

Technical Appendix

Lairdmannoch Energy Park

Technical Appendix 15-1: Outline CEMP

Lairdmannoch Wind Farm Limited wind2

May 2025

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1 Introduction

1.1 Background to the Outline CEMP

This document presents an outline Construction Environmental Management Plan (CEMP) for the Lairdmannoch Energy Park which sets out the principles and procedures for environmental management during construction of the energy park (hereafter referred to as the Proposed Development).

Should planning permission be granted, this outline CEMP would be revised and updated to a CEMP, the content of which would be agreed with Dumfries and Galloway Council through consultation and enforced via a planning condition. The CEMP would be used by the Contractor to ensure appropriate environmental management is implemented 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)[1], Guidelines for Onshore and Offshore Windfarms (2010)[2] and Research and guidance on restoration and decommissioning of onshore windfarms (NatureScot 2013)[3] and provides the construction activities methodology pertinent to the Environmental Impact Assessment (EIA).

There is no specific CEMP guidance for Solar Farms and Battery Energy Storage Systems (BESS), however the above Good Practice guidance is deemed sufficient.

This CEMP will comply with all relevant legislative requirements, including, but not limited to, what is set out below. Please note that where legislation is referred to it is in reference to the legislation as amended (in so far as it relates to Scotland) at the date of compiling this document.

Before the commencement of construction activities, it is imperative to identify and comply with all relevant environmental legislation. This encompasses obtaining and adhering to necessary licenses, permits, and consents. The Site Manager and Contractor will be required to outline the strategy for ensuring compliance with the CEMP.

Below is a list of key legislation that must be adhered to during the Proposed Development phase. This list is not exhaustive and should be reviewed and updated as necessary:

- The Waste (Scotland) Regulations 2012 (as amended);
- The Environmental Protection (Duty of Care) (Scotland) Regulations 2014 (as amended);
- The Environmental Protection Act 1990 (as amended);
- The Waste Management Licensing (Scotland) Regulations 2011 (as amended);
- The Pollution Prevention and Control (Scotland) Regulations 2012 (as amended);
- The Environmental Protection (Duty of Care) (Scotland) Regulations 2014 (as amended);
- The Special Waste Regulations 1996 (as amended);
- The Control of Pollution Act 1974;



- The Conservation (Natural Habitats, & c.) Amendment (Scotland) Regulations 2012;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR);
- Wildlife & Countryside Act 1981;
- Protection of Badgers Act 1992;
- The Construction (Design and Management) Regulations 2015;
- The Control of Substances Hazardous to Health Regulations 2002;
- Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991;
- The Control of Substances Hazardous to Health Regulations 2002;
- Noise and Statutory Nuisance Act 1993 (as amended);
- The Control of Noise (Codes of Practice for Construction and Open Sites) (Scotland) Order 2002;
- Environmental Noise (Scotland) Regulations 2006;
- Air Quality Standards (Scotland) Regulations 2010 as amended 2016;
- Wildlife and Natural Environment (Scotland) Act 2011;
- Nature Conservation (Scotland) Act 2004 (as amended);
- Sewerage (Scotland) Act 1968 (as amended); and
- Environmental Liability (Scotland) Regulations 2009.

This document should be read in conjunction with the relevant EIA chapters, including the **Chapter 3: Description of Development** and **Chapter 15: Schedule of Mitigation** in **Volume 2** of this EIA Report.

This outline CEMP has been produced to provide a framework for all agreed environmental mitigation measures, conditions, consents and licences that require be implemented for the Proposed Development, located at National Grid Reference (NGR) NX 66233 62404, on land northeast of Gatehouse of Fleet and approximately 10km west of Castle Douglas.

The outline CEMP is a fluid document that would evolve during the different phases of the project. As such it would be subject to constant review to address:

- Any conditions required in the planning consent;
- To ensure it reflects best practice at the time of construction;
- To ensure it incorporates the findings of pre-construction site investigations;
- Changes resulting from the construction methods used by the contractor(s); and
- Unforeseen conditions encountered during construction.

This ensures proceedings adhere to all legislative and planning conditions as well as protecting any sensitive environmental resources within and adjacent to the Proposed Development.



1.2 Aims and Objectives

This document presents an outline CEMP, which sets out the principles and procedures for environmental management during construction of the Proposed Development.

The overall objectives of the outline 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 areas where it would be necessary to obtain authorisation from relevant statutory bodies;
- Ensure that the appropriate Proposed Development monitoring and reporting would be in place;
- Provide a framework for reporting, compliance auditing and inspection to ensure environmental aims and objectives are met; and
- Set out the expectations of the Applicant to guide contactors on their requirements with regards to environmental commitments and environmental management.

The outline CEMP is intended to be read as an iterative document, which will be further developed with cognisance of the conditions on the deemed planning permission from Dumfries and Galloway Council with input from other relevant consultees.

The final CEMP will comply with the relevant terms of the consent and attendant planning conditions and other agreements and commitments made during the consenting process.

1.3 Construction Environmental Management Approach

It is important to ensure all aspects of environmental management are clear and understood during every aspect of the construction. The outline CEMP document (referred to henceforth as the CEMP) compiles and distils all relevant agreed environmental mitigation measures, permissions, procedures and documentation for the full extent of the Proposed Development. The CEMP can therefore be considered as the source document from which relevant sections can be extracted to inform specific environmental aspects of construction activities.

The production of this CEMP ensures that environmental matters on site are given due thought and consideration throughout the construction process to best mitigate against any environmental issues that may occur.

Construction environmental management planning provides a mechanism through which all agreed environmental mitigation measures, conditions, consents and licences can be implemented on Site, ensuring legislative and planning compliance as well as protection of sensitive environmental resources.



The CEMP has been produced prior to construction works commencing on site and will remain a live document throughout the construction period. As such, the CEMP will be subject to change and update as circumstance dictates throughout the duration of the construction period. For example, a new environmental constraint such as a new protected species record may be identified during construction which requires additional control measures to be agreed and the documentation updated to include this change.

1.4 Project Description

The Proposed Development would consist of nine wind turbines each with a tip height of 180m tip height above ground level (agl), ground mounted solar panels, battery energy storage system (BESS) and associated infrastructure including:

Access tracks;

- Turbine foundations and crane hardstandings;
- Substation;
- One borrow pit;
- Underground cabling;
- Temporary construction compound;
- Solar infrastructure including a power station and switching and breaking station; and
- Up to eight watercourse crossings.

It is expected that the foundation for the turbines will comprise a standard concrete gravity foundation constructed on poured concrete with steel reinforcement depending detailed geotechnical assessment.

Once the turbines have been installed, the access tracks and crane hardstand areas around the turbines will remain in place as permanent infrastructure.

The Proposed Development includes the use of one potential borrow pit for the excavation of on-site aggregate to be used in the construction of the Proposed Development.



1.5 Location

The Proposed Development Site is centred on National Grid Reference (NGR) NX 66233 62404, located approximately 7 km north-east of Gatehouse of Fleet and 10 km west of Castle Douglas in Dumfries and Galloway. The Proposed Development Site occupies an area of approximately 612.2 ha.

The Proposed Development Site is dominated by marshy grassland, and, at lower elevations, wet modified bog. The Proposed Development Site rises to the north/northeast with ridges of higher land orientated on a north/south axis. Habitats in this part of the Proposed Development are dominated by marshy grassland, semiimproved acid grassland, bracken *Pteridium aquilinum* and dry dwarf shrub heath. Elsewhere, and particularly to the west and in the far north, wet modified bog is dominant. There are several small watercourses flowing south or south-east.

1.6 Planning History

The Proposed Development Site has been subject to a pre-application enquiry, which at the time consisted of 12 wind turbines (at 150 m tip height) and other associated infrastructure, with no attached solar development or BESS (Planning Application Reference: 20/04174/PREMAJ). The Proposed Development has since been reduced to 9 turbines (with an increase in tip height to 180m), with solar array development and battery energy storage system (BESS) included.

An Environmental Impact Assessment (EIA) Scoping Opinion request was submitted to Dumfries and Galloway Council in August 2023. This document detailed ecological surveys which were carried out in 2020 to inform that document, and further proposed surveys. An updated round of all required surveys was then undertaken in 2023/2024. The results of the baseline surveys were used to inform the design of the Proposed Development and form the basis of the detailed assessment.



2 Implementation

2.1 Schedule of Mitigation

Chapter 15: Schedule of Mitigation in **Volume 2** of the EIA Report summarises the various mitigation measures that have been proposed to offset the potential impacts of the Proposed Development.

Alongside each mitigation measure identified, the proposed mechanism by which it would be adopted, implemented or enforced has been provided, as well as a period by which the mitigation measure would be undertaken.

These mitigation measures would be required to be implemented prior to or during construction of the Proposed Development.

2.2 Implementation and Control

Changes that occur to the CEMP throughout the construction period, along with the reasoning behind these changes, are to be documented clearly and concisely. The CEMP version number should also be updated to reflect the change and recorded in the document section within the document. Depending on the nature of the change, there may be a requirement to involve stakeholders such as the planning authority or environmental regulators.

The Principal Contractor would be required to prepare and compile a series of method statements for their work or any of the other contractors and subcontractors work.

These method statements would detail how the contractors intend to implement the mitigation set out in the CEMP and would be integrated with their detailed Construction Method Statements.



3 Roles and Responsibilities

In order for the CEMP to be implemented and to ensure that the key responsibilities are given the attention and consideration they require during the construction period, it is essential that the implementation for each task is allocated to the appropriate member of the project team. This ensures no aspect of the CEMP is overlooked and every member of the team is aware of their role on observing and implementing the components of the CEMP.

The personnel who would be responsible for implementing, monitoring and responding to the CEMP would be the Applicant construction team 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 [4]; and
- Construction (Design and Management) (CDM) Regulations 2015 [5].

The construction works for the Proposed Development would fall under the CDM Regulations 2015[5]. As such, the Principal Contractor would provide a Construction Phase Plan (CPP) in accordance with the CDM regulations. This plan would 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 Client's requirements, and would include instructions to all staff regarding the emergency procedures within the Construction Phase Plan (including pollution prevention, waste, dust and noise management etc.) and relevant procedures.

3.2 Construction Management Team

The Applicant would appoint a Construction Management Team, led by a Construction Manager. It will be this team's responsibility to ensure that the Principal Contractor adheres to and complies with the principles of the CEMP and their Method Statements.

3.2.1 Environmental Clerk of Works (EnvCoW)

A named site EnvCoW will be established, and this role will be completed by a suitability experienced EnvCoW, who will oversee activity at key points for the duration of the construction and reinstatement periods (details to be agreed with Dumfries and Galloway Council and NatureScot).

The purpose of the EnvCoW is to monitor compliance and provide environmental advice and keep an active register of all issues that arise during the works. The EnvCoW would report as required to SEPA, NatureScot and Dumfries and Galloway Council.

In fulfilling their duties, 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



• to review working methods and advise whether alternative or more appropriate working methods require to be adopted.

The EnvCoW would undertake the following activities:

- to give toolbox talks to all staff onsite, e.g. an ecological induction, so staff are aware of the ecological sensitivities on the site and the legal implications of not complying with agreed working practices;
- to undertake pre-construction surveys (otter, badger and pine marten) and advise on ecological issues where required; and
- to carry out pre-construction inspections of areas which require reptile mitigation (i.e. supervision during vegetation clearance).

The EnvCoW would also undertake additional roles such as assisting with hydrological measures or checking for nesting birds (see **Chapter 6: Ecology, Chapter 7: Ornithology and Chapter 8: Hydrology, Geology and Hydrogeology** in **Volume 2** of this EIA Report).

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 Applicant's Construction Management Team, as required.

3.4 All Site Personnel

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

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

3.5 Communication

Prior to the commencement of construction, the Applicant would inform Dumfries and Galloway Council prior to any construction starting on site and communication would be maintained with updates of any incidents or significant changes notified within one week of occurrence. The Applicant would provide contact details to Dumfries and Galloway Council of key site personnel prior to the start of the works.



4 Pre-Construction Surveys, Protected Species and Monitoring

4.1 Hydrology, Geology and Hydrogeology

4.1.1 Ecological/Environmental Clerk of Works

To ensure all reasonable precautions are taken to avoid negative effects on the water environment, a suitably qualified ECoW/EnvCoW will be appointed prior to the commencement of construction to advise the Applicant and the Principal Contractor on all ecological and hydrological matters. The ECoW/EnvCoW will be required to be present onsite during the construction phase and will carry out monitoring of works and briefings with regards to any ecological and hydrological sensitivities on the Proposed Development Site to the relevant staff of the Principal Contractor and subcontractors.

With respect to the water environment, the ECoW/EnvCoW will also have responsibility for ensuring that surface water flow paths and the quality of surface water supporting water dependent habitats are sustained and protected during all phases of the Proposed Development.

4.1.2 Water Quality Monitoring

As per the recommendations in **Chapter 8: Hydrology**, **Geology and Hydrogeology** and **Chapter 15: Schedule of Mitigation**, a Water Quality Monitoring Plan (WQMP) will be developed to address surface and ground water quality and protection and will include measures for different rainfall and flow conditions.

This document will be in place during construction, operation and decommissioning, and is required to record the existing water condition, inform design requirements, and avoid deterioration to water quality during construction.

The WQMP will be submitted to NatureScot, SEPA and Dumfries and Galloway Council for their approval.

It is also proposed that one private water supply source (PWS04) and Tarff Water is included in the detailed monitoring programme to ensure that there are no impacts to the PWS source and Tarff Water DWPA.

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 construction with a baseline data set, sampled prior to the construction period.

4.1.3 Buffer to Watercourses

Examples of the additional safeguards that will be deployed at watercourses and included in the management plans, subject to agreement with consultees, include, but are not limited to the following:

- increased induction and training for staff highlighting sensitivities;
- a wet weather working protocol and provision to cease works during prolonged rainfall or periods of high runoff (pluvial or fluvial);
- reduction in extent of working area to minimise the potential to disturb ground;



- additional passive water quality control measures, such as temporary water diversion ditches, silt fences and silt traps to control and treat runoff from working areas;
- daily inspection of works and watercourses and full-time supervision of construction and restoration and works;
- deployment of real-time water quality monitoring telemetry with predetermined water quality trigger levels based on baseline water quality data (e.g. for ph, dissolved oxygen and electrical conductivity); and
- documentation that clearly identifies responsibilities and actions and contact details should a pollution event be recorded.

4.1.4 Pollution Risk

Good practice measures in relation to pollution prevention would include the following:

- refuelling would take place at least 50 m from watercourses and where possible it would not occur when there is risk that oil from a spill could directly enter the water environment;
- foul water generated onsite would be managed in accordance with best practice and be drained to a sealed tank and routinely removed from site;
- a vehicle management plan and speed limit would be strictly enforced onsite to minimise the potential for accidents to occur;
- drip trays would be placed under stationary vehicles which could potentially leak fuel/oils;
- areas which would be designated for washout of vehicles are a minimum distance of 50 m from a watercourse;
- washout water would also be stored in the washout area before being treated and disposed of;
- no direct or indirect discharges to watercourses without prior treatment in buffer zones or adjacent to proposed infrastructure using appropriate SuDS measures. These measures would be included in the formal drainage management plan and the final CEMP;
- water would be prevented as far as possible, from entering excavations;
- procedures would be adhered to for storage of fuels and other potentially contaminative materials in line with the CAR, to minimise the potential for accidental spillage; and
- a plan for dealing with spillage incidents would be designed prior to construction, and this would be adhered to should any incident occur, reducing the effect as far as practicable. This would be included in the final CEMP.

Site investigation (e.g., trial pitting and/or boreholes) will be undertaken at the detailed design stage, prior to any construction works, where excavation will be required to construct the Proposed Development. The site investigation will inform detailed design and construction methods of the Proposed Development to ensure pollution risk is further considered and minimised prior to construction.

As part of this investigation works, the ground conditions will be assessed to inform the concrete design which will be used to facilitate the Proposed Development in accordance with best practice. The design of the concrete will ensure that the concrete specification used is appropriate for the environment to minimise



degradation and leaching into the surrounding soil and water environment. If necessary, the excavations would incorporate an adequate barrier to prevent the movement of any on-site pollutants to the underlying soils, groundwater and surface water environment.

These methods will be specified in the final CEMP and the proposed concrete design will be agreed with SEPA prior to construction.

4.1.5 Erosion and Sedimentation

Good practice measures for the management or erosion and sedimentation would include the following:

- all stockpiled materials would be located out with a 50 m buffer from watercourses, including on up gradient sides of tracks and battered to limit instability and erosion;
- where possible, stockpiled material would either be seeded or appropriately covered, minimising the area of exposed bare ground;
- monitoring of stockpiles/excavation areas during extreme rainfall events;
- water would be prevented as far as possible, from entering excavations through the use of appropriate cut-off drainage;
- where the above is not possible, water that enters excavations would pass through a number of settlement lagoons and silt/sediment traps to remove silt prior to indirect discharge into the surrounding drainage system. Detailed assessment of ground conditions would be required to identify locations where settlement lagoons would be feasible;
- clean and dirty water onsite would be separated and dirty water would be filtered before entering the water environment;
- if the material is stockpiled on a slope, silt fences would be located at the toe of the slope to reduce sediment transport;
- the amount of ground exposed, and time period during which it is exposed, would be kept to a minimum and appropriate drainage would be in place to prevent surface water entering deep excavations, specifically borrow pit excavations;
- a design of drainage systems and associated measures to minimise sedimentation into natural watercourses would be developed - this may include silt traps, check dams and/or diffuse drainage;
- silt/sediment traps, single size aggregate, geotextiles or straw bales would be used to filter any coarse material and prevent increased levels of sediment. Further to this, activities involving the movement or use of fine sediment would avoid periods of heavy rainfall where possible; and
- construction personnel and the Principal Contractor would carry out regular visual inspections of watercourses to check for suspended solids in watercourses downstream of work areas.

4.1.6 Sustainable Drainage Systems (SuDS)

Sustainable Drainage Systems (SuDS) will be incorporated as part of the Proposed Development.

SuDS techniques aim to mimic pre-development runoff conditions and balance or throttle flows to the rate of runoff that might have been experienced at Proposed



Development Site prior to development. Good practice in relation to the management of surface water runoff rates and volumes and potential for localised fluvial flood risk will include the following:

- drainage systems will be designed to ensure that any sediment, pollutants or foreign materials which may cause blockages are removed before water is discharged into a watercourse;
- onsite drainage will be subject to routine checks to ensure that there is no build-up
 of sediment or foreign materials which may reduce the efficiency of the original
 drainage design causing localised flooding;
- appropriate drainage will attenuate runoff rates and reduce runoff volumes to ensure minimal effect upon flood risk;
- where necessary, check dams would be used to prevent ditches developing into preferential flow pathways and ditches shall be backfilled with retained excavated material; and
- as per good practice for pollution and sediment management, prior to construction, site-specific drainage plans will be developed and construction personnel made familiar with the implementation of these.

The drainage system will also be sized to manage firewater, should, in the unlikely event of a fire, fire water and fire retardants be used to extinguish a fire. To ensure that these do not impair ground or surface water quality provision will be made to collect this water in the onsite attenuation ponds, which will be (a) be lined to prevent a pathway to groundwater, and (b) incorporate a shutoff valve to contain water in the attenuation lagoons and prevent a discharge to the water environment. The impacts of drainage from the BESS are addressed within **Technical Appendix 8-6 Drainage Impact Assessment**.

4.2 Ecology

The following summarises the extent of the ecological assessment to date:

- An Extended Phase 1 survey, National Vegetation surveys (NVC) and protected species surveys which included the following were undertaken:
- Bat emergence surveys;
- Bat activity surveys;
- Otter surveys;
- Water vole surveys;
- Red squirrel surveys; and
- Badger surveys.

Chapter 6: Ecology in **Volume 2** of this EIA Report contains the details of the results from these surveys.

Due to the time that will have elapsed since the last surveys and the possibility that red squirrel and otter activity could have changed in the intervening period, and badger could have colonised the site, a pre-construction survey for protected mammals would be undertaken. This would cover all watercourses and other suitable habitat within 200m of wind farm infrastructure.



The results of the pre-construction surveys would inform the need for further survey and potential mitigation measures in respect of good working practices, or consultation with NatureScot.

All site personnel shall be briefed upon the presence of sensitive habitats and potential/confirmed presence of protected species as well as agreed appropriate working methods. An emergency response procedure will be communicated in the event of site personnel suspecting or detecting the presence of a protected species during works. In the event that a protected species is encountered within or near the working area, works will cease and the EnvCoW be contacted immediately for advice on appropriate working methods and when works can safely proceed.

No new ground will be cleared without prior inspection by the EnvCoW to ensure reptiles, should they be present, are encouraged to disperse before clearance. Clearance will occur in a manner to ensure dispersal routes for reptiles.

As there is potential for fauna to access the Proposed Development Site, excavations/holes will be covered at the end of each working day, or a wooden plank placed inside to allow faunal species to escape, should they enter the hole. Any temporarily exposed open pipe system would be capped in such a way as to prevent wildlife gaining access.

No in-channel obstructions (floodlighting, fencing or diversions) will be permitted within watercourses unless specifically authorised in writing by the relevant authority (i.e., SEPA and/or a suitably experienced freshwater Ecologist).

Measures shall be implemented to reduce the potential for even non-significant construction impacts to bats, e.g., downward-directed artificial lighting will be used to shine light to the working area only and reduce 'light leakage' that may temporarily affect bat flightlines.

A Site speed limit of 15mph will be in place at all times to reduce the risk of collision and protected species mortality associated with construction vehicles.

4.2.1 American Signal Crayfish – Biosecurity Plan

The need for a biosecurity plan, to avoid spread of the invasive American signal crayfish *Pacifastacus leniusculus* (present within Woodhall Loch and other near-by water courses), was noted in the scoping comments from Dumfries and Galloway Council in September 2023.

Studies have demonstrated that signal crayfish can have harmful effects on native flora and fauna, and it is considered to be an Invasive Non-Native Species (INNS) presenting a threat to the biodiversity of watercourses. It can disperse naturally but also through poor site biosecurity, facilitating transfer to other catchments. Importantly, they are very resilient and will voluntarily leave the water to travel over land in search of food or new habitat.

The following is a list of mitigation measures which will be adhered to throughout construction. They have been developed taking account of SEPA's advice on biosecurity and management of invasive non-native species for construction sites and Controlled Activities. For the avoidance of doubt, the term "watercourse" is applicable to channels with running water. Therefore, once the watercourse has been diverted, the dry channel is not considered to be a watercourse, however, conversely, the new



diverted channel is considered to be a watercourse. Storm and surface water drains are also not considered to be watercourses.

[able 15-1-1: American Signa	Crayfish Mitigation Measures
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Measure No	Mitigation
1	The ECoW shall survey the site regularly – at least monthly – for any terrestrial signal crayfish.
2	A signal crayfish toolbox talk will be provided to all site staff & a poster put up in the welfare cabin or site office to raise awareness of the issue.
3	If signal crayfish are identified they must be killed immediately and humanely as per NatureScot advice, namely by placing it on a hard surface then hitting it with a single lethal blow with a heavy or hard object or crush it with a single action.
4	Records must be kept of any signal crayfish found or inspections undertaken. These should be recorded in the biosecurity log. Any positive records must be immediately highlighted to the ECoW and Site Manager.
5	The ECoW will be the designated point of responsibility for dealing with all issues relating to Invasive Non-Native Species, including signal crayfish.
6	Signage to be erected in the vicinity of watercourses within the site to remind staff of the potential for signal crayfish.
7	Where vehicles, plant, hand tools or machinery are used within watercourses they should be thoroughly pressure-washed in a designated wash-down area before being used for other work or taken off site, unless eDNA testing has shown there to be no risk.
8	Care to be taken not to facilitate the transportation of signal crayfish or eggs on machinery, vehicles or by foot, from one site/river catchment to another - in order to achieve this a quarantine zone shall be established when working within watercourses. All machinery/ equipment/tools/ footwear used in the activity will be thoroughly cleaned/ disinfected before exiting the quarantine zone and being relocated or redeployed to other tasks. Note that this only applies where there has been a positive eDNA test for signal crayfish (or they have been detected otherwise).
9	A footbath with appropriate disinfectant should be used for any personnel who have to enter a watercourse that is considered to contain signal crayfish,
10	Where signal crayfish are positively identified, any waste material from the diverted river channel, extending up to 1m either side, shall be buried on-site to remove any risk of transporting eggs/crayfish to another site.

4.3 Ornithology

Good practice measures, as outlined below, would be employed to reduce the possibility of damage and destruction (and disturbance in the case of sensitive species such as breeding waders and short-eared owl), to occupied bird nests during the construction phase.

4.3.1 Timing of Works, Pre-Commencement Surveys and Implementation of Disturbance-Free Buffer Zones

Under the Wildlife and Countryside Act 1981, it is an offence, with only limited exceptions, to:

Intentionally or recklessly take, interfere with, damage or destroy the nest of any wild bird whilst it is in use or being built (applies year round for nests of birds included in Schedule A1);



- Obstruct or prevent any wild bird from using its nest;
- Intentionally or recklessly take, interfere with or destroy the egg of any wild bird;
- Intentionally or recklessly disturb any wild bird listed in Schedule 1 while it is nest building, or at (or near) a nest containing eggs or young, or disturb the dependent young of such a bird;
- Intentionally or recklessly harass any wild bird included in Schedule 1A; or
- Knowingly cause or permit any of the above acts.

Avoidance of damage to, or destruction of nests, or disturbance to sensitive species whilst nesting can be achieved through careful timing of construction activities. For example, restricting activities in sensitive areas as far as practicable in the early part of the breeding season until the location and breeding status of nesting birds has been established.

If site clearance and construction activities are required to take place during the main breeding bird season, from mid-March to August inclusive, pre-commencement survey work would be undertaken to ensure that nest destruction and disturbance to sensitive species (i.e., breeding raptors and waders) are avoided. In addition, regular nesting checks will be carried out within 100 m of working areas for all species, increasing to 1 km for breeding Red kite. Where applicable, construction would not take place within specified disturbance-free buffer zones for certain sensitive species during the breeding season.

Disturbance-free buffer zones around nest sites of sensitive species would be applied and monitored closely. For breeding waders, disturbance-free buffer zones are only required until chicks have hatched and are capable of walking away from any sources of disturbance. The buffer zone should be decided by the ECoW, using relevant literature (e.g., Goodship and Furness 2022).

A Species Protection Plan (SPP) would be developed by a suitably experienced ornithologist, and agreed in consultation with NatureScot, in advance of works commencing on the site. The SPP would set out in sufficient detail the measures and procedures that would be followed to ensure the protection of sensitive species as well as legally protected species during construction.

As part of the SPP, in the breeding season prior to construction commencing, a breeding raptor survey, using methods in Hardey (Hardey 2013), will be carried out to establish the distribution of breeding Red kite across the area to feed into the SPP before construction commences. Monitoring will also continue during the construction period to ensure that nests are identified and protected.



4.3.2 Environmental Clerk of Works

The role of the EnvCoW would include the following specific roles with regard to the ornithology interest of the site:

- Prior to the start of construction and/or the breeding bird season, the EnvCoW would make contractors aware of the ornithological sensitivities within the site (particularly with regard to the potential presence of sensitive breeding species, i.e. breeding waders and raptors); and
- The EnvCoW would undertake surveys for nesting birds throughout the construction period that falls within the nesting season and set up and monitor appropriate exclusion areas whilst nests of relevant species are in use.

4.4 Archaeology / Cultural Heritage

Appropriate mitigation measures for protecting or recording non-designated assets during construction have been set out in **Chapter 10: Cultural Heritage** in **Volume 2** of this EIA Report, which may include:

- Micrositing may take place to allow adjustment within a 50m radius of the proposed turbines, solar panels, BESS, and associated infrastructure locations, and a similar tolerance either side of the access track locations;
- Implementation of a working protocol should previously unrecorded heritage assets, including buried archaeological remains (e.g. archaeological deposits and features) be discovered; and
- Appointment of an Archaeological Clerk of Works (ACoW) to supervise targeted ground-breaking operations and provide onsite advice on avoidance of effects (e.g. providing onsite identification and recording of previously unrecorded heritage assets and liaising with the local authority archaeological adviser as necessary).

The Dumfries and Galloway Council Archaeology Service will be consulted to provide guidance on appropriate conditions to be applied to any prospective consent.

4.5 Geotechnical Investigations (GI)

GI and site investigation work will be undertaken, post consent. These investigations aim to determine the soil conditions and any potential risk related to it that should be borne in mind afterwards whereas the detail design is being developed. This outline CEMP document would be updated following the completion of the GI surveys.



5 Construction Stages

As this is an outline CEMP, the details of the construction staging of the Proposed Development are not yet confirmed, and this document would be updated following production of a Construction Method Statement (CMS) and Construction Phase Plan.

5.1 Site Access

The Principal Contractor will be responsible for developing and implementing a Construction Traffic Management Plan (CTMP) in accordance with HSG144 as set out in **Chapter 11: Transport and Access** (see **Technical Appendix 11-2 Outline CTMP**).

The CTMP will identify measures to reduce the number of construction vehicles as well as considering ways to reduce or avoid the impact of vehicles through construction programming/routing and identification of an individual with responsibilities for managing transport and access effects.

The CTMP will also identify measures to reduce and manage construction staff travel by private car, particularly single occupancy trips. The CTMP will be developed during the detailed design phase of the Proposed Development. Potential measures could include (but are not limited to):

- Immediately upon commencement, all deliveries, operatives and visitors to The Proposed Development Site will report to the security gate. This will be communicated to all early works contractors at their pre-start meeting;
- The main contractor will develop a logistics plan highlighting the access point for the project, loading bay, pedestrian / vehicular segregation, welfare, storage, security and material handling that will be enforced following full site establishment;
- Approved haul routes will be identified to The Proposed Development Site and protocols put in place to ensure that HGVs adhere to these routes;
- All contractors will be provided with a site induction pack containing information on delivery routes and any restrictions on routes;
- Temporary construction site signage will be erected along the identified construction traffic routes to warn people of construction activities and associated construction vehicles;
- A construction traffic speed limit (for example, 20 mph) will be imposed through sensitive areas;
- The construction material 'lay down' areas will allow for a staggered delivery schedule throughout the day, avoiding peak and unsociable hours (i.e. before 6 am and after 10 pm);
- An integral part of the progress meetings held with all trade contractors is the delivery schedule pro-forma. All contractors will be required to give details of proposed timing of material deliveries to the Site. At this stage, they will be given a specific area for delivery;
- The CTMP and the control measures therein will be included within all trade contractor tender enquiries to ensure early understanding and acceptance / compliance with the rules that will be enforced on this project;



- Under no circumstances will HGVs be allowed to lay-up in surrounding roads. All personnel in the team will be in contact with each other and with Proposed Development Site management, who in turn will have mobile and telephone contact with the subcontractors;
- Roads will be maintained in a clean and safe condition; and
- A wheel cleaning facility will be installed on-site during the construction period in order to reduce mud and debris being deposited onto the local road network.

The Applicant will work in partnership with Dumfries and Galloway Council and the supply chain to reduce the impact of the Proposed Development on the local communities.

5.2 Post Construction Reinstatement

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

Information on the reinstatement will be available in the Habitat Management Plan (HMP).



6 General Construction Good Practice

6.1 Handling of Excavated Materials

The extent of any excavations will be kept to a minimum and where excavation is required excavated materials will be stored according to best practice taking care to separate, as far as is reasonable, turves, topsoil's, soil, and boulders.

Should it be necessary to excavate soils, these materials will be carefully stockpiled adjacent to the working area for re-use and re-instatement. Localised measures, such as stockpile covers, silt fencing, and filter strips will be used to manage runoff from stockpiles.

The maximum permissible height for any soil stockpiles will be 2m and these will not be stored within 50m of any watercourse.

These measures will ensure that any potential run off issues are controlled and dealt with in a suitable manner so that any and all potential impacts are avoided or at the very least minimised.

6.2 COSHH Chemicals, Oil and Fuel Storage

All COSHH chemicals, oil drums and containers or other potential contaminants stored on the site will be controlled in accordance with the following guidance:

- GBR's 26, 27 & 28 contained in The Water Environment (Miscellaneous) (Scotland) Regulations 2017; and
- The Control of Substances Hazardous to Health Regulations, 2002 (COSHH).

All storage will be isolated, placed on drip trays or bunded so that no oil or other contaminants are allowed to reach water courses or ground water. A list of these substances should be kept on site.

Storage of such materials and any re-fuelling activities will be located a minimum of 50m away from any watercourse and out with any flood zones. All static plant such as generators will have an integral bund or use internal nappies at all times.

6.3 Surplus and Waste Material

Initiated as part of the Defra Red Tape Challenge, aiming to reduce bureaucracy for business, the Site Waste Management Plans Regulations 2008 (SWMP) [8] were repealed on 01 December 2013. However, it has been adopted as good practice to produce a Site Waste Management Strategy (SWMS) for large scale construction sites and to append planning applications and as such are recommended to be adopted in this project.

The SWMS will be included as part of the final CEMP. This will include appropriate level of detail on how construction waste materials would be managed, including the management and definition of excavated materials.

The Principal Contractor and any other contractors and subcontractors 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) (Scotland)



Regulations 2014 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.

6.4 Hazardous and Other Wastes

The Project Team are not aware of any potential for contaminated soils or other hazardous wastes to be located at any locations which require excavation. However, should any be identified the Site Manager will be notified immediately, soils will be kept separate and where possible isolated until they can be assessed and dealt with in an appropriate manner.

All staff will be made aware of the soils and the associated requirements and appropriate waste management procedures will be applied to the disposal of the contaminated materials.

6.5 Regulatory Compliance

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

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 offsite 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.

It is 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.

6.6 Dust Mitigation

Good practice measures 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.

Good practice measures can include:

- Site speed limits to be set at 15mph on tracks and 10mph on trackway;
- Provide adequate protection for fine or dry materials from wind exposure (e.g. cover over materials on site and in lorries);
- No burning of waste on site;



- All vehicles will comply with relevant Euro Standards for emissions levels; and
- All vehicle drivers will be required to switch off their vehicle engines when stationary to reduce exhaust emissions and keep their engines in tune and catalysts and / or particulate filters working efficiently.

6.7 Noise Management

Noise during the construction phase, including noise from construction traffic on access tracks, will be minimised through the adoption of Best Practicable Means (BPM). Methods for mitigating and minimising noise will be set out in the final CEMP that will be prepared before construction commences.

Noise during construction works will be controlled by generally restricting works to standard working hours (07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays) and excluding Sundays and Scottish local and national holidays, unless specifically agreed otherwise with Dumfries and Galloway Council.

Outside these hours, construction activities on-site will be limited to turbine erection, maintenance, emergency works, dust suppression, and the testing of plant and equipment, unless otherwise approved in advance in writing by Dumfries and Galloway Council. It is therefore expected that only the weekday daytime noise limit will be applicable, but this is dependent on the working hours required at the time of construction.

It is not yet known whether blasting activities will be required. With regards to potential blasting activities, BS 5228 states that practical measures, including good blast design, that have been found to reduce air overpressure and/or vibration are:

- Ensuring appropriate burden to avoid over or under confinement of the charge;
- Accurate setting out and drilling;
- Appropriate charging;
- Appropriate stemming with appropriate material such as sized gravel or stone chippings;
- Using delay detonation to ensure smaller maximum instantaneous charges;
- Using decked charges and in-hole delays;
- Blast monitoring to enable adjustment of subsequent charges;
- Designing each blast to maximize its efficiency and reduce the transmission of vibration; and
- Avoiding the use of exposed detonating cord on the surface to minimize air overpressure if detonating cord is to be used in those cases where down-the-hole initiation techniques are not possible, it should be covered with a reasonable thickness of selected overburden.

If blasting is required, the above factors will be considered as part of the final CEMP, and a combination of minimising blasting activities and ensuring nearby residents are fully notified, will mitigate adverse effects from these activities which are high in sound and vibration energy but of very short duration.

With regard to noise from construction traffic, a site management regime will be developed to control the movement of vehicles to and from the site. This will be implemented through a Construction Traffic Management Plan (CTMP), as discussed further in Chapter 11: Transport and Access of the EIAR.



6.8 Site Lighting

Temporary site lighting may be occasionally required for specific activities to ensure safe working conditions. This is more likely to be a requirement during construction activities in the winter months. It is intended the type of lighting would be non-intrusive and specifically designed to negate or minimise any effect to likely receptors and any other environmental considerations.



7 Environmental Incident Prevention Measures

7.1 Environmental Incident Response Strategy

An Environmental Incident Response Strategy will be developed as part of the final CEMP. The Principal Contractor would be responsible for developing and implementing this as a method statement as part of their CPP. This method statement would provide reference to procedures to be followed in the event of a specific incident.

7.2 Fuel Storage and refuelling

Clearly defined areas for the storage of oil and fuel will be identified as part of the site establishment process within the site compound and tower specific set ups.

On-site storage of oil and fuels will be avoided if possible; where temporary on-site storage is required, the volumes to be stored should be minimised as far as practical through efficient management of deliveries, plant, and planning of works.

Re-fuelling will take place at the site compound where possible however, due to the type of project this may not always be possible.

Fuel will be stored in accordance with GPP2, in bunded fuel cubes at the site compound or at a designated area at the work site. In either case, storage- and refuelling-locations will be >50m from any watercourses and plant nappies and spill kits will be in place. Re-fuelling will be supervised and undertaken in line with GBRs 26, 27 and 28, GPP2 and PPG7.

Plant nappies will be placed under all items of plant when not in use.

Minimal quantities of oils will be stored at the site compound, on drip trays and in a locked storage area with appropriate spill kit(s) available at the site compound.

It is recommended that biodegradable hydraulic oil is used in major items of plant i.e. excavators and lorry mounted cranes.

Spill kits will be available at all storage and re-fuelling areas and in all plant, (mobile and static), and vehicles on site. These will be sized appropriately for the plant and equipment to be used on site.

Any hazardous materials will be stored in a secure labelled COSHH cabinet and a list of these should be kept on site.

Storage of such materials and any re-fuelling activities will be located a minimum of 50m away from any watercourse and out with any flood zones.

7.3 Spillage

Spillage of fuel, oil and chemicals would be minimised by implementation of an Emergency Pollution Prevention Strategy (EPPS) which would be prepared by the Principal Contractor as part of the Construction Phase Plan. In the event of any spillage or pollution of any watercourse the emergency spill procedures as described in the EPPS would be implemented immediately. Procedures developed in the EPPS will be adhered to for storage of fuels and other potentially contaminative materials to minimise the potential for accidental spillage.



8 Drainage and Surface water Management

8.1 Hydrological Mitigation and Management Measures

Full details on the hydrology of the Proposed Development Site are included in **Chapter 8: Hydrology, Geology and Hydrogeology**. The following management measures are suggested to protect the hydrology of the site.

Mitigation Measure	Phase	Reason
Construction Method Statement environmental and construction proposals component	Construction	To ensure safe environmental and water environment construction methods
Develop Pollution Prevention Plan (PPP)	Construction	To identify activities of greatest risk and prepare controls.
Appointment of an EnvCOW ensuring the requirements of the CEMP, DMP and PMP are implemented, undertake regular site inspections.	Construction	So that activities remain compliant with legislation, planning conditions and good practice.
All infrastructure and drainage to be positioned a minimum of 50m from watercourses (where possible). Where not possible, a post micrositing numbered plan with design and photos etc.of final locations of infrastructure will be provided).	Construction	To protect watercourses from sediment pollution and flow disturbance.
Develop a Drainage Impact Assessment (DIA) and implement a Drainage Management Plan (DMP) with detailed methods for the collection and treatment of surface water runoff	Construction, Operation and Decommissioning	To understand drainage inch points, protect watercourses and install precautionary drainage. The DIA will inform the temporary and permanent drainage design and the DMP to protect watercourses.
All watercourse crossings to be WAT-SG-25 compliant, to be bottomless arch designed based on best practice guidelines and designed to accommodate the 1 in 200 year event with 20% added for climate change	Construction	To avoid effects on the flow, bottom, banks and ecology of watercourses
Prepare and implement a Water Quality Monitoring Plan (WQMP) to address surface and ground water quality and protection and include measures for	Construction, Operation and Decommissioning	To record the existing water condition, inform design requirements, and avoid deterioration to water quality during construction.



Mitigation Measure	Phase	Reason
different rainfall and flow conditions.		
Develop the Outline Peat Management Plan (OPMP) into a detailed Peat Management Plan (PMP)	Construction and Operation	To minimise peat disturbance and maximise re use of peat soil
Achieve a peat balance between peat excavation, reinstatement and reuse	Construction	To avoid the need for residual peat excavations to be taken off site
Carry out monitoring of vegetative recovery of the finished borrow pit surface, effectiveness of constructed berms in holding peat in place, and moisture content of the peat deposits	Construction and Operation	To measure the effectiveness of peat reuse in borrow pits
Implement precautionary appropriate mitigation and control measures for working in peat as in PLHRA Technical Appendix 8-1	Construction	To avoid peat landslides

8.2 Construction Site Licence

In accordance with Controlled Activity Regulations (CAR) prior to any construction at site a Construction Site Licence application would be made to SEPA. The Licence, which is regulated by SEPA, is used to ensure that runoff from a construction site does not cause pollution of the water environment. The Construction Site Licence requires the development of a pollution prevention measures, which once agreed with SEPA is adhered to on site.



9 Water Quality Monitoring and Contingency

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 (depending upon the construction phase) on these catchments.

As stated previously, a WQMP will be developed for submission to the relevant statutory bodies.

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.

A Private Water Supply (PWS) Risk Assessment has been undertaken and committed mitigation is presented in this document. This includes:

- The deployment of an Ecological or Environmental Clerk of Works (ECoW or EnvCoW) to oversee all works and with the authority to cease works should a risk to the water environment (e.g. change in water flow or quality) become apparent;
- a commitment to undertake preconstruction (baseline), construction and post construction water quality monitoring and reporting; and
- commitment to protect distribution pipework in accordance with good practice.

Where water distribution pipework is crossed by the Proposed Development this will be marked, and structural analysis competed. A site investigation will be undertaken to review confirm the location of the pipework, review the condition of the pipework and provide any additional mitigation measures that would be required to safeguard the pipework. If required, additional protection to pipework will be placed for the duration of works / traffic movement as required.

If damaged, distribution pipework would be repaired, and reinstated, to its condition at the time of construction as a minimum.



9.1 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 Environment Incident Response Strategy will provide emergency response contacts, reporting procedures, and procedures for dealing with all potential pollution incidents during the construction of the Proposed Development.



10 Construction Phase

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

The overall Proposed Development Site design has been developed in accordance with recommendations adopted from the EIA Report and to reflect the requirements and specifications for transporting wind turbine components to the proposed turbine locations.

10.1 Proposed Construction Compound

The works would include formation of a temporary construction compound during the construction phase of the Proposed Development, located at NGR NX 64733 60870.

The construction compound has an anticipated footprint of $125m \times 60m (7,210m^2)$, and would be likely to contain the following:

- Pre-fabricated buildings for use as site offices;
- Welfare facilities;
- Parking for construction staff and visitors;
- Fuelling point or mobile fuel bowser;
- Secure storage areas; and
- Waste storage facilities.

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 removing topsoil and vegetation followed by land levelling and grading. The final surface might consist of granular material layers .

The stripped topsoil would be stored adjacent to the compound in a linear bund no greater than 2m in elevation.

Surface water run-off from the compound would be collected via a perimeter ditch.

10.2 Welfare Facilities and Services

Welfare facilities include portable toilets with sewage waste being tankered offsite by an appropriately licensed waste contractor. The facilities would in-built water supply for sanitation etc. The toilets would be self-contained with no connection to any supply or drainage system.

Electricity would be provided by onsite generators.

10.3 Borrow Pits

One borrow pit is proposed to produce aggregate for different on site uses in order to limit the need for importing stone.



Prior to construction a site investigation (SI) would be undertaken to determine the quantity and suitability of the rock at each location. Detailed design for each borrow pit would be undertaken at this point.

A detailed drainage system would be installed based on that design to control surface water ingress and manage run off. The drainage system would include swales, infiltration and cut off trenches as well as sumps and silt traps to contain suspended solids. The drainage system would allow for any dewatering and would include a settlement pond as required.

Overlying vegetation and soils would be removed and stored in stockpiles adjacent to the working area of each borrow pit with the drainage system.

Rock extraction would be undertaken using a mixture of mechanical crushing and blasting. The borrow pits would be fenced whilst in operation to prevent public access during operation. Any plant located at the borrow pits would be equipped with spill kits.

Rock stockpiles would be stored in already-worked areas of the borrow pit(s) or, on other safe and stable designated areas.

10.4 Access Tracks

Access tracks would be constructed to a minimum running width of 5m (increasing at bends), plus shoulders of approximately 1m on either side, to accommodate the maximum transport requirements. Track shoulders may be up to a width of 2-3m to accommodate cabling along the access track alignment.

Access tracks would be formed on suitable underlying material (superficial soil or rock with sufficient bearing capacity) in the following manner:

- Stripping of surface vegetation (turves) and careful stockpiling of this material;
- Excavating the remaining superficial soil materials and stockpiling this material;
- Deposit of rock fill material directly onto the proposed access track alignment; and
- Spreading of material and compaction typically using vibratory rollers.

Maintenance of the running surface would then be undertaken by way of brushing or scraping to minimise significant deterioration. Loose track material generated during the use of access tracks would be prevented from reaching watercourses by maintaining an adequate cross fall on the tracks.

Dust suppression would be undertaken in prolonged periods of dry weather by spraying a minimal amount of water onto the running surface. The site access tracks, hardstandings and trackside drains would be inspected on a regular basis.

Where the access tracks are of a 'cut and fill design', drainage would be facilitated by installing a lateral drain upslope of the track and cross drains no less than 30m apart depending on the track alignment under the running surface.

Run-off from the access tracks and existing drainage ditches would be directed into swales that would be designed to intercept, filtrate and convey the runoff. The access tracks would be designed to have adequate cross fall to avoid ponding of rainwater.

The swales and drainage ditches would have outlets at regular intervals to reduce the volume of water collected. Check dams would be installed in order to increase the attenuation of run-off and allow sediment to drop out.



Where the presence of peat has been identified to be greater than 0.5m in depth, floating tracks are proposed to be used (where gradients allow and where lengths and cut and fill requirements do not preclude their construction). A layer of crushed stone (depth dependant on ground conditions) will be laid on geotextile/geogrid reinforcement to form the track.

Where necessary, risk from run-off would be mitigated by directing drainage to settlement ponds. Erosion processes on the track side embankments and cuttings would be mitigated by ensuring that gradients are below stability thresholds.

If any unstable ground is encountered during access track construction, the following procedure would be adopted:

- Cessation of construction activities in the affected area;
- The ground assessed by a suitably qualified engineer with involvement of the EnvCoW to determine any potential risk of landslip; and
- Ground stabilisation or relocation/realignment of the track within micrositing allowance should a significant risk be identified.

10.5 Turbine Foundations

The turbines would be erected on reinforced concrete gravity foundations. Proposed turbine foundation locations would be inspected by the EnvCoW to ensure that all potential environmental constraints have been identified, demarcated and/or mitigated for prior to the on-set of construction in that area.

The final location of the turbines would be within approved micrositing allowances of the consented positions in accordance with Planning Conditions.

The regularity of inspections (daily, weekly, as appropriate) during construction would be determined in advance for each particular section, based on anticipated ground conditions, known environmental sensitive receptors, prevailing weather conditions, and anticipated rate of progress.

Construction of the turbine foundations would be the responsibility of the Civil Contractor.

The limits of each of the foundation excavations would be surveyed and pegged out in advance of any proposed works, and the EnvCoW would be consulted to ensure all necessary pre-construction checks have been completed.

The typical construction activities associated with the turbine foundations are detailed as follows:

- Stripping and separate stockpiling of surface vegetation, superficial soil and rock;
- Installation of cut-off ditches at the perimeter of foundation excavations to divert the clean water away from the work areas. Silt traps and settlement lagoons would be installed should dewatering of excavations be required;
- Casting and levelling the blinding concrete;
- Installation of steel reinforcement cages. The formwork would be pre-fabricated and of sufficient quality and robustness to allow repeated use. Formwork would be cleaned after each use and re-sprayed or painted with mould oil within the blinded foundation excavation prior to being fixed in place. The placement of



containers with mould oil would be strictly monitored to ensure that storage is only in bunded areas (i.e. in the construction compound) on sealed hardstanding. Spraying of mould oil and storage of such sprayed materials would be undertaken in such a way as to avoid pollution;

- The steel reinforcement would then be finished to the required design specification. The steel reinforcement would then be delivered to site and stockpiled adjacent to the respective turbine base;
- Pouring of structural concrete, as appropriate for the prevailing ground conditions to complete the turbine base. Pouring would follow best working practice procedures and fresh concrete would be protected from hot and cold weather as required; and
- Backfilling to the turbine base would proceed in layers of approximately 0.3m with compaction as necessary. Further layers of material would be laid until the original till level is attained. Soil would be replaced from the appropriate storage area.

Following the completion of all construction activities, the area surrounding the base would be reinstated.

10.6 Crane Pads

As with the construction compound, vegetation and superficial soil would be removed and stored separately adjacent to the removal area for later reinstatement.

The pad area would be levelled and graded. Filling material 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.



10.7 Substation Compound and Control Building

10.7.1 Substation Compound and BESS

The substation compound and BESS would be formed by the excavation and stockpiling of topsoil and vegetation, followed by levelling and grading.

The main control building would be a single storey structure composed of either prefabricated panels or a brickwork finish, built on a pre-cast concrete base.

Welfare facilities including a toilet would be provided in the control building for the duration of the operation of the Proposed Development. Sewage waste would be tankered offsite by a licensed approved waste contractor.

10.7.2 Cable Laying

Underground power cables would run from each turbine location to the onsite substation and would typically be buried in the track verges. in a trenching operation.

The position of trenches would be marked out and the line stripped of vegetation and superficial soils and set aside for reinstatement.

Cables would be incorporated in the access track body along elevated sections or watercourse crossings crossing points.

Following testing, the trench would be backfilled and compacted in layers with suitable material and reinstated with previously excavated superficial soils (from which stones would have been removed). Sand would be imported to site and would be placed around the cables as protection. Suitable duct marker tape would be installed in the trench prior to backfilling.



11 References

BSI, 2009. BS 5228-1:2009 'Noise control on construction and open sites; Part 1 - Noise

Defra, Site Waste Management Plans Regulations 2008 (revoked)

HSE, 1974. Health and Safety at Work Act.

HSE. 2015. Construction (Design and Management) Regulations 2015. [online] Available at: <u>http://www.hse.gov.uk/pubns/priced/l153.pdf</u>.

Masters-Williams, H. et al, 2001. Control of water pollution from construction sites, C532. London: CIRIA.

NatureScot 2019. Good Practice during Windfarm Construction.

NatureScot, 2013. Research and Guidance on Restoration and Decommissioning of Onshore Windfarms.

Pollution Prevention and Control (Scotland) Regulations 2012.

RenewableUK, 2010. Guidelines for Onshore and Offshore Windfarms

Scottish Environment Protection Agency, 2006. Prevention Of Pollution From Civil Engineering Contracts: Special Requirements. 2nd ed. Available at: https://www.sepa.org.uk/media/152220/wat_sg_31.pdf.

SEPA (2003) Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water, v2.

SEPA (2024) Guidance on Assessing the Impacts of Development on Groundwater Abstractions.

The Environmental Protection (Duty of Care) (Scotland) Regulations 2014

UK Government, 1974. Control of Pollution Act