, dependent on the monitoring location, the enabling works and construction activities occurring within a catchment and whether any potential pollution incidents are observed or reported.

5.10.14 Field monitoring will include a record of:

- Date and time of monitoring and name of person undertaking monitoring;
- Construction activities occurring in the catchment areas of the monitoring location;
- Rainfall (e.g. as recorded at on-site rain gauge) and weather conditions preceding and during monitoring;
- Observations of flow rate (high, moderate or low compared to baseline/steady state at comparative time of year) and any visual/olfactory observations on water quality or potential pollution;
- Field measurements of pH, temperature, electrical conductivity (EC) and turbidity; and
- Details of any samples taken for laboratory analysis.

5.10.15 A proforma and results database will be developed prior to the on-set of monitoring to maintain consistency of data recording and ease of reporting.

### Laboratory Analysis

5.10.16 When a visual observation or field measurement of any parameter is recorded in exceedance of the identified limits a sample may be sent to the laboratory for confirmatory analysis.

### Private Water Supplies (PrWS)

5.10.17 Of the private water supply abstractions identified as being within hydraulic continuity with wind farm infrastructure, all have water supply sources within close proximity or downgradient of sections of access track or public road which will be subject to upgrading.

5.10.18 Where enabling or construction works are within the catchment of a PrWS, monitoring will be undertaken.

5.10.19 In the event of pollution incident, the construction activities that were on-going prior to, during and immediately following the incident shall be established and works stopped temporarily. Information shall be recorded in order to determine whether the incident occurred as a result of site activities or natural background conditions. Emergency monitoring and sampling shall be undertaken until such time as the source of the pollution incident has been identified and remedial measures implemented as appropriate.

### Records & Reporting

5.10.20 Results of water quality monitoring shall assist in determining requirements for improvements in drainage and pollution prevention measures implemented on site.

5.10.21 Records of visual inspections, monitoring data and laboratory analyses carried out as part of baseline monitoring will be kept readily available in accordance with best practice, and will be used during the remaining lifecycle phases of the wind farm for compliance monitoring as well as for identifying impacts that may be occurring on the surrounding water environment.

5.10.22 Results of water quality monitoring will be reported by the appropriate person to the EDF-R and the appointed contractor during weekly meetings. Records of weekly monitoring and any exceedances will be retained. Copies of weekly results will be forwarded to the environmental consultant to inform the preparation of the monthly report as well as targeted laboratory sampling in the week(s) ahead.

5.10.23 A monthly report on water quality will be prepared by the environmental consultant. The monthly reports will consider all field monitoring and results of laboratory analysis completed that month. Reports shall describe how the results compare with baseline data as well as previous monthly reports on water quality. The reports will also describe whether any deterioration or improvement in water quality has been observed and whether any effects are attributable to construction activities and what remedial measures or corrective actions have been implemented.

5.10.24 Monthly reports will be provided to NRW.

## 5.11 Ecological Protection

### Introduction

- 5.11.1 This section is to provide details on ecological protection measures with regard to Species and Habitats in relation to pre-construction and during construction mitigation and monitoring. This section does not include details of a Habitat Management Plan which is provided as a separate document.
- 5.11.2 The aim of this Ecological (Habitat and Species) Protection Plan is to keep effects within the predictions, or to lessen them. Measures within the HMP aim to improve the habitats and populations of key species on the site, offsetting the effects of the development and providing additional habitat enhancement.
- 5.11.3 Works may be suspended at the request of EDF-R, ECoW, NRW or HSE at any time when a potential risk to habitats and species is identified (and resulting harm may be caused to land, water, protected species or human health) or where construction methods and mitigation measures relating to site ecology (habitats and species) are not as specified within the construction method statements and relevant plans as submitted and agreed at the commencement of the works.

### Species: Birds to be protected

- 5.11.4 All bird species (apart from a few “pest” species) are protected by law, under the Wildlife and Countryside Act 1981, so that 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 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.
- 5.11.5 Pre-construction phase surveys for active nests ahead of ground works will take place when construction is undertaken during the breeding season. If breeding birds are found within the development footprint, it may be possible to clear areas for subsequent development ahead of the breeding season, and keep these areas cut short to prevent birds from nesting. Maintenance

of the sward in these areas would have to be regular and informed by checks by an ecological clerk of works.

- 5.11.6 It is proposed to clearly mark the extent of the working area to minimise the risk of machinery encroaching onto adjacent habitat. It is important to protect habitats adjacent to the working area, since they might be used by nesting birds.

### Species: Mammals to be protected

- 5.11.7 The following mammal species protected under UK and/or EC legislation are recorded as present within the wind farm development.
- 5.11.8 **Otter.** Measures to avoid direct collision between otters and vehicular traffic will include restricting traffic to particular speed limits on The Site between sunset and sunrise, and informative signage for vehicles around water course crossing points.
- 5.11.9 Thorough checks of the water course crossing points will be made prior to commencement of works to redesign / reinforce them, as well at the start of works each day, to prevent direct mortality or injury to otters.
- 5.11.10 Measures to prevent indirect effects on otters, such as silt and other pollution being introduced into the water courses will be identical to those described for the River Ithon SSSI & River Wye SAC.
- 5.11.11 **Badger.** A survey to update the findings of the original field study in 2019 is recommended prior to the initiation of construction to identify new setts and field signs. This survey effort will aid in the assessment of any changes in badger use and distribution across the site, inform updates to this CEMP and any new mitigation measures that may have to be implemented in light of the updated results.
- 5.11.12 Badgers were recorded to use the Site for foraging and commuting purposes. To allow continuation utilisation for commuting behaviour, connective linear features such as hedgerows and dense scrub corridors must be maintained to provide good cover for commuting badgers.
- 5.11.13 In line with standard good construction practice, ground excavations during the construction phase, for borrow pits, turbine foundations etc. should be completely covered overnight. If this is not possible, a means of escape for mammals or other species must be placed within the

excavation overnight. All construction materials must be stored in secure compounds or raised off the ground to prevent mammal interference.

5.11.14 In similarity with otter, measures to avoid direct collision between badgers and vehicular traffic will include restricting traffic to a particular speed limit on site between sunset and sunrise.

5.11.15 **Bats.** All bats are protected under the Conservation of Habitats and Species Regulations 2010. Under this legislation, it is an offence to intentionally or deliberately or recklessly kill, injure or capture (take) bats; deliberately or recklessly disturb bats (whether in a roost or not); deliberately or recklessly damage, destroy or obstruct access to bat roosts; possess or transport a bat or any parts of bats, unless acquired legally; and sell, barter or exchange bats, or parts of bats.

5.11.16 The site is considered to be suboptimal for species such as water vole and no sightings were identified during the surveys. Should this status change, the necessary protection measures must be implemented.

#### **Species: Salmon, Brown trout and Freshwater Pearl Mussel to be protected**

5.11.17 Requirements of Atlantic salmon, Brown trout, and Freshwater Pearl Mussel (FWPM) are intertwined with those of the River Ithon SSSI and River Wye SAC. Mitigation measures of preventing pollutants entering the water course, described above, in Appendix 10-7: Garn Fach Wind Farm Outline Drainage and Surface Water Management will benefit the species as well as the habitat.

5.11.18 Physical impacts to Atlantic salmon, Brown trout and FWPM, such as accidental or reckless mortality or injury is considered to be unlikely, as there will be limited breaching of the water courses for the purposes of The Development,

5.11.19 New and upgraded culverts will be designed to retain the conditions that existed prior to that installation. This means that the cross-sectional area will not be restricted by the culvert, the slope will not change, and the roughness coefficients will remain the same.

5.11.20 The streams where new and upgraded culverting are proposed, are small and shallow. Where practicable, any culverting works will be carried out between early May and late October and damage to or destabilisation of banks, will be avoided to avoid impacts on spawning fish or developing eggs and fry. If it is necessary to carry out culverting work during sensitive months (November to April) then fish habitat assessment surveys will be carried out to determine habitat suitability for key live stages of fish. Surveys will be carried out as described in fish habitat survey

section included within the SEI response to PEDW; If the habitat surveys conclude the crossing locations as important spawning areas, then further consultation with NRW will be undertaken as part of this process and prior to works commencing. Options to consider would be restricting works to avoid the sensitive months, or reviewing locations of crossings and this can be secured through relevant planning or consenting conditions.

#### **Species: Reptiles and Amphibians to be protected**

5.11.21 All reptiles are protected under the Wildlife and Countryside Act (1981, as amended) and against intentional or reckless killing, injury and sale (or advertising for sale).

5.11.22 **Great Crested Newts** The ponds that support the medium population of GCN (the Pond 3 cluster) will remain unaffected by the Development. However, a borrow pit will be excavated within 250m of the ponds, in an area supporting semi-improved grassland, marshy grassland and dense scrub on a north-facing bank. Newts are most likely to be within 250m from the pond edge (English Nature 2001) and may travel further if there are suitable linear features present (Jehle & Arntzen, 2000; Gustafson, Malmgren & Mikusiński, (2011). In the absence of evidence that suggests otherwise or absolute physical barrier, it is assumed that GCN present on The Site will behave no differently.

5.11.23 Works to excavate the particular borrow pit will require mechanical clearance of 3,718m<sup>2</sup> of terrestrial habitat. On account of the proximity to the Pond 3 cluster and the likelihood of GCN being present in the habitat, it is considered necessary to trap individual newts and remove them from the area to be excavated. Trapping, or capture of GCN is prohibited under the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019, and therefore a European Protected Species (EPS) licence (or equivalent at the time of construction) must be applied for from NRW to derogate from the legislation.

5.11.24 The licence must be in place prior to commencement of works, but after permission has been granted.

5.11.25 The licence must include resources for the following actions:

- Appointing an experienced and appropriately-licensed Ecological Clerk of Works (ECoW) to direct the licensable works and provide advice where necessary;
- Designation of a receptor site or area;

- Creation of compensatory habitat in a like-for-like manner for what is to be lost;
- Ring-fencing of the area to be excavated with a suitable herptile-proof fence, and correct installation of pitfall traps an appropriate distance apart and laying of refugia;
- Execution of a 60-day translocation regime (on account of the medium population size in the Pond 3 cluster) undertaken by the ECoW or an appropriately-licensed or trained individual during appropriate weather conditions; and
- Supervision of the careful strip of habitat within the ring-fenced area, after which the borrow pit may be excavated.

5.11.26 Removal of the herptile-proof fence under supervision from the ECoW.

5.11.27 The receptor site must be ready to receive translocated GCN prior to the commencement of the ring-fencing. The compensatory habitat must also be suitably developed prior to the commencement of the translocation. Securing of the sites with the landowner will be obtained from the landowner via a planning condition.

5.11.28 Submission and implementation of a statutory-consultee-approved biosecurity risk assessment must be incorporated into the working practices.

5.11.29 For information on terrestrial and aquatic habitat management prescriptions for GCN, please refer to the details in Appendix 8-9: Outline Habitat Management Plan and Appendix 8-10: Great Crested Newt - Species Conservation Plan of the ES. Figures 17a.V2 (Terrestrial and aquatic habitat management prescriptions for GCN (Southern Parcel)) and 17b (Terrestrial and aquatic habitat management prescriptions for GCN (Middle Parcel, Ponds 3 and 6)).

### Habitat Protection Plans

5.11.30 The following important habitats have been identified within the development area:

- Blanket bog, and
- Watercourses/waterbodies.

5.11.31 Protection of these habitats (through avoidance and minimisation of damage and loss) is necessary for the following reasons:

- Blanket bog. In general, areas of blanket bog are only present as small examples, juxtaposed with more modified bog, and small areas of wet heath. The rarity of

blanket bog is recognised both in its inclusion as an Annex 1 habitat under the Habitats Directive, and as a priority habitat in the UK BAP. The UK BAP is underlined by legislation in the NERC Act (Section 42).

- Active blanket bog (i.e. bog supporting a significant area of peat-forming vegetation) is listed as a Priority habitat on Annex 1 of the EC Habitats Directive and therefore the habitat is of international importance. Blanket bog is also a Priority habitat in the UK BAP. The definition of blanket bog in the UK BAP comprises a number of component communities. All these are listed as part of the Priority habitat. The Sphagnum-rich vegetation communities found on peat within the site study area fall within these definitions.
- All of the above habitats are located on peat soils which are a vital store of organic carbon. Peat stores carbon accumulated following plant photosynthesis over thousands of years. Exposure of peat leads to drying and ultimately to oxidation of the peat as carbon dioxide and water, increasing carbon emissions to the atmosphere. Damage to peatlands can also lead to release of dissolved organic carbon in drainage waters, as well as erosion as particulate organic carbon. Both of these sources can then lead to emission of carbon dioxide to atmosphere at a later stage within ecosystems downstream of the original carbon store. The wind farm development is being undertaken to reduce UK fossil fuel emissions, particularly carbon dioxide. It would be counterproductive to undertake such development without ensuring that important natural stores of carbon on site are left as intact and little affected as possible.
- The watercourses/water bodies represent a habitat which is integral to the downstream populations of otter, bird and fish populations.

5.11.32 The following protection measures are proposed:

- Inclusion of habitat sensitivity material in site induction procedures and the procedures to be implemented to minimise impacts outside the development footprint;
- [Where roads or pipeline trenches cross existing drainage ditches, culverts will be used to replicate existing surface drainage. Clay plugs used in cable trenches, at](#)



frequencies dependent upon ground conditions and slope, to ensure preferential flow pathways are avoided. Watertight membranes employed in construction of foundations to prevent accumulation of drainage water.

- Micrositing of development infrastructure to reduce the volume of excavated peat, to be approved by the ECoW in consultation with NRW, as necessary;
- Best use of excavated live turf and peat as part of reinstatement procedures;
- The ECoW will ensure that there are no discharges of water on to blanket bog surfaces. Blanket bog habitat gains most of its nutrition from rainfall and it is adapted to low nutrient inputs via rain and snow. Discharge of silty water could partly bury vegetation and greatly increase nutrients, creating negative effects on blanket bog;
- ECoW control over the use of a 50 metre unmarked buffer around watercourses with detailed consideration of mitigation measures for all site working practices to minimise effects on habitats within that buffer zone;
- Detailed discussions and pre-operational training and environmental awareness between the ECoW and the site engineers and operatives will occur where the construction of tracks occurs in high sensitivity areas;
- Definition and demarcation of areas of particularly sensitive habitat in which no works will take place without the prior agreement of NRW.

5.11.33 Felling and construction activities around watercourses will adhere to general good practice measures as outlined in Forests and Water Guidelines produced by the Forestry Commission, Pollution Prevention Guidance produced by NRW, the Water Framework Directive, Welsh Government's Woodlands for Wales Strategy and the site specific mitigation measures as described within the ES;

#### **Pre-Construction Survey Checks:**

5.11.34 Qualitative and semi-quantitative inspection of habitats will be included as part of pre-construction surveys and undertaken by the ECoW. A photographic record will also be made of sample locations and locations will be recorded using GPS.

5.11.35 Results from regular specified physical sampling will be used to assess any evidence of siltation, bank erosion and flooding. Additional sampling locations will be added at proposed water

crossing locations, before and after construction, to assess the effects of construction on aquatic conditions.

5.11.36 Results from sampling after a pollution incident response will be used to seek and stop the cause of the incident. Further sampling will be undertaken after implementing pollution control measures to be sure that measures have been effective.

#### **Personnel Induction**

5.11.37 All relevant site personnel will be given an induction by the (ECoW). The induction will be in a format of a toolbox talk with the aim of:

- Making personnel aware of legal obligations placed on them in relation to protected species by national and international legislation and by the conditions of any licence which may be obtained;
- Making personnel aware of their personal responsibility for ensuring that no infringement of legislation or breach of any licence condition occurs;
- Ensuring personnel understand that no person or work is allowed within exclusion zones without prior agreement and/or supervision with an ecological consultant or ECoW and in consultation with NRW and/or under a disturbance licence;
- Ensuring personnel understand the procedure to be followed when encountering a dead or injured species within site works. The ECoW is to be called to the location immediately. The ECoW will collect the injured animal. The ECoW will be responsible for ensuring that any injured or dead animals are handed over to the proper authorities for care, as well as reporting the circumstances to the appropriate authorities.

## **5.12 Archaeological Protection**

### **Introduction**

5.12.1 The methods and principles contained herein, as well as within referenced legislative instruments and published guidance documents, will be adhered to by the appointed Contractor in developing the detailed design of the wind farm and other plans relating to environmental management as required by the Contract.

## Protection Measures

- 5.12.2 The ES identifies a number of cultural heritage features within the application site.
- 5.12.3 An Archaeological Clerk of Works (ACoW) will be appointed to oversee construction excavations on the site.
- 5.12.4 Areas of archaeological importance will be fenced off prior to construction activity starting on site, to protect cultural heritage features.
- 5.12.5 In waterlogged areas and peat deposits, the deposits may also be covering potentially significant buried archaeological remains. If discoveries of archaeological interest are made during this archaeological monitoring, and preservation in situ of any sites or features is not possible, provision would be made for the recording, excavation, where necessary, of any archaeological remains by a suitably qualified archaeologist ultimately reporting back to the Local Planning Authority and Cadw/CPAT.

## 5.13 Excavated Materials

### Contractor Requirements

- 5.13.1 In advance of each main phase of works, the Contractor (in consultation with ECoW, and other specialists where required), will provide a method statement detailing expected volumes, material classification, storage and reuse procedures for the excavated materials anticipated from that particular work area.
- 5.13.2 The Contractor will liaise with NRW on all aspects of waste management, if required, to ensure compliance with all appropriate regulatory controls prior to and during construction works.

### Classification of Excavated Materials

- 5.13.3 Excavated soils, peat and rock are a definite requirement for reinstatement on site in landscaping and re-profiling works and in order to minimise visual impacts and facilitate habitat and ecological restoration, improvement and enhancement.
- 5.13.4 Classification of excavated materials will depend on their identified re-use in reinstatement works. In order to ensure compliance with relevant waste legislation, excavated materials will

require to be classified on site. Three initial classes of excavated materials may be identified during construction:

- **Top:** Surface layer of living vegetation and underlying fibrous subsoil.
  - **Mineral Soil:** Highly variable composition, which will depend on underlying geology, depositional environment or provenance if made ground.
  - **Peat:** The upper layer of a peat bog in which organic matter decomposes aerobically may be fibrous or pseudofibrous (plant remains recognisable), spongy, of low strength although consolidated, retains integral structure and can stand unsupported when stockpiled.
- 5.13.5 Any non-peat material that is not immediately suitable for a predetermined use without the requirement for treatment (e.g. dewatering) would be classed as waste and requires to be dealt with in accordance with the Contractor's developed Waste Management Plan. The Outline Peat Management Plan (Appendix 10.2) provides details of the estimated volume of peat to be excavated and the re-use requirements on site. All peat will be re-used on site and no peat will be treated as waste.

### Estimated Peat Excavation Volumes

- 5.13.6 It should be noted that the excavation volumes estimated herein are only a preliminary estimate.
- 5.13.7 As part of the EIA design a preliminary ground investigation was undertaken, at the site. The first phase in May 2020 included 697 points as part of a phase 1 peat survey (477 peat depth probes and 220 auger samples). This was carried out through depth probing of the soils using avalanche probes alongside the extraction of auger samples at regular intervals, which were graded according to the Von Post scale. The Von Post scale allows for a grading of the level of humification of the soil (decomposition of plant matter) so as to describe the quality and nature of the peat material. 86% (601) of the recorded peat depths were <0.5m thick, with only 2% (14) of the recorded peat depths exceeding 1.0m. It should be noted that 83% (182) of the auger samples found no peat, 9% (20) samples found completely decomposed peat (H10). As part of the Phase 2 peat survey, an additional 4225 points were surveyed, forming a 10m spaced points grid of peat depths within a 50m radius of the turbine locations, for the tracks, points were sampled every 50m at the track centreline and 10m either side of the centre line. This included 2986 peat depth probes and 1239 auger samples, 79% (3354) of the recorded peat depths were

<0.5m thick, with only 1.5% (62) recorded peat depths exceeding 1.0m in thickness. It should be noted that 80% (989) of the auger samples found no peat. Typically, the deepest peat was recorded in the north western region of the site.

**Table 5.13.1 – Peat volumes extracted at each infrastructure**

Infrastructure Item	Peat Volume excavated (m3)
Turbine foundations and hardstandings	7,392
Substation	82
Energy storage facility	-
Temporary compounds	5,934
Access Track	3,732
Borrow pits	-
Cycle track car park	-
<b>Total peat volume excavated</b>	<b>19,674</b>

## Handling of Excavated Material

### General

- 5.13.8 Prior to commencement of a particular phase of works or in a particular area of the site, the Contractor will undertake an assessment of:
- The likely excavated material types and method of on-site classification;
  - Estimated volumes of each type of anticipated excavated material; and
  - Intended end-use(s) for each type of excavated material.
- 5.13.9 The above assessment will involve a review of existing ground investigation data and potential further survey of the principal habitat types and existing depth of soil/ peat horizons. The area to be encompassed by such an assessment will be determined by the construction works programme, phasing of the works and available ground investigation data for any particular area.
- 5.13.10 Where possible, excavation of soils will be undertaken in such a manner as to avoid cross contamination between distinct horizons. The different soil horizons will be kept and stored separately for use at a later date.
- 5.13.11 During and after excavation, storage, haulage and reuse of excavated material will be planned to minimise material movement around the site. Where possible, immediate reuse is preferred to temporary storage.

### Excavation of Peat

- 5.13.12 In regards to the management of excavated peat deposits, the work will be carried out as described in the updated Appendix 10-2 Outline Peat Management Plan, and the additional information submitted as part of the SEI.
- 5.13.13 The Contractor should avoid placing arisings from excavations and local concentrated loads on peat slopes without first establishing adequacy of the ground to support the load.
- 5.13.14 The majority of access tracks for the site shall be “cut tracks”. Superficial materials, including peat / peaty soils, shall be excavated out to a suitable bearing stratum upon which the track shall be built. Superficial materials shall be carefully separated during excavation, to keep peat (and peaty soils) and other soil materials (e.g. weathered rock, gravels and clays) apart. Any surplus material will either be used on the exposed edges of floating tracks or re-used elsewhere, i.e. in borrow pit restoration.
- 5.13.15 In those limited areas where peat is encountered, the acrotelm and catotelmic materials shall be separated, with the acrotelmic material being retained for in-situ reinstatement. The construction of floating roads will not create any peat surplus.

## Temporary Storage of Excavated Materials

### General

- 5.13.16 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 re-profiling, landscaping or structural purposes.
- 5.13.17 In order to reduce the need for temporary storage, reinstatement of soils and turves around infrastructure, and in restoration and landscaping works on areas of excavated / disturbed ground, will be carried out during the construction phase or as soon as is practical after the completion of the works in any one area of the site.
- 5.13.18 Stripped materials will be carefully separated to keep peat and other soils apart, and stored in appropriately designed and clearly defined separate piles.

5.13.19 Temporary storage locations will be appropriately located and designed to minimise impact to sensitive habitats and species, prevent risks from material instability (particularly in peatland areas) and run-off into watercourses.

5.13.20 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.

5.13.21 Turves must be stored turf side up and must not be allowed to dry out. The condition of stored turves will be monitored by the Contractor and the ECoW.

### Storage of Peat

5.13.22 Peat will not be stockpiled or deposited permanently higher than 1m, and turf will be stockpiled separately.

5.13.23 Due to the programming of the works there may be a need for temporary storage of peat spoil prior to its final deposition. This will occur, for example, if the peat is to be used to reinstate a borrow pit which has yet to be exhausted.

5.13.24 The works will be planned so that peat will be stored for as little time as possible. The locations where peat is to be stored will be agreed with the ECoW and the appointed geotechnical engineer. The integrity of the peat will be maintained as much as possible.

5.13.25 *In order to maintain the integrity of the peat whilst it is in storage it may be necessary to water it. The contractor and ECoW will monitor the condition of the stored material at up to weekly intervals in dry periods, to ensure no drying takes place.* Wherever possible, water will come from a local source (abstracted and piped/transported from a stream nearby). Care will be taken to water the peat with a fairly fine spray to avoid run-off.

5.13.26 Cut off ditches and suitable treatment systems such as settlement ponds will be constructed where necessary where peat is stored. This will ensure that leachate and sediment from the peat will not reach a watercourse.

### Temporary Borrow Pit Storage

5.13.27 Where the excavated material is identified to be required elsewhere in restoration works, although re-use is not imminent, specified areas within the working borrow pit may provide suitable temporary storage locations. However, the handling of the stored material must be kept

to a minimum and appropriate drainage, pollution prevention and material stability measures must be designed prior to the temporary deposition of the material to ensure material is maintained in a suitable condition for future use.

5.13.28 The Contractor will ensure that any temporary control measures (bunds, drainage etc) required in order to use borrow pits as temporary storage areas will also be compatible with the final re-profiling proposals for the borrow pits.

## 5.14 Forestry

### Minimum Requirements

5.14.1 The objective of this Section is to provide a benchmark for best practice such that all possible preventative measures will be taken to avoid pollution of the water environment during forestry works.

- Procedures and methods for forestry works, including harvesting and forwarding operations, and associated tasks relating to material storage, etc;
- Identification of potential sensitive areas and risks relating to forest ecology/agricultural land (crops and livestock).

5.14.2 Where applicable, all forest operations will comply with UK Forestry Standard and Forestry Industry Safety Accord (FISA).

### General Control Requirements

5.14.3 Timber harvesting operations will be undertaken by a qualified timber harvesting contractor and their subcontractors (if applicable).

5.14.4 The timber harvesting contractor will liaise with the Ecological Clerk of Works (ECoW) appointed for the site to ensure that any protected species and/or sensitive habitats have been considered prior to commencement of the works, and appropriate mitigation measures have been agreed.

5.14.5 The ECoW will be responsible for identifying, marking on site and briefing timber harvesting contractors on the location of ecologically sensitive areas within the site bounds. All work areas will be clearly identified on site prior to commencement of clearance operations. All access tracks will be clearly identified on site, marked and cleared prior to works commencing. Any information

relating to services and water supplies, if applicable, will be identified and clearly marked on ground prior to commencement of felling.

- 5.14.6 Prior to commencement of felling works, all areas will be checked for stability. The timber harvesting contractor will ensure that signage is in place to notify all construction personnel of felling operations and that no unauthorised personnel can enter within safe working distances for machine operations or twice the tree length for motor manual chainsaw felling.

#### **Forestry Plant and Equipment**

- 5.14.7 The site will be broken down as per information agreed with EDF-R/landowner prior to commencement of forestry works.
- 5.14.8 All access and egress points will be as agreed with the Principal Contractor. For all road vehicles all normal highway rules will apply on all routes, at all times. Traffic management will normally be under the control of the Principal Contractor. Where there are localised site traffic risks associated with tree felling operations, traffic management will be set up by the timber harvesting contractor in consultation with the Principal Contractor.
- 5.14.9 Trees on site will be felled by a purpose built timber harvester or motor manual chainsaw operative. After felling, a purpose built forwarder will be used to extract the timber. The forwarder travels over brash mats and using a hydraulic loader lifts the timber into the bunk section. Once loaded, the forwarder travels across the brash mats to the designated log storage area where the timber is stacked ready for collection by road going timber lorries. Brash mat management is of primary importance in the prevention of site damage and siltation of watercourses. Extraction route management will follow the guidance given in the Forestry Commission report– Soft Ground working – review of methods to minimise soil disturbance.

#### **Subcontractors, Health & Safety and Environment**

- 5.14.10 The timber harvesting contractor will provide details of the harvesting and extraction subcontractor and the timber haulage subcontractor (if applicable) prior to commencement of forestry works.
- 5.14.11 The timber harvesting contractor will only use suitable qualified, competent and experienced personnel/subcontractors with regard to use of their plant as well as use of spill kits and implementation of emergency pollution prevention measures. Competence will be demonstrated via training records prior to commencement of works.

- 5.14.12 Noise and dust levels will be kept to a minimum.

## **5.15 Reinstatement**

### **General requirements**

- 5.15.1 The Contractor will provide proposed methods for reinstatement of materials in landscaping and re-profiling of: track verges; turbine bases; construction compounds; borrow pits; cable trenches; other disturbed areas and redundant construction features (such as drainage ditches, settlement ponds or other sediment control measures, concrete wash out pits 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.
- 5.15.2 Excavated peat from cut and fill sections of access tracks will be used for dressing the side slopes of floating track sections if required, or for site reinstatement. No mineral soil should be used for dressing the side slopes of floating tracks to prevent silt run off unless a suitable geotextile is used as stabilisation until vegetation is re-established.
- 5.15.3 Where practicable, reinstatement and re-profiling of, and around, infrastructure and borrow pits 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 reinstatement as early as possible.
- 5.15.4 Outline design proposals for borrow pit re-profiling, including details on reinstatement material origin and classification, placement method, final ground profiles, surface dressing, potential grazing impacts and monitoring of vegetation regeneration will be submitted by the Contractor and agreed by the ECoW prior to commencement of re-instatement.
- 5.15.5 Comprehensive records will be maintained by the Contractor of the location, depth and volumes of all materials used in restoration of the borrow pits.
- 5.15.6 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.

5.15.7 Where there are insufficient turves for top dressing, hydro-seeding or other seeding methods may be an acceptable method of vegetation reinstatement. Seeding proposals, including specification for seed mixes and application methods, potential grazing impacts and monitoring requirements, will be agreed with the ECoW and relevant external consultees and stakeholders (e.g. NRW, the planning authority, land owners etc) where appropriate. The Contractor is responsible for the success of the regeneration measures, including re-vegetation/ hydro-seeding etc post-construction.

## 5.16 Decommissioning

### General requirements

- 5.16.1 Detailed decommissioning proposals will be established and agreed with relevant authorities prior to commencement of decommissioning activities.
- 5.16.2 It is anticipated that upon decommissioning it will be preferable to leave the majority of buried structures and equipment such as foundations and cables in situ, where they are at sufficient depth not to conflict with ongoing land use. The upper sections of the turbine foundations would be removed and backfilled with appropriate material. In areas that are to be returned to forestry operations, all below ground structures will be removed to an appropriate depth for ploughing, likely to be a minimum of 1m. Furthermore, it is anticipated that the majority of access tracks and constructed water course crossings would be left in-situ for amenity or landowner access requirements. Attempting to remove and reinstate the tracks is likely to result in minimal benefit which will be outweighed by the ground disturbance involved in removing the tracks.
- 5.16.3 Where the foundations of turbines are partially removed (to a depth of 1m), the verges around the structure will likely be disturbed, whilst infilling of the foundations will also be required. Where these verges have included re-used peat, the decommissioning process will be carried out so as to immediately reposition these deposits within the foundation space created, above a soil fill.
- 5.16.4 Tracks are to be left in-situ, therefore no disturbance of peat is expected during the decommissioning process for these. For cable trenches, where cables are to be removed, there will be a sequential process of removal of peat, extraction of cabling for the section and immediate replacement of peat, such that storage is not required. The void space left by the

cabling is considered to be relatively minimal, so as not to require any compensatory infilling following removal.

- 5.16.5 It is not intended that any re-used peat from the construction phase would be used in the decommissioning phase apart from where disturbance would be required (such as re-used peat for the turbine bases).
- 5.16.6 On decommissioning, reinstatement of some infrastructure is likely to be required (e.g. control room and substations, turbine bases and hard standings), and therefore in order to restore ground and habitats to as near to natural conditions as is possible reinstatement of surface cover material will be required. Hydrological conditions will be maintained where possible.
- 5.16.7 Where required, it is preferable that previously 'disturbed' soil is used for reinstatement and landscaping required at decommissioning stage, as opposed to disturbing virgin soils or peat. Disturbed peat will be retrieved from previously reinstated infrastructure borders and verges. Where additional material is required, this will be obtained from restored borrow pits or other restored areas providing that: no ecologically sensitive receptors have since established in these areas; the extraction of the material is done in a sensitive manner with minimal visual impacts; and there are no significant risks to environmental receptors.

