Carn Fearna Wind Farm

Outline Construction Environmental Management Plan (CEMP)

Carn Fearna Wind Farm Limited

Prepared by:

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Acronyms and Abbreviations

CAR Regulations	The Water Environment (Controlled Activities) (Scotland) Regulations 2011 as amended
CDM	Construction (Design and Management)
CEMP	Construction Environmental Management Plan
CMS	Construction method statement
C/TMP	Construction /Traffic Management Plan
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EnvCoW	Environmental Clerk of Works
EPPP	Emergency Pollution Prevention Plan
EPS	European Protected Species
EQS	Environmental Quality Standards
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HGV	Heavy Goods Vehicle
HMP	Habitat Management Plan
LOLER	Lifting Operations & Lifting Equipment Regulations
NatureScot	Scottish Natural Heritage
PPE	Personal Protective Equipment
PWS	Private Water Supply
QA	Quality Assurance
RAMS	Risk Assessment Method Statements
SAC	Special Area of Conservation
THC	The Highland Council
SEPA	Scottish Environment Protection Agency
SHPP	Species & Habitat Protection Plan
SPA	Special Protection Area
SPP	Species Protection Plan
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
SWMP	Site Waste Management Plan
TCC	Temporary Construction Compound
WQMP	Water Quality Monitoring Plan
EQS	Environmental Quality Standards

1.0 Introduction

1.1 Background

This document presents an outline Construction Environmental Management Plan (CEMP) for Carn Fearna Wind Farm Limited which sets out the principles and procedures for environmental management during construction of the proposed Carn Fearna Wind Farm (hereafter referred to as the Proposed Development).

Should consent be granted, this outline CEMP will be revised and updated to a final version, which will be agreed upon with The Highland Council (THC) through consultation and enforced as a planning condition. The Contractor will use the CEMP to ensure proper environmental management throughout the construction phase of the Proposed Development.

The outline CEMP has been prepared to take account of Good Practice during Windfarm Construction (NatureScot, 2019), Guidelines for Onshore and Offshore Windfarms (2010) and Research and guidance on restoration and decommissioning of onshore windfarms (NatureScot 2013) and provides the construction activities methodology pertinent to the Environmental Impact Assessment (EIA).

The CEMP is a fluid document that would evolve during the different phases of the Proposed Development. As such it will be subject to ongoing review in order to:

- address relevant conditions required in the approved consent;
- ensure it reflects best practice at the time of construction;
- ensure it incorporates the findings of pre-construction site investigations;
- address changes resulting from the construction methods used by the contractor(s); and
- address unforeseen conditions encountered during construction.

1.2 Aims and Objectives

The CEMP would be maintained and updated on site and would be augmented by associated design specifications and Construction (Design and Management) (CDM) 2015 Regulations documentation such as the Principal Contractor's Construction Phase Plan.

Where appropriate, the CEMP, or plans within the CEMP, would form part of the site induction which would be mandatory for all employees, contractors and visitors attending the site. All employees and contractors would need to familiarise themselves with the relevant contents of the CEMP and supporting appendices as directed.

Management practices and mitigation measures have been developed for those aspects of the construction works that could potentially affect the environment.

The objectives of the CEMP are to:

- outline the proposed mechanisms for ensuring the delivery of environmental measures to avoid or reduce environmental effects identified;
- ensure procedures are in place so that there is a prompt response to effects requiring remediation, including reporting and any additional mitigation measures required to prevent a recurrence;
- provide an outline of the content that would be supplied in the construction method statements and strategies that would be prepared in order to secure mitigation measures in relation to different design aspects of the Proposed Development;

- ensure compliance with legislation and identify where it would be necessary to obtain authorisation from relevant statutory bodies;
- ensure that appropriate monitoring and reporting would be in place;
- provide a framework for reporting, compliance auditing and inspection to ensure environmental aims would be met; and
- set out the applicant's expectations to guide contractors on their requirements with regards to environmental commitments and environmental management.

1.3 Site Setting

The site is located approximately 1.5 km northeast of Garve village in Ross-shire, within the administrative boundary of The Highland Council. While not within a designated Special Area of Conservation (SAC), the site occupies a regionally significant landscape, primarily comprising open moorland with a mix of bog, acid grassland, heather, heather grassland, and thin peaty soils. To the west and south, the area is bordered by coniferous woodland, with smaller patches of broadleaved woodland remnants. Loch Garve and Loch Luichart lie approximately 2.5 km and 4.7 km south-west, respectively.

Access to the site will follow a designated route from the Port of Invergordon via the B817 and A9, then along the A835, turning near Inchbae Lodge and returning to a new access track at Black Water Falls, northeast of Garve. This route, assessed for necessary road improvements, will connect to a new junction off the A835, designed for turbine components, Abnormal Indivisible Load (AIL) deliveries, and general construction traffic.

1.4 Project Description

It is anticipated that the development will consist of the following main components;

- Nine variable pitch (three bladed) wind turbines, five with a maximum blade tip height of up to 200 m, the remaining four with a maximum blade tip height of up to 180 m height;
- Turbine foundations and hardstandings;
- On-site signage;
- Crane pads;
- Watercourse crossings;
- Passing places (number and locations to be confirmed as part of detailed design);
- Batching plant (to be located in main temporary construction compound);
- Approximately 11.63 km of new on-site access track and 3.34 km of upgraded existing access track and associated drainage and 7 turning heads;
- A turning circle for AIL vehicles, located at Inchbae Lodge
- One on-site substation compound which would accommodate a control building and the wind farm substation;
- Underground electricity cables;
- Up to Three Borrow pits;
- Three temporary construction and storage compounds and ancillary infrastructure.

2.0 Schedule of Mitigation and Implementation

2.1 Schedule of Mitigation

The EIA report will outline various mitigation measures aimed at offsetting the potential impacts of the planned development.

For each mitigation measure that will be identified, the report will detail the specific mechanism by which it is to be adopted, implemented, or enforced, as well as the timeframe within which the mitigation measure is to be carried out.

It will be mandatory for these mitigation measures to be implemented either before or during the construction phase of the planned development.

2.2 Implementation and Control

Compliance with the CEMP is the key control measure required during construction to ensure mitigation is appropriately addressed. The CEMP documents the principles and processes to be followed to implement all relevant agreed environmental mitigation.

The Principal Contractor will be required to prepare a series of method statements in accordance with the Schedule of Mitigation. These method statements would detail how the contractor intends to implement the mitigation set out in the CEMP and would be integrated with their detailed Construction Method Statements.

If any significant changes are required to the Schedule of Commitments due to changing environmental sensitivities, results of pre-construction surveys, unforeseen events or for any other reason, these would be discussed and agreed with statutory bodies in advance of any amended works being carried out. The Schedule of Commitments would be revised with any approved changes required resulting from the discussions with the relevant statutory bodies. Any such agreed revisions will require to be submitted to and receive the written approval of the Planning Authority prior to being implemented

3.0 Roles and Responsibilities

- During construction there will be key responsibilities for the Developer, the Principal Contractor and their teams. Establishing roles and responsibilities in relation to construction would be important in order to ensure the successful construction of the Proposed Development, including the implementation of the CEMP. The personnel who would implement, monitor and respond to the CEMP would be the Developer's construction team and the Principal Contractor.

3.1 Health and Safety

The construction works would be undertaken in accordance with primary health and safety legislation, namely:

- Health and Safety at Work Act 1974; and
- Construction (Design and Management) (CDM) Regulations 2015.

The construction works for the Proposed Development will fall under the CDM Regulations 2015. As such, the Principal Contractor would provide a Construction Phase (Health and Safety) Plan in accordance with the CDM regulations. This plan will include (but not be limited to) a construction programme, emergency procedures, site layouts and fire plans, method statements and details of the proposed induction programme. This induction programme would include both the Principal Contractor's site-specific rules as well as the Developer's requirements and would include instructions to all staff regarding the Emergency Pollution Prevention Plan (EPPP) and relevant procedures.

An induction would be required for all personnel on-site (permanent / temporary / contractor / subcontractor), site visitors, client representatives or other 3rd parties. Inductions would be documented.

All site activities will follow a safe system of work, with specific tasks having Risk Assessment Method Statements (RAMS) detailing:

- how the task will be carried out;
- identifying potential hazards and evaluating the risk on the basis of how likely hazards are to occur and what the consequences there could be in the event of an incident;
- Mitigation measures to be implemented to reduce the risks of the task, which will follow the Hierarchy of Controls in the following order, with elimination being the most effective and PPE being the least effective:
- Elimination – physically remove the hazard.
- Substitution – replace the hazard.
- Engineering controls – isolate people from the hazard.
- Administrative controls – change the way people work.
- PPE – protect the worker with equipment.

RAMS will be recorded, monitored and reviewed at appropriate intervals. If works change in a manner not anticipated by the RAMS, works would be stopped until the risk can be appropriately evaluated.

Plant operators and construction staff would be trained by the Principal Contractor with regard to spill prevention/mitigation measures and procedures and in the use of relevant mitigation material (e.g. spill kits).

Staff and subcontractors employed by the Principal Contractor would be trained and have to prove certification for any plant, vehicle or use of specialist equipment such as electrical and hot works.

3.2 Construction Management Team

The Developer would appoint a Construction Management Team (CMT), led by a Construction Manager. The team would include, as a minimum, a Resident Engineer and a subcontracted Environmental Clerk of Works (EnvCoW).

Prior to appointment of a Principal Contractor, the Developer would own the CEMP and the document would become uncontrolled if printed.

It would be the Construction Management Team's responsibility to ensure that the Principal Contractor adheres to and complies with the principles of the CEMP and their Method Statements. This would likely be the responsibility of the Resident Engineer, the EnvCoW and the Construction Manager. The team is also responsible for:

- regular liaison with the Principal Contractor's Site Manager;
- maintaining environmental risk registers;
- communicating with regulators and consultees such as SEPA, NatureScot and The Highland Council regarding any changes that need to be made to the CEMP including the Schedule of Mitigation; and
- ensuring that any required changes are approved and updated within the CEMP.

The Construction Manager, Resident Engineer and Carn Fearna Wind Farm Limited would have the power to stop works at any stage should it be deemed necessary, i.e., if there were risks posed to environmental receptors from construction that could not be mitigated immediately.

3.2.1 Environmental Clerk of Works

An EnvCoW, who will incorporate the role of an Ecological Clerk of Works (ECoW) and additional environmental duties as noted below, would be appointed during the period of construction and post-construction restoration. The appointment of the EnvCoW would be approved by THC.

The purpose of the EnvCoW would be to provide environmental advice and monitor compliance, not implement measures. The EnvCoW would have a number of different tasks to carry out during construction and prior to the outset of each construction phase. The EnvCoW would be required to keep an active register of all issues that arise during the works and report as required to the Construction Manager, THC, NatureScot and SEPA.

The EnvCoW would have sufficient powers to:

- oversee construction work and identify where mitigation measures are required;
- authorise temporary stoppage of works if required; and
- review working methods and advise whether alternative or more appropriate working methods require to be adopted.

The EnvCoW would undertake the following activities:

- Work with the Principal Contractor to induct all site personnel with regards to key environmental sensitivities and mitigation measures to be applied during construction. Toolbox talks will be given by the EnvCoW throughout the construction period in the event that additional unforeseen issues arise that require alternative working methods;

- Undertaking site walkovers, review and contribute to the implementation of the Water Management Plan with reference to water quality protection and appropriate locations for fuel and oil stores.
- Inspecting working areas to monitor for compliance with the CEMP.
- Advise on, and provide written approval of, micro-siting of wind turbines and other infrastructure.
- Undertaking water quality monitoring.
- Providing advice on sediment and drainage management.
- Communicating with all site personnel regarding environmental issues and mitigation measures.
- Overseeing the need for any necessary licenses regarding protected species to be obtained, if required, and facilitating the implementation of any licensable works with the support of suitably qualified and experienced Ecologists.
- Undertaking pre-construction checks for protected and notable species and overseeing the implementation of associated mitigation measures, as set out in the SPP.
- Reporting to the Construction Manager any incidents of non-compliance with the EnvCoW Works at the earliest opportunity and advising temporary stoppage of works where any breach is identified.
- Documenting and reporting any environmental issues and incidents, as required, to the Developer, THC and other relevant consultees, such as NatureScot and SEPA if required.
- Submitting monthly reports to the Planning Authority summarising the works undertaken on the site.

All works would be undertaken in accordance with the SEPA guidance documents (Pollution Prevention Guidelines and Guidance for Pollution Prevention, see references for full list) and Prevention of Pollution from Civil Engineering Contracts [SEPA, Version 2, June 2006]. In addition, the appointed contractor would be familiar with and take due regard to the other related guidance documents as listed in Section 12 of this document.

3.2.2 Resident Engineer

The Developer would appoint a Resident Engineer for the construction of the Proposed Development. The Resident Engineer will provide support to the Construction Management Team and have day to day responsibility for monitoring the Proposed Development on-site on behalf of the Construction Manager.

The Resident Engineer would have a wide range of duties including but not limited to:

- overseeing construction works to ensure conformance with the specification, monitoring quality and progress and most importantly ensure that health, safety and the environment is given a high priority at all times. The Resident Engineer would effectively be Developer’s eyes and ears on the site and would report directly to the Construction Manager.
- authority to stop the construction works in the case of a health and safety, environmental or quality issue. This would be applicable where to delay would cause additional or prolonged risk or damage.

- daily visual inspections of working areas to identify possible construction issues from a quality, environmental, programme and safety perspective. Any issues would be raised directly with the contractor.
- working closely with the EnvCoW to ensure that ecological and environmental requirements dictated by the CEMP, best practice and the planning conditions are adhered to by the works contractors.
- reviewing construction related documents from all contractors – including method statements and risk assessments and providing comments directly on-site to the Principal Contractor.
- reporting all environmental or health and safety incidents and near misses to the Construction Manager in a form and timescale required by the Construction Management Team.

3.3 Principal Contractor

The Principal Contractor would be required to comply with and regularly review the CEMP throughout the construction period. This would include being aware of any changes or updates to the CEMP following the identification or any new environmental sensitivity or any Proposed Development changes. These changes would be controlled and implemented by the Developer Construction Management Team, as required.

The Principal Contractor and their team (including any sub-contractors) would be responsible for:

- undertaking their duties in accordance with CDM 2015;
- liaising with the Developer Construction Management Team;
- completing the construction of the Proposed Development in a manner which complies with all relevant laws, rules and regulations;
- acquiring licenses and permits as necessary for their works;
- ensuring that all method statements in line with the principals set out in the CEMP have been provided;
- planning, managing, monitoring and coordinating all pertinent activities relating to construction;
- liaising with and providing justification to the regulators and consultees such as SEPA, NatureScot and THC if any significant changes are required from the Schedule of Commitments;
- developing and implementing a Pollution Prevention and Incident Plan and ensuring that all personnel (including sub-consultants and sub-contractors) understand and are aware of procedures to be undertaken should an environmental incident occur. This would sit as an additional appendix in the CEMP;
- ensuring that all personnel receive training and are aware of the potential to damage to sensitive environmental receptors and procedures required to be implemented to avoid, minimise and mitigate against such damage;
- verifying the competence and resources of all personnel working on the Proposed Development and any sub-consultants and sub-contractors that were engaged on the Proposed Development; and
- implementing the Schedule of Mitigation.

3.4 Site Personnel

All site personnel, including all members of the Developer and Principal Contractor's teams, all sub-contractors and sub-consultants are required to:

- attend all inductions and site-specific training including toolbox talks carried out by the EnvCoW; and
- implement control measures throughout the site, as required.

3.5 Communication

Prior to the commencement of construction, the Developer will set up a community liaison strategy. The objective of the community liaison activity will be to keep the community informed of progress of construction of the Proposed Development. The community liaison strategy would be designed to establish processes to keep the community informed, reviewing incidents that have occurred and how these have been resolved and discussing the forthcoming programme of work. The Developer will start to liaise through the Community Council prior to any construction starting on-site and communication would be maintained on a regular basis, i.e. monthly, until construction is complete, and the Proposed Development is operational. The Developer will provide contact details to the Community Council of:

- the Resident Engineer – who would be on-site for the majority of the construction phase;
- the Developer's Construction Project Manager; and
- the Developer's Public Relations Officer.

Any resident who has a question regarding the construction of the Proposed Development would be directed to one of these contacts. All questions would be logged and responded to within a specified number of days.

Once construction has started, the Developer should provide details of any construction activity that would impact on the local community, such as deliveries.

Careful monitoring of any complaints received, including recording details of the location of the affected party, time of the disturbance and nature of the issue would assist with managing the works to reduce the likelihood of further incidents.

4.0 Phasing

4.1 Construction

The construction works will be completed within a timeframe to be agreed upon between the developer and relevant parties. The construction working hours for the Proposed Development would be 07:00 to 19:00 Monday to Friday and 07:00 to 14:00 on Saturdays. While Sunday work is typically not anticipated, it should be noted that out of necessity, some activities, for example, abnormal load deliveries, concrete deliveries during foundation pours, and also the lifting of the turbine components, may occur outside the specified hours stated. These activities would not be undertaken without prior approval from THC.

The principal contractor will keep local residents informed about the proposed working schedule, including the times and duration of any abnormally noisy activity that may cause concern.

The following phases would be taken into consideration for the construction works:

- Phase 1 – Site Preparation:

  - site clearance, including vegetation removal as necessary;
  - improvement of existing access roads and construction of new site access points;
  - establishment of a site compound, including the installation of welfare facilities and storage areas.
- Phase 2 – Construction:
  - construction of internal access tracks and service roads;
  - excavation and installation of turbine foundations and crane hardstandings;
  - construction of the main substation building, including all necessary civil and structural works;
  - laying of cable trenches and installation of underground wind farm cabling;
  - installation of drainage systems and any erosion control measures.;
  - installation of wind farm cabling;
- Phase 3 – Commissioning:
  - turbine delivery and construction;
  - wind farm commissioning;
  - turbine and wind farm reliability run;
- Phase 4 – Demobilisation:
  - removal of temporary site compounds, welfare facilities, and any remaining temporary structures;
  - restoration of areas disturbed by construction, including landscaping and reinstatement of natural features;
  - final snagging and completion of outstanding tasks;
  - restoration of the site.

Construction of the Proposed Development is expected to begin in 2028 and will last approximately 23 months. The construction will include the main activities outlined in the indicative construction program provided in Table 4 1.

Table 4-1: Construction Programme

CONSTRUCTION ACTIVITY	MONTH NUMBER																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mobilisation & compounds																							
Access & Site Tracks																							
Crane Hardstanding																							
Turbine Foundations																							
On-site Cabling																							
Substation civils work																							
Substation construction																							
Turbine Delivery																							
Turbine Erection																							
Commissioning & Testing																							
Site Reinstatement																							

4.2 Post Construction Reinstatement

Good practice techniques for vegetation and habitat reinstatement would be adopted and implemented on areas subject to disturbance during construction as soon as practicable.

The following reinstatement works would be considered:

- re-use of turves;
- re-use of topsoil/peat where appropriate; and
- reseeding with appropriate species.

For clarity, the following are definitions for the different soil make-up of the natural ground between the surface and rockhead (from top down):

a) Vegetation:

This is typically plant matter that can be removed/stripped above the ground level (i.e. does not include roots/topsoil). This can vary depending on the nature of the vegetation encountered on-site.

b) Turf/Turves:

This is typically a layer of matted earth formed by grass and plant roots. The matted earth layer would normally be 30-50mm thick.

c) Topsoil:

The upper layer of soil usually containing significantly more organic matter than is found in lower layers. This can vary in depth but is typically 200mm thick. This can be excavated with the turf and depends on whether the turf is required elsewhere, or the topsoil needs to exclude the turf.

d) Superficial Soils:

This is a generic term used for all material between topsoil and rockhead. This can vary in depth and content throughout the depth profile at any location.

e) Weathered Rock:

This is a layer that may exist above rockhead that is neither rock nor superficial material but a mixture of both. It can be mostly fractured rockhead as a result of physical and chemical weathering processes. When excavated it may have elements of fractured rock and superficial material as the boundary can be difficult to distinguish.

In some cases, this can provide suitable engineering material for the construction of foundations, embankments, tracks, etc.

f) Rockhead:

This is a naturally occurring solid aggregate of minerals which lies beneath the superficial soils.

5.0 General Construction Good Practice

5.1 Handling of Excavated Materials

The construction of tracks, turbine foundations and crane hardstanding areas as well as the establishment of the construction and control building compounds would require the stripping and excavation of soil and its reuse or temporary storage. Excavations would generate material comprising peat, soil and rock. Soils and peat would be used for reinstatement works associated with access tracks, cable trenches, turbine foundations, crane

hardstandings and the temporary construction compounds. The upper vegetated turves (where available) would be stored and be used to dress infrastructure edges and to be replaced on areas which have been temporarily stripped.

Excavated material would be used as soon as practicable and as close as possible to the area it was excavated from; however some temporary storage would be required. Soils in areas taken for temporary use will ideally be stockpiled close to excavation location.

5.2 Materials Storage

Granular, non-organic material required to be stored temporarily would be compacted to reduce the potential for erosion and transfer of sediment and stockpiled in designated areas at least 50 m from a watercourse. Temporary stockpiles would be appropriately sited away from marshy grassland, bog or heath, where possible, with the locations agreed in advance with the EnvCoW.

Where soils cannot be transferred immediately to an appropriate restoration area, short-term storage would be required. In this case, the following good practice would apply:

- soil would be stored around the perimeter of the turbine hardstandings at a sufficient distance from the cut face of excavations to prevent overburden induced failure;
- local gullies, diffuse drainage lines (or very wet ground) and locally steep slopes would be avoided for storage;
- stored upper turves (incorporating vegetation) would be reinstated adjacent to similar habitats as advised by the EnvCoW;
- monitoring of stockpiles/excavation areas would occur during and following rainfall events; and
- if material is stockpiled on a slope, silt fences would be utilised to reduce sediment transport in accordance with CIRA guidance C532. Additional measures may also be necessary to control flow of water and sediment transport on-site in accordance with this guidance.

Material excavated during new and upgraded access track construction would be stored adjacent to the track and granular, non-organic material compacted in order to limit instability and erosion potential. Peat would not be allowed to dry out, through rewetting and monitored irrigation.

Silt fences would be employed in combination with the measures described in ‘CIRA Control of Water Pollution from Construction Sites. Guidance for consultants and contractors (C532)’ where required to minimise sediment levels in run-off.

All soils stripped from the borrow pit(s) would be retained in clearly demarcated stockpiles of no greater than 3 m height in locations immediately around the edges of borrow pit excavation.

5.3 The Management and Movement of Concrete

5.3.1 Accidental Spillage

Appropriately sized spill kit(s) would be provided and maintained at suitable locations across the active areas of the site, such as a batching plant if utilised, and all vehicles, including the plant, will carry a spill kit. These would contain materials, such as absorbent granules and pads, absorbent booms and collection bags. These are designed to halt the spread of spillages and would be deployed, as necessary, should a spillage occur within the construction site.

In the event of any spillage or pollution of any watercourse the emergency spill procedures as described in the PPIP would be implemented immediately (refer to section 6.1 Pollution Prevention and Incident Plan).

A speed limit of 15 mph would apply for vehicles on-site and would be monitored and enforced by the Principal Contractor. Maximum vehicle load capacities would not be exceeded.

5.3.2 Vehicle Washing

There would be a concrete wash-out facility within the construction compound consisting of a sump overlain with a geosynthetic membrane. The geosynthetic membrane would filter out the concrete fines leaving water to pass through to the sump. The sump water would either be pumped to a licenced carrier and taken off-site for approved disposal, or it would be discharged to surrounding vegetated surfaces where such discharge meets the requirements of NatureScot and SEPA. No washing of concrete-associated vehicles would be undertaken outside the wash out facility, and the area would be signposted, with all site contractors informed of the locations.

5.3.3 Concrete Pouring for Turbine Foundations

To prevent pollution, it is important that all concrete pours are planned, and specific procedures adopted in accordance with Construction Industry Research and Information Association (CIRIA) C532 Control of water pollution from construction sites: guidance for consultants and contractors. These procedures would include:

- ensuring that all excavations are sufficiently dewatered before concrete pours begin and that dewatering continues while the concrete cures. Construction good practice would be followed to ensure that fresh concrete is isolated from the dewatering system;
- ensuring that covers are available for freshly placed concrete to avoid the surface of the concrete washing away during heavy precipitation; and
- Perimeter drains with silt traps.

The excavated area would be back-filled with compacted layers of graded material from the original excavation, where this is suitable, and capped with peat or soil. The finished surface around the base of the turbine, would be capped with crushed aggregate providing a walkway to allow for safe personnel access.

5.4 Surplus and Waste Material

5.4.1 Introduction

Initiated as part of the Defra Red Tape Challenge, aiming to reduce bureaucracy for business, the Site Waste Management Plans Regulations 2008 (SWMP) were repealed on 01 December 2013. However, it has been adopted as good practice to produce a Waste Management Plan (WMP) for large-scale construction sites and to append planning applications and, as such, it is recommended to be adopted in this project.

The SWMP would detail how all waste materials would be managed, including the management and definition of excavated materials.

The Principal Contractor would take all reasonable steps to ensure that all waste from the site is dealt with in accordance with the requirements under the Environmental Protection (Duty of Care) Regulations 1991 (and amendments) and that materials would be handled efficiently and waste managed appropriately.

Appropriate waste management, disposal and waste carrier documentation and licences would be obtained (e.g. complete waste transfer notes prior to waste leaving site, ensure all waste carriers have a valid waste carrier's registration certificate, ensure wastes are disposed of at a correctly licensed site, complete notification for hazardous waste to SEPA).

Waste streams would include wastes generated by plant, machinery and construction workers over the period of the works, for example waste oils, sewage, refuse (paper, carton, plastic etc.), wooden pallets, waste batteries, fluorescent tubes etc.

5.4.2 Soils and Spoils

It is planned that any materials excavated on-site during the construction works would be stored on-site ideally close to the excavation location and re-used where it is appropriate to do so. As such, off-site disposal of this material is not anticipated.

5.4.3 Hazardous and Other Wastes

Table 5-1 lists some of the waste types that may be generated during the construction works. Although some waste types may be generated in locations other than the construction compounds, such waste materials would be stored within the construction compounds only. Waste materials generated outside the construction compounds would be taken to the compounds on a daily basis to be managed thereafter.

Table 5-1: Common Construction Wastes

EWC Code	Description
13 01 10*	Used mineral hydraulic oil (non-chlorinated)
13 02 08*	Other waste engine, gear or lube oil
13 02 05*	Waste engine, gear or lube oil (non-chlorinated)
13 02 08*	Other waste engine, gear or lube oil
16 01 07*	Oil filters
20 01 23*	Discarded equipment containing CFCs e.g. waste fridges
16 06 01*	Lead batteries
16 07 08*	Oily waste from transport and storage tanks
16 10 01*	Hazardous liquid wastes to be treated off-site
20 01 21*	Fluorescent tubes and other mercury-containing waste
20 01 33*	Hazardous batteries and accumulators that are collected separately
15 02 02*	Absorbents, filter materials, wiping cloths, clothing contaminated by dangerous substances
15 01 01	Cardboard or paper packaging
15 01 02	Plastic packaging e.g. toner and ink cartridges, polythene sheeting
15 01 03	Wooden packaging e.g. timber pallets
15 01 04	Metallic packaging e.g. drink cans, paint tins
16 01 03	Tyres
16 01 15	Antifreeze fluids that do not contain dangerous substances e.g. Coolants
16 01 17	Ferrous metal from vehicles e.g. car parts
16 02 14	Non-hazardous waste electricals e.g. washing machines, power tools

EWC Code	Description
16 05 05	Gases in pressure containers i.e. gas cylinders
17 01 01	Concrete
17 02 01	Wood from construction or demolition e.g. timber trusses, supports, frames, doors
17 04 11	Cables that do not contain dangerous substances e.g. electric cabling
20 01 01	Paper and card similar to that from households e.g. office paper, junk mail
20 01 30	Non-hazardous detergent e.g. flushing agent/universal cleaner
20 01 39	Separately collected plastics e.g. plastic containers, bottles
20 03 01	Mixed waste similar to that from households e.g. mixed office, kitchen and general waste
20 03 04	Septic tank sludge

*Denotes Hazardous Waste, as categorised by the European Waste Catalogue.

Foul water from the onsite facilities at the construction compounds would be removed from Site by an appropriately licensed contractor (see also Section 7.4.5).

5.4.4 Regulatory Compliance

Waste would be transferred to a licensed waste management site or site with a waste exemption. The Principal Contractor would check that the site is licensed and that the licence permits the site to take the type and quantity of waste involved. Copies of the waste management licence or waste exemption license would be held on file.

A ‘Waste Transfer Note’ must be completed by all parties involved and must be retained for a period of two years. Sub-contractors excavating and hauling waste off-site must complete their own Waste Transfer Notes and copy them to the Principal Contractor. It is not necessary to have a Waste Transfer Note for each load of waste and a Waste Transfer Note can be issued weekly or monthly as a season ticket.

It would be the responsibility of the Principal Contractor to ensure that other parties involved in the transport, storage and disposal of waste were legally entitled to carry out their duties.

5.5 Dust Mitigation

Good practice measures as listed in **Table 5-2** would be adopted during construction to control the generation and dispersion of dust such that significant impacts on neighbouring habitats should not occur. The hierarchy for mitigation would be prevention – suppression – containment.

Table 5-2: Dust Mitigation Measures

Task	Mitigation Measures
Excavation and Earthworks	- working areas would be stripped as required in order to minimise exposed areas; - during excavation works drop heights would be minimised to control the fall of materials reducing dust escape; and - temporary cover may be provided for earthworks if necessary and completed earthworks and other exposed areas would be covered with topsoil and re-vegetated as soon as it is practical in order to stabilise surfaces.

Task	Mitigation Measures
Stockpiling of loose materials	- ensure that stockpiles exist for the shortest possible time; - material stockpiles would be low mounds without steep sides or sharp changes in shape; - material stockpiles would be located away from the site boundary, sensitive receptors, watercourses and surface drains; and - material stockpiles would be sited to account for the predominant wind direction and the location of sensitive receptors.
Track works/ traffic movements	- water bowsers would be available on-site and utilised for dust suppression where required; - daily visual inspections would be undertaken to assess need for use of water bowsers; - daily visual inspections would be conducted to evaluate the condition of the new access junction with A835. - vehicle loads to be covered.

5.6 Noise Management

The sources of construction noise are temporary and vary both in location and their duration as the different elements of the Proposed Development are constructed, and arise primarily through the operation of large items of plant and equipment such as bulldozers, diesel generators, vibration plates, concrete mixer trucks, rollers etc. Noise also arises due to the temporary increase in construction traffic near the site. The level of noise varies depending on the different elements of the Proposed Development being constructed. The noise assessment set out in Chapter 12 of the EIA identified the overall levels of construction noise are considered to represent a minor significant effect (not significant in the context of the EIA Regulations).

BS 5228-1:2009 ‘Noise control on construction and open sites; Part 1 – Noise’ is identified as being suitable for the purpose of giving guidance on appropriate methods for minimising noise from construction activities.

For all activities, measures would be taken to reduce noise levels with due regard to practicality and cost as per the concept of ‘best practicable means’ as defined in Section 72 of the Control of Pollution Act 1974.

5.7 Site Lighting

Temporary site lighting may be occasionally required for specific activities to ensure safe working conditions, during periods of limited natural light but would be carried out within the limits of the permissible working hours. It is intended the type of lighting would be non-intrusive and specifically designed to negate or minimise any effect to local properties and any other environmental considerations. No nocturnal works using artificial lighting, which could otherwise adversely affect foraging/commuting bats, would be undertaken.

Given the proposed size and scope of the development, and location in Scotland, it is most likely that the construction timetable would require elements of the works to be undertaken during periods of the year when natural daylight is limited.

The use of artificial lighting may therefore be required in order to facilitate the works, such as vehicle and plant headlights; construction and compound lighting; office complex lighting; and localised floodlights/mobile lighting units. There would be fewer requirements for artificial lighting in the summer months when natural lighting would be present during normal working hours. There are no known issues with regards to the limit of lighting levels in this

area, but lighting would be provided to meet the required lighting levels for the respective works which are being undertaken, especially where there is plant and machinery involved. Any issues identified with regards to limiting the lighting levels, either the lux values, or the time/duration of the lighting would be taken into consideration as part of the developed construction method statement.

5.8 Vehicle Storage

Appropriate areas would be provided adjacent to or within the site compounds to allow staff and visitor vehicles to be parked. In addition, appropriate provision would be made for the layover of HGV traffic, to ensure that the adjacent road always remains clear and available for use. The track design incorporates spurs and crane hardstanding's which from time to time could be required to temporarily store vehicles i.e., as waiting areas.

6.0 Pollution Prevention Measures

6.1 Environmental Incident Response Plan

The Principal Contractor would be responsible for developing and implementing an Environmental Incident Response Plan (EIRP). The EIRP would provide reference to procedures to be followed in the event of a specific incident. In general, if an environmental incident was to occur, the following would take place immediately:

- mitigation would be implemented to stop or reduce impacts from the incident;
- if these were ineffective, work in the area would cease immediately;
- if necessary, monitoring would be undertaken to identify the source of the incident;
- work would only recommence once it is considered that it would not continue to adversely impact sensitive environmental receptors; and
- provision of a full report by the Principal Contractor and separately by the EnvCoW to the developer following an incident occurring.

The Environmental Incident Response Plan would reflect site-specific conditions/issues. The Principal Contractor would submit the detailed Plan to the Developer for approval prior to any construction works commencing on-site. The Plan would provide:

- a summary of local environmental sensitivities, e.g. environmentally designated areas, protected species or habitats and high amenity areas;
- an outline of the construction works and appropriate references to other environmental plans and construction method statements;
- an inventory of stored materials and emergency response spill kits;
- details on training requirements, evidence of training of site staff/plant operators in emergency response procedures including inclusion of Environmental Incident and Response training in site inductions and toolbox talks; and key staff contacts for environmental management and emergency response;
- detailed procedures to be taken in the event of an incident or emergency (including procedures for positioning and movement of plant) and identification of relevant personnel who would be responsible for implementing such procedures; and
- contact telephone numbers for the emergency services and SEPA Pollution Hotline (0800 80 70 60).

A plan of the site would also be provided, detailing:

- all areas of 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 that could give rise to pollution;
- the location of potential sensitive environmental receptors, including sensitive habitats or species, surface watercourses, drains or culverts where pollution may travel to;
- the location of spill kits and other pollution control or emergency response equipment;
- The procedures for responding to a major pollution incident would be a regular topic at on-site toolbox talks and management meetings in order to ensure that the incident response plan is fully understood by all personnel, and that all involved know their role in it. Any lessons learnt from any response to real incidents would be fed back into the plan to ensure that best practice is followed.
- The EIRP will be developed referencing relevant guidance, including but not limited to:
- Ciria (2015) Environmental good practice on-site guide (fourth edition) (C741);
- Ciria (2006) Control of water pollution from linear construction projects. Site guide (C649);
- DEFRA (2011 as amended in 2018) Code of practice for the sustainable use of soils on construction sites;
- Forest Research (2019) Practical guide: Managing Forest operations to protect the water environment;
- SEPA (2021) Sector Specific Guidance: Water Run-Off from Construction Sites Supporting Guidance (WAT-SG-75); and
- SEPA (2010 Second edition) Engineering in the water environment: good practice guide River crossings.

6.2 Re-Fuelling of Vehicles, Plant and Machinery

Vehicle re-fuelling would take place either within the compounds at a dedicated impermeable refuelling pad or by mobile double-bunded bowsers at their place of work. The refuelling pad would have an impermeable base and bund with a capacity of 110% with sumps provided such that they do not drain directly into the surface water drains. Where practicable, drainage from storage compounds will be passed through oil interceptors prior to discharge. Refuelling would be carried out using an approved mobile fuel bowser with a suitable pump and hose. Absorbent material (spill kits) would be available on-site with dedicated kits adjacent to watercourses and would be deployed to contain drips and small spillages. Waste oil and /or other contaminates from interceptors and used spill kits will be disposed of in accordance with GPP 8 Safe storage and disposal of used oils.

All other fuels, oils and potential contaminants, as well as waste oils, would be stored within the site compounds in secure, fit for purpose containers within bunded containment as appropriate and in accordance with SEPA guidance (GPP 2: Above ground oil storage tanks, January 2018). All drums and barrels will be fitted with flow control taps. All drums and barrels will be correctly labelled. The bunded containment would have a capacity of 110% of the volume to be stored and would have impervious, secured walls and base. Maintenance of mobile plant would take place within the construction compounds only and would comply with SEPA PPG 7 (The safe operation of refuelling facilities, July 2011).

There would be no fuel storage outside the compounds. Plant would be maintained in good operational order and any fuel/oil leaks recorded for attention. Absorbent pads/granules in the case of an accidental leak/spillage would be available at the temporary construction compounds.

Refuelling procedures and risk assessments and method statements will be provided by the Principal Contractor to the Developer for approval prior to work commencing.

6.3 Spillage

In the event of any spillage or pollution of any watercourse the emergency spill procedures as described in the EIRP would be implemented immediately. Procedures will be adhered to for storage of fuels and other potentially contaminative materials in line with the Water Environment (Oil Storage) (Scotland) Regulations 2006, to minimise the potential for accidental spillage.

6.4 Other Storage

Stockpiles for stone material for the construction of tracks would generally be limited to the borrow pits or within work areas. This material would be transported and deposited directly to the point of use from the borrow pits. Therefore, track stone would generally not be stockpiled around the site. Other aggregate will be stockpiled within the batching plant area.

Stripped topsoil/superficial soil would be stockpiled in a suitable location away from the area of movement of heavy vehicles, machinery and equipment, to minimise compaction of soil. Stockpiling of excavated material would be managed such that the potential contamination of down slope water supplies and/or natural drainage systems is mitigated / minimised in accordance with the Borrow Pit Plan (BPP).

Low mounded stockpiles would be formed from excavated material, adjacent to access tracks, turbine areas and compound areas, away from open drains.

6.5 Prevention of Mud and Debris on Public Roads

Plant and wheel washing facilities and road sweepers would be provided as required to prevent mud and deposits from being transferred from site onto the public highway.

Plant and wheel washing, where provided, would be located within a designated hardstanding at least 10 m from the nearest watercourse or surface water drain. Runoff from the facilities would be captured within a purpose designed system for recycling and re-use where possible within the site. Settled solids would be regularly removed and disposed of by an appropriately licensed contractor. This facility would be located and designed in consultation with SEPA and THC.

Open backed lorries or tippers delivering material to site or removing material from would be sheeted where there is a risk of loose or deleterious material being deposited on the local public road network.

6.6 Cement

Where the quality of the in-situ rock is deemed suitable for concrete, then on-site concrete batching would likely be proposed. Cement for concrete production would be appropriately stored in sealed silos and its use controlled as part of the batching process. This would be protected from the elements.

Any bagged cement would be stored within a soil bunded area on pallets above the ground and covered with secured plastic sheeting to minimise the risk of wind-blown cement and uncontrolled washout occurring.

Any spilled cement would be removed by shovelling/excavator and suitably disposed off-site.

If the rock is found to be unsuitable for concrete batching then ready-mixed concrete would be brought onto the construction site from an off-site source for use as required.

6.7 Silt

Silt laden runoff could be expected from any areas of recently exposed soil or rock and from access tracks in regular use. There would be no discharge or disposal of any material directly into any river, stream or drainage ditch. Further detail on control of silt entrained in surface water runoff will be contained within the Water Management Plan.

6.8 Waste and Litter

Waste storage/recycling materials would be stored at the construction compounds. Section 5.4 details principles for waste minimisation, recycling and disposal of waste streams. A separate Waste Management Plan would be prepared by the Principal Contractor in order to document waste movement and amounts of different waste streams generated. Further detail on this plan is found under Section 5.4.

With respect to the control of litter on-site, all such waste would be collected and stored within sealed containers within the construction compounds and serviced by a registered waste carrier. No disposal of litter would be permitted at other locations. This will be a point of emphasis within the site induction to all site personnel.

6.9 Hydrocarbon Contamination

6.9.1 Vehicle Maintenance

As noted in Section 5, plant and machinery would be regularly maintained to ensure that the potential for fuel or oil leaks/spillages is minimised. All maintenance would be conducted on suitable absorbent spill pads to minimise the potential for groundwater and surface water pollution. All machinery would be equipped with drip pans to contain minor fuel spillage or equipment leakages.

6.9.2 Chemical Storage

All fuels, oils and other chemicals would be stored in the construction compounds in secure, fit for purpose containers within bunded containment as appropriate and in accordance with SEPA guidance. The bunded containment would have a capacity of 110% of the volume to be stored and would have impervious, secured walls and base.

The bunded area would be within the construction compound and would be underlain by an impermeable ground membrane layer to reduce the potential pathways for contaminants to enter watercourses and groundwater.

7.0 Drainage and Surface Water Management

7.1 Introduction

Control of water is of great importance during construction to prevent exposed soils eroding and silting up surrounding drainage channels and downstream watercourses. It is essential that the works have little or no impact on the existing hydrology in order to minimise potential impact on ecology and environmental quality of the surrounding area.

The following principles are intended to demonstrate measures that could be used across the site to adequately protect hydrological, and related, resources. Detailed proposals for such measures would be documented prior to construction and would provide the same or

greater protection for the water environment as those described in this document. The measures are proportionate to the risk and, where greater risk is highlighted at specific locations prior to construction, specific measures would be agreed for those locations.

Legislation and Guidance that have informed the drainage and surface water management proposals includes those listed in Section 6.1, as well as:

- GPP 4 Treatment and Management of Wastewater where there is no connection to the public foul sewer.

7.2 Site Induction and Training

All employees and contractors would undergo a site induction to ensure that they are familiar with the site rules prior to any work commencing on-site. In addition, the Principal Contractor would ensure that all operatives and contractors responsible for handling fuel, oil, concrete or cement or other potential pollutants undergo a thorough induction programme with respect to the relevant proposed pollution control measures. The relevant programme would include, as a minimum, the following:

- waste management;
- emergency response procedures;
- materials management;
- habitat and species protection;
- surface water management;
- potential sources of pollution and their effects on the environment;
- requirements of the contract and legislation with respect to pollution;
- the Principal Contractor's pollution avoidance plan;
- traffic management and routing, including areas where access is not permitted; and
- training in the use of pollution control equipment.

7.3 Site Drainage

During the construction phase of the Proposed Development, measures would be adopted, in order to prevent silt, chemicals and/or other contaminants from being washed into existing watercourses. Areas exposed due to the removal of vegetation are more susceptible to erosion during heavy rainfall, so areas would be reinstated as soon as possible to minimise this effect.

Measures would include specific guidance in relation to drainage (and control of pollution to the water environment) around the following aspects of site infrastructure:

- access tracks;
- turbine foundations;
- borrow pits;
- watercourse crossings; and
- hardstanding areas and buildings (including crane hardstanding's, construction compounds and associated infrastructure).

The appropriate methodologies to cover water control and the means of drainage from all hard surfaces and structures within the site are described in the following sections.

Ditches would remain in place to convey surface water flows during the operational life of the Proposed Development.

7.4 Management of Sediment and Surface Waters

Good practice construction techniques would be adopted for the management of sediment and surface water run-off generated during the construction phase of the Proposed Development. Sustainable Drainage Systems (SuDS) would be used where applicable.

Drainage from the site would include elements of SuDS design. SuDS replicate natural drainage patterns and have several benefits:

- SuDS would attenuate run-off, thus reducing peak flow and any flooding issues that might arise downstream;
- SuDS would treat run-off, which can reduce sediment and pollutant volumes in run-off before discharging back into the water environment; and
- SuDS measures, such as lagoons or retention ponds, correctly implemented would produce suitable environments for wildlife.

In addition, a wet weather protocol would be developed and implemented by the Principal Contractor to manage activities during periods of heavy and prolonged precipitation. The protocol would be approved by THC in consultation with SEPA.

Heavy or prolonged rainfall during construction and operation may lead to sediment transport or vegetation causing blockage to infrastructure drainage channels or watercourse crossing structures. Regular monitoring and prompt maintenance of these assets will ensure that the drainage system continues to function as designed.

7.4.1 Sustainable Drainage Systems (SuDS)

During drainage design it is highly encouraged that runoff pollutants, such as silt, are treated within the development, such that the surrounding environment is not harmed, and local drainage connections are not overloaded. SuDS are a sustainable method of reducing the quantity and improving the quality of runoff into local water courses and connecting drainage network systems. They are inspired by natural systems and aim to improve the local amenity and biodiversity.

SuDS are desirable and easily constructable at a large-scale for wind farms. Additionally, wind farm sites usually have established vegetation which can act as a form of SuDS, naturally intercepting pollutants and allowing for slow infiltration. Thus, the use of SuDS for wind farm sites can assist in reducing the risk of polluting the local environment and/or overwhelming drainage systems to a not significant level. There are several forms of SuDS, however the methods mentioned below are those considered more suitable for wind farm developments:

- Permeable surfaces such as gravelled areas, drain water through voids within the gravel, into the soil below. The access tracks to the wind turbines will be constructed using porous materials, encouraging a natural and slow infiltration process.
- Filter strips are a method of source control constructed by sloping a gentle strip of ground for runoff to flow over. Considering wind farms are usually naturally hilly, runoff will flow down the hillside and the vegetation will intercept the pollutants such as silt, whereas the water will infiltrate slowly into the soil below. Filter strips are typically constructed between the upland development/access tracks and the watercourses at the bottom of the development. However, it is noted that filter strips are not suitable for use at steep sites.

- Swales are a source control and a method of deterring runoff from accumulating into one large drainage area. Swales are typically broad but shallow and can be created by excavating a small trench alongside the source of runoff, for example access tracks. Swales assist water into a storage or discharge system to reduce flood risk and encourage slow infiltration. Additionally, as pollutants will become captured in the top layer of the soil, it is possible for an impervious lining to be constructed under this layer. It is best practice that swales are designed to be dry during dry weather as this strengthens their pollutant eradication potential.
- Silt fences, which are constructed using a closely woven synthetic geotextile material, are a quick and easy form of SuDS which can be used from the construction stage. They can be established along the leading runoff routes, intercepting high runoff flows and pollutants. Both methods have high capabilities of intercepting the mass of pollutants during the construction stage, with further use of being temporary check dams if required, for example within swales.
- Settlement lagoons are a form of retention ponds except that water is retained permanently. Ponds attract wildlife and can be a form of local amenity. A pond could be constructed down slope of a wind farm site by constructing a depression within the soil where water from the drainage network and runoff collects. Ponds reduce flood risk while encouraging slow infiltration into the soil below.
- Wetlands are an extended form of ponds – providing further amenity and biodiversity.

7.4.2 Location of Silt Traps

Silt traps would be utilised to trap and filter sediment-laden run-off (in very small quantities) from isolated areas of excavation works at the Proposed Development. They would be installed to assist in water flow management to minimise the risk of water reaching drainage ditches during times that water is at risk of becoming silt/ sediment laden. They can also be used in a well-designed water control system across slopes where the water is directed to grassy locations and/ or sediment lagoons/ silt busters. The use of silt traps/ fences needs to be carefully planned as they are easily overwhelmed. Management and regular monitoring of the effectiveness of silt trap/ fences is paramount.

Silt traps would be sited to avoid slopes with a gradient greater than 1 in 20. Silt traps would also be installed on the side of tracks adjacent to watercourse crossings to avoid sediment being transferred into the wider hydrological system.

7.4.3 Location of Settlement Lagoons

All settlement lagoons would be actively managed, with regular inspections and removal of silt build up to control water levels and ensure that any run-off is contained, especially during times of rainfall. If required to achieve the necessary quality of the final run-off, further measures could include increasing the number and/ or depth of lagoons, the use of sequential lagoons and the use of silt busters.

7.4.4 Outflow Monitoring from Settlement Lagoons

Settlement lagoon outflow would be regularly inspected, and discharge may be pumped, when required, for maintenance purposes. Any pumping activities would be supervised and authorised by the Principal Contractor and Site EnvCoW.

Treated water would be discharged with care in accordance with the following principles:

- Water to be discharged in planar sheet flow way rather than as a single point discharge in order to slow and spread the flow and minimise potential scour.

- Use of many small/mid diameter off lets, rather than collecting larger volumes of drainage flows to discharge to a smaller number of larger capacity outlet points.
- Not allowing direct, contaminated ditch discharge into watercourses, lochs and sensitive wetlands or grasslands.
- Not diverting natural flows, unless under prior agreement with SEPA and THC.

7.4.5 Foul Drainage

Effluent and waste from on-site construction personnel would be treated at a package sewage treatment plant or a septic tank and discharged into a properly designed and sized drainage field, in accordance with “Guidance for Pollution Prevention (GPP) 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer”. The system would be designed for approval by SEPA and THC prior to the construction phase of the Proposed Development.

Alternatively, should on-site treatment be deemed unsuitable, effluent and waste will be removed by a licensed waste contractor for off-site disposal at a permitted wastewater treatment facility.

7.5 Measures for Protecting Groundwater Receptors

It is important to note that even if the site area is not sustained by groundwater and does not fall under the potential high and moderate GWDTE, special measures and safeguards will be required to maintain the existing surface water flow paths. This is crucial to ensure that the incident rainfall can continue to sustain the habitats in the area. Therefore, it is essential to implement safeguards to sustain the existing surface water flow paths, even if the buffers to potential GWDTE specified in SEPA guidance do not apply.

8.0 Water Quality Monitoring and Contingency

8.1 Water Quality Monitoring

Water quality monitoring during the construction phase would be undertaken for the surface water catchments that serve the site, to ensure that none of the tributaries of the main channels are carrying pollutants or suspended solids. Monitoring would be carried out at a specified frequency on these catchments.

With regard to the protection of the water environment the following risks would be addressed:

- siltation of watercourses;
- discolouration of raw water;
- potential pollution from construction traffic due to diesel spillage or similar;
- alteration of raw water quality resulting from imported track construction material;
- excavation and earthworks;
- use of large quantities of concrete; and
- construction compounds and associated drainage/foul drainage and diesel spill issues.

The Principal Contractor would compile a monitoring and maintenance plan for the drainage system and surface water runs for use by the EnvCoW which would as a minimum include:

- Visual monitoring/inspections.

- During site works, including water crossing construction works, the relevant drainage/surface water runs potentially being impacted by these works would be inspected daily by the EnvCoW while works are ongoing in this area.

A Water Quality Monitoring Plan (WQMP) will be developed to form part of the Construction Method Statement (CMS), which would be submitted to the appropriate planning authorities and bodies such as SEPA prior to construction and development. The WQMP will be implemented to monitor surface water quality, fish populations and macroinvertebrate community prior to, during and post-construction. A robust baseline of water quality in surface watercourses/drainage channels downstream of construction works will be established prior to construction commencing and used a benchmark of water quality for the construction phase monitoring.

The purpose of the WQMP is to:

- ensure that the commitments put forward in the EIA Report are fulfilled with regards to identified ground and surface water receptors;
- provide a specification for monitoring prior to, during and after construction;
- provide a record of water quality across the site that can be compared to rainfall and site activities;
- provide reassurance of the effectiveness of pollution prevention measures installed to protect surface watercourses throughout the construction period; and
- provide data to identify any potential pollution incidents, and to inform a structured approach to manage and control such incidences.

The WQMP will outline details for the monitoring of surface watercourses down gradient of works areas including watercourse crossings, access tracks, turbine foundations and borrow pits and at control sites (up gradient of works areas), and will include:

- indicative monitoring locations;
- frequency of monitoring prior to, during and after construction;
- parameters for field hydrochemistry testing and laboratory analysis including as a minimum pH, electrical conductivity, suspended solids, dissolved metals, nutrients and hydrocarbons;
- sampling and analysis protocols;
- relevant environmental quality standards (EQS);
- responsibilities for monitoring – it is expected that the ECoW will be responsible for daily monitoring of watercourses particularly around active works areas and watercourse crossings. Further monitoring on a less frequent basis (i.e. monthly) may be done by an external party;
- procedures to be followed in the event of an environmental incident; and
- recording and communicating of results.

A Private Water Supply (PWS) Action Plan would be developed and would include details regarding all water monitoring and reporting, pollution incident reporting and emergency mitigation measures to address a temporary or permanent material change in either the quality or quantity of an existing private water supply. The PWS Action plan would include as a minimum:

- the provision of an emergency hotline telephone number for householders so that they can contact the project with any concern regarding water quality or quantity;

- the contact details of householders downgradient of work areas to alert in the event of a pollution incident;
- the provision of an alternative water supply, if required, during any periods of PWS disruption; and/or
- to supply affected properties with filters for particulate removal.

8.2 Laboratory Analysis

This monitoring would involve laboratory analysis of water samples taken at agreed locations across the site and would continue throughout the construction phase and immediately following construction.

8.3 Monitoring

Monitoring would be used to allow a rapid response to any pollution incident as well as assess the impact of good practice or remedial measures. Monitoring frequency would increase during the construction phase if remedial measures to improve water quality would be required.

The performance of the good practice measures would be kept under constant review by the water monitoring schedule, based on a comparison of data taken during the construction phase with a baseline data set, sampled prior to the construction period and through the observance of any trends in water quality change over time.

8.4 EnvCoW WQMP Duties

In addition to the monitoring and analysis, it is proposed that regular watercourse inspections (frequency depending on nature and proximity of works to the watercourse) would be undertaken by the EnvCoW in areas selected in the field and where construction is taking place. As daily inspection points, they would be readily accessible points close to infrastructure.

The regular inspections would include, but not be limited to:

- regular visual inspection of the sediment control structures and oil interceptors;
- investigation of problem areas (e.g., those causing silty run-off) to try to establish the cause and locate the source;
- management of the Principal Contractor to comply with method statement activities;
- development of a clear line of communication with site staff to address issues promptly;
- prioritisation of issues so that site staff know how to react to incidents; and
- regular hydrological reporting - daily records and monthly reports.

8.5 Incident Response

Drainage networks provide a conduit for rapid transport of silty water and potential contamination from surface spills of fuels/oils, concrete or chemicals. A pollution incident would include any discharge to the drainage network that could potentially cause environmental damage. Examples of pollution incidents include:

- fuel drips or spills during refuelling;
- leaking plant or equipment;
- leaks from fuel or chemical containers;

- contaminated water or sediment/silt entering a watercourse or drainage network;
- windblown dust and waste;
- excess silt deposition in drainage ditches, channels, culverts following heavy rainfall events;
- operational failures of pumps and pipelines; and
- failures of treatment or sediment controls.

The Principal Contractor would be required to prepare a Pollution Prevention and Incident Plan (ref Section 6.1) which would provide emergency response contacts, reporting procedures, and procedures for dealing with all potential pollution incidents during the construction of the Proposed Development.

9.0 Construction Phase

9.1 Introduction

This section describes in more detail the key components of construction and the impact they may have on the environment.

As the CEMP and CMS are developed into and through construction, the contractor must comply with the conditions of planning consent, specifically:

9.2 Temporary Compounds

The construction project involves building three Temporary Construction Compounds (TCCs), the main compound directly beside the substation and 2 smaller compounds located near the site entrance and across from Turbine 1. TCCs are likely to contain the following:

- temporary modular building(s) to be used as a site office;
- welfare facilities;
- parking for construction staff and visitors;
- reception area;
- fuelling point or mobile fuel bowser;
- secure storage areas for tools; and
- waste storage facilities.

Welfare facilities would be provided for the duration of the construction period in accordance with the Construction (Design and Management) Regulations 2015. Facilities for waste management, refuelling, power, water supply and chemical/material storage would be provided.

Where and when compound lighting is required, it would be designed to minimise light pollution to the surrounding area. All lights would face inwards.

The compound would also be used as a storage compound for various components, fuels and materials required for construction.

The compound would be built by stripping topsoil and regrading, then laying geotextile and an imported stone layer. The stripped topsoil would be stored adjacent to the compound in a linear bund typically no greater than 2m in elevation. Superficial soil would be stripped and stored separately from the topsoil. This would be stored in a similar manner to the topsoil, but would depend on the volume which is required to be excavated.

It is proposed that uncontaminated surface run-off from the compound is accommodated in a swale or soakaway which would be constructed as a perimeter ditch to avoid contamination of watercourses should there be a spillage and from fines washout. All other run-off from the site would follow natural drainage patterns and newly installed drainage routes.

The compound area would be reinstated at the end of the construction period. Reinstatement would involve removal of the imported material and underlying geotextile. The exposed substrate would be gently ripped and the stored superficial soil and topsoil replaced. The surface would be re-seeded as required using the same seed mix as that used for the reinstatement of track verges and batter (in consultation with NatureScot).

Alternatively, if the ground conditions permit, all inert materials, such as the imported stone, could be retained, and the stored superficial soil and topsoil replaced. This area would be kept on record and could be used as the temporary construction compound during the decommissioning phase.

9.3 Transport Routes

During the construction phase of the Proposed Development, both construction workers and materials, including wind turbine components, will be transported to the site via pre-established and approved transport routes. These routes would be designed to minimize disruption to local communities, ensure safety, and minimize the impact on the existing road infrastructure.

Heavy Goods Vehicle (HGV) movements, particularly for large turbine components, would be controlled and planned carefully to minimize disruption. In particular, abnormal load deliveries will use a dedicated, approved route to ensure that there is minimal impact on local traffic. Traffic management measures such as the implementation of signage, road escorts, and potential road closures will be put in place during these periods. These routes will be monitored and reviewed with the local authorities to ensure that they are maintained in good condition throughout the construction process.

Chapter 13 - Traffic, of the EIA, outlines key measures that will be implemented to mitigate potential traffic impacts; these measures will involve restricting HGV deliveries during peak traffic times, employing designated haulage routes to avoid sensitive areas, and conducting pre-construction and post-construction road condition surveys to address wear and tear. Temporary traffic management measures, such as signage and speed controls, will be introduced to enhance road safety for both construction traffic and local road users. Additionally, a code of conduct for drivers and the use of GPS tracking for HGVs will ensure compliance with established routes and traffic management protocols.

Temporary laydown areas and construction compounds will be established on-site to facilitate the storage of materials, thus reducing the need for frequent deliveries during the construction phase. These compounds will be situated in locations that will not interfere with the main construction areas and will be reinstated once the construction phase is complete.

The construction team will ensure that the transport routes are managed effectively to reduce the environmental impact of transport operations, minimizing vehicle emissions, dust, and noise. A Construction Traffic Management Plan (CTMP) will be prepared and implemented as part of the CEMP, which will include further details on vehicle scheduling, routes, and safety measures.

9.4 Borrow Pits

Borrow pits would be established on-site to supply the necessary aggregate and stone materials for constructing access tracks, turbine foundations, and other infrastructure. These pits would help reduce the volume of imported materials, thus minimizing traffic associated

with transporting construction materials to the site. The location and size of each borrow pit would be carefully selected to avoid sensitive ecological areas and minimize visual impact.

The borrow pits for the Proposed Development would be located within three identified search areas on-site. These areas would collectively provide the material required for the construction of the development, subject to confirmation through appropriate geotechnical investigations that the in-situ material meets the required engineering and quality specifications for use as construction aggregate. Should the excavated stone be deemed unsuitable, alternative sourcing or partial importation of materials would be considered..

The location and size of each borrow pit will be carefully planned to avoid any sensitive ecological areas, such as protected species habitats, watercourses, or areas of high environmental value. Additionally, the visual impact of the borrow pits would be minimized by selecting appropriate locations that blend into the surrounding landscape and by adhering to best practice guidelines for excavation and reinstatement.

In accordance with the Quarry Regulations 1999, borrow pits that are created for the exclusive purpose of supplying materials to the site are exempt from the usual quarry regulations. However, the development of these borrow pits, along with their subsequent reinstatement, would be subject to approval through the planning process. The detailed design and method of working for each borrow pit would be outlined in the final Construction Environmental Management Plan (CEMP), ensuring that environmental safeguards are in place during both excavation and restoration phases.

Monitoring of the borrow pit areas will continue throughout the construction phase and into the operational phase, ensuring that reinstatement has been successful. In the event of any unforeseen issues, such as erosion or poor vegetation establishment, remedial measures would be promptly undertaken to restore the area in line with environmental best practices.

9.4.1 Material Storage

Prior to the excavation of the borrow pit(s) and following construction of appropriate SuDS measures, vegetation and soils would be removed and stored in overburden stockpiles. Overburden stockpiles would be located adjacent to the borrow pit(s) and compacted in order to limit instability and erosion potential. Silt fences would be employed to minimise sediment levels in runoff from the stockpiles.

Rock stockpiles would be stored in already-worked areas of the borrow pit(s) or, before these are available, stockpiles would be located on safe and stable designated areas approved by a qualified engineer, identified on a plan of the working area of the borrow pit(s) and agreed with the EnvCoW.

Overburden or rock stockpiles would be stored at least 50m from watercourses in order to reduce the potential for sediment to be transferred into the wider hydrological system.

9.4.2 Surface Water Management

Temporary interception bunds and drainage ditches would be constructed upslope of the borrow pit(s) to prevent surface water runoff from entering the excavation. Swales would also be implemented to convey and attenuate excess surface water flow away from borrow pit(s). These methods would be kept to a minimal depth and gradient, with check dams, silt traps and buffer strips also utilised where possible to minimise erosion and sedimentation at peak flows.

Infiltration trenches would also be placed downslope of the borrow pit(s) and overburden and rock stockpiles and would be designed to treat run-off before discharging back into the drainage network. Silt fences would be used to intercept sediment-laden surface run-off in addition to infiltration trenches.

9.4.3 Borrow Pit Dewatering

Limited dewatering of the borrow pit(s) may be necessary. Water would be treated by a settlement lagoon(s) and by discharge onto vegetated surfaces.

Outflow from settlement lagoon(s) in proximity to the borrow pit(s) would discharge to surface water drains.

It is unlikely that groundwater ingress would be significant. However, the floors of the borrow pit(s) would have a gravity drain design. All floor water would drain to an adequately sized sump to allow sediment to settle out before discharge to surrounding vegetated surfaces.

Excavation machinery would be regularly maintained to ensure that there is minimal potential for fuel or oil leaks/spillages to occur. All maintenance would be conducted on suitable absorbent spill pads to minimise the potential for groundwater and surface water pollution.

9.5 Access Tracks

Approximately 14.9 km of on-site access tracks would be required to provide access to the wind turbines, substation, and construction compound. A total of approximately 11.6 km of new track would be created and approximately 3.3 km of existing track would be upgraded. Where required, some existing tracks may be upgraded to accommodate larger construction vehicles and the transportation of turbine components. The upgrade of existing access tracks would involve widening approximately 3.3km of track, increasing the width from 4 meters to 6 meters in certain sections, and improving surface conditions and drainage to accommodate larger construction vehicles and turbine component transport. Water crossings along the access routes would also be carefully managed, with culverts or bridges installed as necessary to maintain the natural flow of water and minimize disruption to local hydrology.

To ensure safe and efficient traffic management, on-site signage would be installed to clearly mark vehicle routes and designated areas. This signage would guide drivers to the correct access points, storage areas, and work zones, while promoting adherence to speed limits and safe driving practices. Additionally, strict protocols would be followed to manage vehicle movements, particularly in areas with sensitive habitats or protected species.

In line with best practices, vehicle movements would be confined to the designated access tracks to prevent damage to surrounding vegetation and to minimize soil compaction. Temporary traffic management measures, including barriers and warning signs, would be used to ensure the safety of workers and reduce the risk of conflicts between construction traffic and other site operations.

9.6 Turbine Foundations

The turbines for the Proposed Development would have a maximum tip height of up to 200 meters, with an average generating capacity of approximately 7.2 MW per turbine, depending on the final model selected. The turbines will be supported by reinforced concrete foundations, which will typically be excavated to a depth of around 4 meters, though this may vary depending on local ground conditions. The foundation design would accommodate the specific requirements of the chosen turbine model and the site’s geotechnical characteristics.

Adjacent to each turbine, crane pads will be constructed to facilitate the installation and future maintenance of the turbines. These crane pads, with a typical footprint of around 30 meters by 80 meters, will remain in place throughout the lifetime of the project, ensuring the efficient servicing and replacement of turbine components.

Where possible, materials for the foundations and crane pads will be sourced from on-site borrow pits, reducing the need for external material transport and minimizing the environmental impact associated with construction traffic. Any temporary hardstandings used during the construction phase will be reinstated after the turbine installation is complete, with the site returned to its original state as closely as possible.

9.7 Crane Pads

Crane pads would be required to allow installation and removal of the turbine components. Location and orientation would be optimised to make best use of the existing topography, prevailing wind conditions (to enable safe lifting) and the chosen erection procedure. Additionally, the crane pad orientation would take account of environmental constraints. As with access tracks, topsoil and superficial soil would be removed wherever possible and stored separately adjacent to the removal area for later reinstatement up to the edge of the hardstanding.

The area would be set out to the required dimensions and excavated to a suitable formation. Coarse rock fill would then be placed and compacted in layers using compaction equipment. Geotextile may be used depending on the suitability of the underlying strata. The final surface would be formed from selected granular material and trimmed to allow surface water run-off to drainage ditches. The crane pad would remain in-situ for the operational life of the Proposed Development.

9.8 Substation and Control Building

9.8.1 Substation

The substation for the Proposed Development will make use of the existing on-site substation, with underground cables from the turbines routed and connected to this facility. The detailed layout of the substation, including its contents and construction methods, will be outlined within the updated Construction Environmental Management Plan (CEMP). The substation will play a key role in consolidating the power generated by the turbines before feeding it into the wider grid.

Additionally, the substation compound will be designed with appropriate drainage and pollution prevention measures to ensure that environmental impacts are minimized during both construction and operation.

9.8.2 Control Building

The control building for the Proposed Development will be located within the substation compound. The building will have a pitched roof that will rise to a maximum height of 12 meters at its tallest point. The facility will include welfare amenities, such as a toilet, which will be available throughout the operational phase of the Proposed Development. Sewage waste will be transported off-site by a licensed waste contractor. Alternatively, a septic tank may be installed and maintained in compliance with SEPA’s GPP 4 (refer to Section 4), including regular emptying by an authorized contractor.

A rainwater collection and purification system will be set up to serve the welfare area, with electricity supplied either from a local connection or a backup diesel generator. Lighting within the compound will be minimal, restricted to emergency floodlights around the switchgear, security and motion sensor lights for the building, as well as any necessary internal lighting.

9.9 Cable Layout

The cable layout for the Proposed Development will involve underground cables that will connect the turbines to the existing substation. The cables will be routed along the access tracks to minimize disturbance to the surrounding landscape and ecosystems.

The exact cable layout, along with the construction methods, will be detailed within the updated Construction Environmental Management Plan (CEMP), ensuring that all necessary precautions are in place to avoid impacts on sensitive areas and habitats. The design will incorporate measures to manage drainage and protect watercourses, particularly in areas where cables need to cross such features

9.10 Soil Storage

Superficial soils would be excavated and stored temporarily. It is anticipated that most of the soil resources within areas directly affected by construction activities would be able to be stored and reinstated as close as possible to where they were excavated in accordance with best practice; so that the site would be restored with minimal movement of material from its original location.

At turbine foundations topsoil would be stripped keeping the top 200mm of turf intact. This material would be stored adjacent to the base working area and would be limited in height to 2m to minimise the risk of overheating. Superficial soil would then be stripped and stored, keeping this material separate from the topsoil.

Following excavation of the turbine foundation area and construction of the foundation (concrete/reinforced steel) the area would be backfilled with spoil. The area would be reinstated using the retained topsoil/turf where appropriate materials are available. Where required a gravel area would be left around the tower base for access. Reinstatement at turbine foundations would begin as soon as possible after foundation and plinth installation is complete.

The risk of water pollution from excavation works in terms of sediment loss would be prevented / mitigated by the following measures:

- Careful location of turbine bases and track line to minimise excavation where applicable.
- Stripped topsoil/superficial soil would not be stored adjacent or in close proximity to watercourses, where a construction area requiring soil stripping is close to a watercourse the soil would be stored a suitable distance from the watercourse.
- Soil would be stored in accordance with best practice in order to remain intact as the soil would be essential to the site reinstatement.
- Where turf requires excavation for track construction an excavator would lift turf and place it to the side leaving space between the edge of the track and the embankment to be constructed. The excavator would then lift out the soil and would place it to the side of the proposed track. The soil stored by the side of the access track would be graded by an excavator and the turves would be replaced by the excavator over the graded soil beside the track. The timescale for this operation is short and the methodology has been successfully applied at other wind farms.
- Excavated soil would not be placed onto water reservoirs or placed where it would block established surface or drainage channels.

9.11 Watercourses

9.11.1 General

As part of the design mitigation, all wind turbines and associated infrastructure have been sited outside the 50m watercourse buffer zone, wherever possible. The aim is to ensure that all proposed development remains at a safe distance from nearby watercourses.

Tracks have been routed to minimise any crossing of the watercourse, where possible. However, where track crossings are required, then these would be designed and constructed appropriately. 11 new watercourse crossings would be required with five existing crossings associated with existing tracks which may need to be upgraded subject to structural analysis at the detailed design stage of the Proposed Development.

The Contractor is responsible for liaising with and obtaining from SEPA all relevant consents, licenses and authorisations relating to construction of the watercourse crossing at the site.

All construction works on the site, and specifically construction works to be undertaken within and in the vicinity of the watercourse, would be completed in compliance with current legislation and best practice as detailed within this document.

The EnvCoW would be consulted on all watercourse crossing works. Surveys by the EnvCoW would be carried out immediately prior to construction of the crossing to identify areas of ecological interest and more specifically, mammal and fish activity in watercourses to ensure that adequate mitigation is built into the design.

9.11.2 Design Philosophy

The Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended (CAR Regulations) require that all new river, loch and wetland engineering activities, including river crossings and culverting for the watercourse shown on the Ordnance Survey 1:50,000 scale map, would require authorisation by SEPA, which may include (depending on the nature of the works) Registration with, or a Licence from, SEPA. Even if a proposed crossing does not require a Registration or Licence, due to its compliance with a General Binding Rule (GBR), as defined in the CAR, SEPA are still required to be notified.

General good practice in watercourse crossing design is detailed below:

- Where appropriate, the watercourse would be routed through culverts appropriately sized and designed not to impede the flow of water and would allow safe passage for wildlife, such as fish, water voles, otters etc. (i.e. the crossings would have a capacity well in excess of the design flow).
- When installing culverts, care would be taken to ensure that the construction does not pose a permanent obstruction to migrating species of fish, or riparian mammals (i.e. the crossing would make provision for fish and wildlife migration).
- Culverts would be sized so that they do not interfere with the bed of the stream during construction, (i.e. the crossing would leave the watercourse in as natural condition as possible).
- Culverts with a single orifice would be used in preference to a series of smaller culverts that may be more likely to become blocked with flotsam and create erosion (i.e. the crossing would 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.
- Visually in keeping with the surroundings.

In accordance with CAR guidance, the watercourse crossings would be designed on a case-by-case basis to be appropriate for the width of the 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 would influence the selection of structure type and the design of the crossing.

The watercourse crossings would be designed to convey a minimum 1 in 200 years plus climate change return period flood event, and individually sized and designed to suit the specific requirements and constraints of its location.

The watercourse crossings would include splash boards and run-off diversion measures to prevent direct siltation of watercourses.

9.11.3 Structural Design

Design of a watercourse crossing needs to consider:

- bearing capacity of foundations (and variability of capacity);
- design loadings; and
- design options such as bridges or culverts.

9.11.4 Culverts

Medium to large culverts or large Armco culverts would be used where a culverted solution is desirable or where a small, piped culvert is not appropriate for environmental or capacity reasons.

Depending on size, a natural stone headwall would be provided upstream and downstream to protect the track embankment where necessary. Further protection would be provided to the banks using soft engineering techniques as much as possible.

9.11.5 Relevant Mitigation

The following is a summary of the relevant mitigation measures and general good practice associated with the development of watercourse crossing:

- Appropriate care would be given to the construction of the crossing and all loose materials left from construction would be collected and disposed accordingly.
- Site track crossings would be constructed with granular materials, which would limit the production of surface runoff and the direct discharge of sediment into the watercourse.
- The methods of drainage proposed for the site tracks prevent the significant discharge of surface runoff and suspended solids into the watercourse adjacent to the tracks. This is owing to the runoff being collected within the upslope ditch, the presence of peat dams and culverts at appropriate intervals so as to limit longitudinal flow and the discharging of water to the downslope ground. There would therefore be no long runs of ditches that directly discharge into watercourse.
- The watercourse crossing would be designed to avoid disruption and / or habitat loss to aquatic systems or to affect free passage of fish.
- Minimum buffer strip of 50m should be kept free from development from the top of the banks of any watercourse/waterbody.

10.0 Pre-Construction Surveys, Protected Species and Monitoring

10.1 Pre-Construction Surveys

Prior to the commencement of the construction of the Proposed Development, detailed site investigations would be undertaken to inform the designers/engineers of the development components. Preconstruction habitat and protected/ notable mammal surveys would be required to inform appropriate management and protection plans. Additional survey for protected species will be undertaken by the EnvCoW in tune with the locations and programme of works. Survey outcomes will inform the designers/engineers in selecting appropriate working methods.

10.1.1 Water Quality Monitoring

Prior to the works commencing, baseline water quality monitoring would be undertaken by an appropriately qualified and experienced independent consultant to establish the water quality prior to any interference from the works.

This would be undertaken in accordance with the proposed water quality monitoring developed by the Principal Contractor and as detailed within Section 8.0.

This water quality monitoring is to be agreed and reviewed by the applicant in advance of the works commencing to ensure that the conditions during the monitoring and the testing undertaken are representative and allow a suitable benchmark to be established.

10.1.2 Archaeology

An archaeological assessment, including a site walkover, has been conducted to identify and record heritage assets within the project area. While no turbines have been relocated due to direct archaeological constraints, the presence of heritage assets has influenced turbine siting decisions to avoid potential impacts on their settings.

Where necessary, in the vicinity of identified features of interest, an archaeologist would be employed as a watching brief to look over the marked-out infrastructure to identify potential additional mitigation (if necessary), fence off archaeological sites where required and supervise construction works in the vicinity of known assets. The precise scope of work would be agreed upon with THC.

10.1.3 Ecology

Extensive work has been done to assess non-avian ecology, with particular attention given to notable habitats, including those listed on the Scottish Biodiversity List and Annex 1 habitats. These ecological constraints have guided the turbine layout to avoid areas of significant environmental value. The development has been designed to minimize impacts on key species such as red kite, black grouse, and golden eagles, with turbine locations adjusted to mitigate disturbance, displacement, and collision risks.

As part of the pre-construction ecological surveys, dedicated terrestrial mammal surveys were conducted to identify the presence of suitable habitats for Scottish wildcats within the project area and up to 250 meters from the site boundary where access was permitted. These surveys focused on identifying potential den sites, tracks, and scats that could indicate wildcat activity. Although no direct evidence of Scottish wildcats was recorded during the surveys, mitigation measures will be implemented to ensure their protection during construction. These include maintaining buffer zones around potential denning habitats, limiting nighttime construction activities to reduce disturbance, and providing ecological supervision during key phases of the project. Any sightings or evidence of

Scottish wildcats during construction will be reported immediately to the ECoW, and additional measures will be implemented as required in consultation with NatureScot.

Furthermore, a range of ecological surveys, including ornithology, peatland assessments, and watercourse studies, will inform mitigation measures and potential habitat enhancements. An outline Nature Enhancement and Management Plan (ONEMP) and Breeding Bird Protection Plan (BBPP) will be part of the EIA, focusing on protecting key species and improving habitats where necessary.

10.2 During and Post Construction

10.2.1 Species and Habitat Protection Plan

A Species and Habitat Protection Plan (SHPP) would be produced, to ensure all reasonable protection measures are undertaken with regard to protected species and the habitat which they rely upon for the Proposed Development.

The aim of the SHPP is to ensure all reasonable precautions are taken to safeguard protected species from disturbance, injury and death and to protect any structure, place or habitat, which any such protected species uses for growth, breeding, resting, shelter or protection during the construction and operation of the Proposed Development (with emphasis on the construction phase).

Good practice measures to protect sensitive ecological receptors during the construction phase would be implemented, including the erection of temporary protective fencing demarcating the working footprint, to be monitored and supervised by the EnvCoW with advice on remedial actions where necessary.

The aim of the SHPP would be fulfilled by adopting the following objectives throughout the construction of the Proposed Development:

- objective A – Implement a monitoring and protection plan for protected species;
- objective B – Follow an approved procedure if a sensitive ecological receptor is suspected/identified; and
- objective C – Ensure adequate education and awareness of site personnel.

The EnvCoW would have the specific remit of monitoring compliance with the SHPP during the construction phase and report any breaches to the Construction Project Management Team. The EnvCoW's role would involve direct monitoring of all activities on the site to the extent the EnvCoW considers this to be required, and/or training of nominated personnel to carry these out in a manner likely to minimise the potential for impact on the protected species. The EnvCoW would also agree changes to construction operations to prevent breaches of the SHPP.

10.2.2 Breeding Bird Protection Plan

A Bird Protection Plan would be produced as part of the SHPP for agreement with NatureScot to ensure that damage to and/or disturbance of nesting Important Ornithological Features (IOFs) and any disturbance to Schedule 1 breeding birds is avoided. The SHPP would provide Generic and specific measures to be followed.

Nature Enhancement and Management Plan (NEMP)A NEMP would be produced, based on the outline NEMP with the aim of maintaining important habitats and enhancing habitat quality within the site. Habitat monitoring, conducted by suitably qualified and experienced ecologists, would evaluate the success of the goals and objectives. Good practice techniques for vegetation and habitat reinstatement would be adopted and implemented on areas subject to disturbance during construction as soon as is practicable.

11.0 Reinstatement

During the construction of the infrastructure elements (detailed in Section 9), the vegetated topsoil layer will be stripped from the area of excavation and stored locally with the growing side facing upwards. This will preserve the seed bank and ensure the soil remains viable for reinstatement. The remaining organic topsoil and subsoils will be excavated down to the required formation level, or a suitable underlying stratum, and stored separately near the excavation site. Segregation of the materials will be maintained to prevent the mixing of topsoil and subsoil layers, ensuring that the soils can be effectively reused during reinstatement.

Once construction is completed, reinstatement of disturbed areas will begin immediately. This will include the reapplication of stored soils and vegetation in a manner consistent with the original landscape. Immediate aftercare measures will be implemented, which will involve inspections of reinstated areas following the completion of works at each location. Regular maintenance visits will be carried out to monitor the success of re-vegetation efforts, and any failures will be addressed promptly. In addition, erosion control measures will be implemented on embankments and cuttings, such as designing appropriate gradients and stabilization techniques. Sediment traps will be employed during the initial years following construction to control sedimentation until vegetation is fully re-established.

Should any unforeseen erosion or sedimentation occur, the affected areas will be re-graded as necessary to restore stability. Disturbed ground along the edges of access tracks will be reinstated promptly to match the surrounding landscape, avoiding unsightly scars and promoting seamless integration into the existing environment. The reinstatement process will utilize on-site vegetation and soil through turfing or clodding methods, promoting natural regeneration, or through reseeding with species appropriate to the local habitat, such as heather in moorland areas. All proposed methods for reinstatement will be finalized and confirmed in consultation with relevant authorities, including the Principal Contractor and NatureScot. If reseeding is required, this will be carried out using heather brash or treated heather seeds to ensure compatibility with the surrounding ecosystem.

Monitoring of the vegetation recovery in restored areas will continue throughout the post-construction period. This will ensure the successful establishment of plant cover and allow for early identification of any areas requiring remedial actions. All reinstatement and recovery efforts will be undertaken in line with the NEMP to support long-term ecological stability and landscape integration.

12.0 References

12.1 Reference Documents

Table 12-1: Reference Documents

Doc. Ref.	Reference Documents
1.	NatureScot 2019. Good Practice during Windfarm Construction.
2.	RenewableUK, 2010. Guidelines for Onshore and Offshore Windfarms
3.	NatureScot, 2013. Research and Guidance on Restoration and Decommissioning of Onshore Windfarms.
4.	HSE, 1974. Health and Safety at Work Act.
5.	HSE. 2015. Construction (Design and Management) Regulations 2015. [online] Available at: http://www.hse.gov.uk/pubns/priced/l153.pdf [Accessed 17 November 2021].

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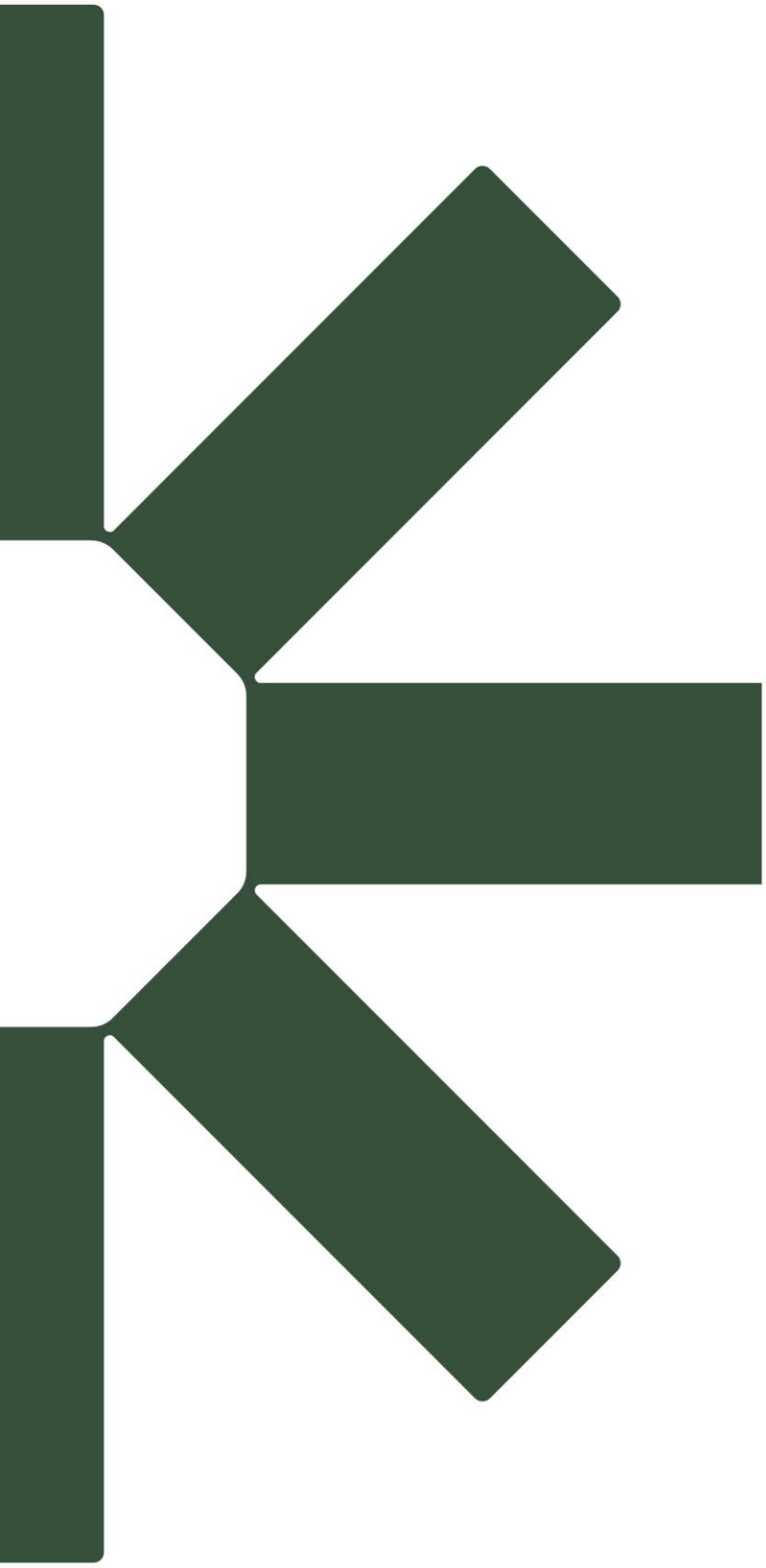
6.	2006. Prevention Of Pollution From Civil Engineering Contracts: Special Requirements. 2nd ed. SCOTTISH ENVIRONMENT PROTECTION AGENCY. Available at: https://www.sepa.org.uk/media/152220/wat_sg_31.pdf [Accessed 17 November 2021].
7.	Masters-Williams, H. et al, 2001. Control of water pollution from construction sites, C532. London: CIRIA.
8.	Defra, 2008. Site Waste Management Plans Regulations.
9.	UK Government, 1991. Environmental Protection (Duty of Care) Regulations.
10.	BSI, 2009. BS 5228-1:2009 'Noise control on construction and open sites; Part 1 – Noise
11.	Control of Pollution Act 1974.
12.	SCOTTISH ENVIRONMENT PROTECTION AGENCY, 2017. Planning guidance on on-shore windfarm developments. Land Use Planning System SEPA Guidance Note 4. LUPS-GU4.
13.	mbec Environmental Consulting Protected Species – Pre-construction Survey Method Statement December 2023
	Guidance for Pollution Prevention (GPPs) http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/
14.	PPG1 Understanding your environmental responsibilities – good environmental practices: PPG 1, July 2013
15.	GPP2 Above Ground Oil Storage Tanks: GPP 2, January 2018
16.	PPG3 Use and design of oil separators in surface water drainage systems: PPG 3, April 2006
17.	GPP4 Treatment and disposal of wastewater where there is no connection to the public sewer: GPP 4, November 2017
18.	GPP5 Works and maintenance in or near water: GPP 5, January 2017
19.	PPG6 Working at Construction and Demolition Sites: PPG6, 2012
20.	PPG7 Safe Storage – The safe operation of refuelling facilities: PPG 7, July 2011
21.	GPP 8 Safe storage and disposal of used oils: GPP 8, July 2017
22.	GPP21 Pollution incident response planning: GPP 21, July 2017
23.	PPG26 Safe Storage – drums and intermediate bulk containers: PPG 26, March 2011
24.	Technical Flood Risk Guidance for stakeholders (section 4.3) [SEPA, 24/4/11].
25.	Technical Flood Risk Guidance for stakeholders (section 4.3) [SEPA, 24/4/11].
26.	Good Practice during Windfarm Construction, Version 4, September 2019 Scottish Renewables and Scottish Environment Protection Agency Guidance



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