

Environmental Impact Assessment

# Sandy Knowe Wind Farm Extension

Appendix 14-1: Outline Construction  
Environment Management Plan

ERG UK Holding Ltd



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# 1 Introduction

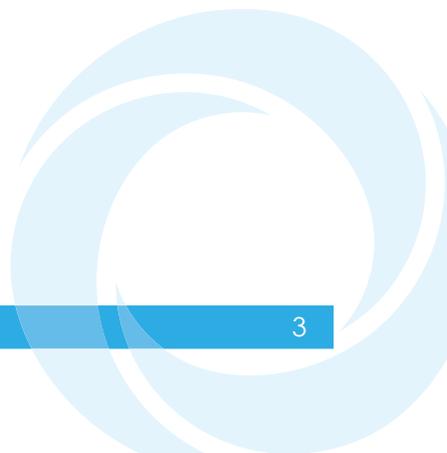
This document presents an Outline Construction Environmental Management Document (CEMP) for the proposed Sandy Knowe Extension Wind Farm (the 'Proposed Development'). The Outline CEMP provides the overarching environmental management principles that will be taken forward into all environmental management plans, supporting documents and method statements. As such it sets out the key 'threads' of environmental management that will be woven through the construction methods and practices during the construction phases for the Proposed Development Footprint. Some methodologies replicate principles set out in the main Sandy Knowe Wind Farm CEMP (Roadbridge 2021) as the vicinity is a shared working environment, and a collaborative approach is recommended.

It is intended to be read as an indicative document, which will be further developed in collaboration with Dumfries and Galloway Council (DGC) and other relevant consultees as part of the deemed planning conditions. 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.

Subject to receipt of consent and deemed planning permission and sign-off of pre-commencement conditions; construction works are anticipated to commence in 2024 with a total duration estimated at approximately 12 months. The work would proceed in four phases as summarised in Table 1.

**Table 1: Construction Programme**

Phase	Summary of Works
Phase 1 (month 1); Enabling/Access Works;	Construction of new access routes from existing access tracks to the turbine locations.
Phase 2 (month 2 to 10); Development (Main Site)	Establishment of site facilities, turbine foundation and turbine cabling. Delivery of turbine components & installation with cranes.
Phase 3 (month 10 to 11); Testing and Commissioning	Testing and commissioning equipment and turbines.
Phase 4 (month 11 to 12); Reinstatement and Restoration	Removal of temporary facilities and re-instatement of temporary working areas. Restoration of working areas as set out in the Schedule of Mitigation and CEMP.



The Final approved CEMP documents will be incorporated into the Applicant's contract with the selected Contractor. By doing that, the Contractor will be obliged contractually to adhere to the requirements of the plan. As part of the Contractor's prestart conditions, they will be required to produce a series of specific environmental risk assessment and management plans and detailed method statements for implementation at a construction level of detail.

The Final CEMP will incorporate the generic and site-specific mitigation measures identified during the EIA and reported in the EIA Report. These measures are listed in a Schedule of Mitigation Measures presented in the Schedule of Mitigation of the EIA Report.

The Outline CEMP has been structured to reflect the aspects of construction works that could potentially affect the environment as follows:

- Site Induction and Training;
- Transport and Access;
- Pollution Prevention;
- Drainage Management;
- Groundwater Protection;
- Watercourse Crossings;
- Water Monitoring and Remedial Actions;
- Peat Management;
- Ecological Protection Measures;
- Construction Noise and Working Hours;
- Handling of Excavated Materials;
- Resource Management and Site Waste;
- Reinstatement and Restoration;
- Monitoring; and
- Environment Incident Response and Reporting.

## 2 Construction Environmental Management Process

NatureScot published *Good Practice During Wind Farm Construction* (SNH) 2019 which seeks to identify good practice and ensure wind farms are developed in a sustainable way. The guidance sets out recommendations for the following.

- Pre-construction planning;
- The use of Environmental Management Plans and Construction Method Statements (incorporating a Site Waste Management Plan);
- Using a Clerk of Works and other specialist advisors;
- Water Quality monitoring;
- Access tracks;
- Site drainage;
- Managing Recreational Access;
- Site infrastructure;
- Biosecurity and non-native invasive species;
- Post construction habitat management and restoration; and
- Seasonal considerations.

A key element of the guidance is the use of the CEMP and associated plans which should be available on site and used daily, which include relevant legislation and all relevant topics, and ensure aspirations and timings are achievable in practice. Site Waste Management Plans and Ecological Management Plans such as Species Protection Plans should also form part of the CEMP and the Final CEMP should be developed in collaboration with the key stakeholders.

This process provides for commitments made as mitigation to minimise environmental impact to be incorporated directly into the Construction Environmental Management process and has formed the basis and concept for this Outline CEMP.

Chapter 14 of the EIA Report of this document presents the Schedule of Mitigation for the Proposed Development.

This Outline CEMP provides overarching information which will feed into individual detailed CEMPs (or equivalent method statements) and provides some information which will ultimately be included in the Final CEMP.

Mitigation proposals and assessments follow best practice as detailed within the relevant guidance documents such as: *Good Practice During Wind Farm Construction*; *Guidance on the Assessment of Peat Volumes* (SNH 2015) and *Reuse of Excavated Peat and Minimisation of Waste* (SEPA/Scottish Renewables 2012, 2014).

These principles will be adopted in the overall management plan as a minimum and where new techniques may be developed or other measures are identified that offer enhanced mitigation and protection they will be adopted where possible.

It is worth noting that the Applicant has already undertaken engagement with the Local Community to inform the design of the Proposed Development. Engagement with the community will continue as appropriate to keep the locals informed of the

proposed works, key delivery dates and required road closures. Details of the Site Manager will be provided so the community have a point of contact if required.

## 2.1 Relationship to Other Documents

This Outline CEMP comprises an overarching document containing Outline prescriptions for aspects including transport management, waste, and pollution prevention. These aspects are covered in greater detail within the following supporting management plans which will be Finalised and agreed with the appropriate authority prior to construction as follows:

- Peat Management Plan (Chapter 8: Appendix 8-2);
- Peat Restoration Plan;
- Geotechnical Risk Register;
- Habitat Management Plan (Chapter 14: Appendix 14-2);
- Drainage Management Plan (includes a Drainage Impact Assessment);
- Construction Transport Management Plan;
- Pollution Prevention Plan;
- Water Quality Monitoring Plan;
- Ecological Mitigation Strategy;
- A Written Scheme of Investigation;
- Site Waste Management Plan;
- Accident Management Plan; and
- Emergency Response Plan.

## 3 Project Description

The Proposed Development Footprint is centred on (NGR) (approximate) NS 69292 10825 and illustrated in Figure 3-1.

The Proposed Development lies adjacent to the Sandy Knowe Wind Farm which was consented in July 2020 by Scottish Ministers (ECU Ref: ECU00000660) and consists of 24 wind turbines (at 125m tip height) and associated infrastructure. The anticipated output of the Sandy Knowe Wind Farm is 86.4 MW, and the project is currently under construction.

The Proposed Development will have an indicative output of approximately 21.6MW and an indicative battery storage capacity of 28.4MW. The combined export capacity will not exceed 50MW. The Proposed Development will be known as Sandy Knowe Wind Farm Extension.

The Proposed Development consists of three turbines up to a maximum 125m tip height; three turbines up to a maximum of 149.9m; battery storage; and associated infrastructure.

The associated infrastructure includes:

- Use of existing; consented / under construction; and proposed access tracks;
- Construction of turbine foundations and crane hardstandings;
- Underground cabling;

- Use of an existing borrow pit for the excavation of on-site aggregate to be used in the construction of the Proposed Development and for peat reinstatement. Any extraction of aggregate will be within the existing boundaries of the Borrow pit (See Chapter 3 Project Description);
- Reuse of two consented temporary storage compounds; and
- Three watercourse crossings.

The Proposed Development has been designed with an operational life of 40 years at the end of which it can be decommissioned.

It is anticipated that approximately 3km of new track is likely to be required to service the turbine and associated infrastructure. No upgrades are proposed on the consented / constructed Sandy Knowe Wind Farm access tracks.

Once each turbine has been installed, the crane hardstand area around the turbine will remain in place as permanent infrastructure. The boom assembly areas, temporary track and hardstand working areas will be restored using retained topsoil or turf. Material won from foundation excavations will be used in the landscaping of access tracks and other site infrastructure.

The permanent and temporary infrastructure is shown on Figures 3-2c to 3-8.

## 4 Roles and Responsibilities

The Applicant will establish roles, responsibilities, authorities, and accountabilities in advance of the construction phase, and these will be embedded within the construction contract performance requirements. Works will be carried out in accordance with the conditions attached to the planning permission and the general law. Following a rigorous selection process, the Applicant will appoint a Contractor to build the works.

The successful Contractor will appoint a suitably qualified and experienced Site Manager who will monitor the day-to-day management of the site, including legal and environmental responsibilities, site health and safety, and to ensure adherence to the CEMP, approved method statements and the consent. Contractors and subcontractors will be required to adhere to the Final version of the CEMP.

The Applicant will nominate a Project Manager for the site whose responsibilities will include overall environmental management of the site on behalf of the Applicant and the landowners.

The Applicant or Contractor will appoint an appropriately qualified Environmental Clerk of Works (EnvCoW) who will be a named individual and whose role will be approved by the planning authority, NatureScot and SEPA. EnvCoW tasks will include:

- Advising and assisting in avoiding, minimising, and mitigating adverse effects of environmental and ecological aspects associated with construction;
- Attending and minuting ecological and environmental meetings to:
  - Review the construction progress on site in the context of agreed ecological and environmental mitigation; and
  - Review the effectiveness of the ecological and environmental mitigation.
- On-site communication, stakeholder liaison (e.g., with NS, DGC and SEPA);
- Participation in the preparation of the site induction package;

- Review of water management and pollution control measures;
- Review the need for culverting of the many unmarked drains and channels which will have to be crossed to avoid blockages and local flooding;
- Oversee all peat stripping and removal;
- Identify GWDTE at risk and oversee GWDTE drainage mitigation;
- Have the authority to stop works where significant GWDTE, water or peat related impacts are considered likely to occur, and to instigate control/mitigation measures to rectify noncompliance;
- Oversee monitoring according to the (Water Quality Monitoring Plan) WQMP;
- Be part of the team responsible for Emergency Spill Response;
- Be part of the team providing induction, briefings, and toolbox talks; and
- Provide regular weekly reports.

Method Statements for individual works will be prepared prior to the commencement of specific construction activities. The CMS will be reviewed by the Project Manager, the Site Manager and the EnvCoW to ensure that operations comply with the best possible environmental practice and the provisions of the CEMP. Once the specific construction activity commences the Contractor will be required to adhere to these Method Statements.

The Applicant will ensure that a suitably qualified and competent Geotechnical Engineer, Hydrologist and Ecologist are in place within the Contractor's team by having such requirements written into the Construction Contract. They will be required to be available as required during sensitive earthworks and environmentally sensitive operations and when geotechnical approvals are required, supporting, and reviewing drainage design and operation, reviews of construction methods, and required mitigations and baseline and control monitoring reviews.

All roles will be identified precisely in a schedule in the Final CEMP, with names, roles, responsibilities, access numbers and delegates. This schedule will be kept current and regularly updated.

Should unexpected environmental issues arise during construction; the Contractor will be briefed to immediately report them to the Site Management Team so that suitable measures can be implemented consistent with the CEMP.

## 5 Environmental Control Measures

### 5.1 Site Induction and Training

Prior to construction commencement, training will be undertaken for all site staff. Training aspects will include:

- On-site traffic management;
- Ecological protection;
- Environmental risks associated with working in proximity of watercourses/drains etc.;
- Use/storage of fuels, oils, chemicals etc. and spill prevention measures;
- Effects of weather such as heavy rain and wind (dust issues);
- Potential for noise and/or dust issues;

- General housekeeping including good waste segregation; and
- Health and safety for site workers and visitors under site worker escort.

An environmental notice board will be provided on site displaying information on site ecology, pollution prevention, Emergency/Spill response, Consents and/or Licenses.

In addition to the above training, site workers will undergo or be able to demonstrate compliance and completed certification as required by the applicable regulations and legislation including:

- Health and Safety at Work Act 1974;
- Management of Health and Safety at Work Regulations 1999;
- Construction (Design and Management) Regulations 2015;
- The Provision and Use of Work Equipment Regulations 1998;
- The Work at Height Regulations 2005; and
- The Control of Substances Hazardous to Health Regulations 2002.

Prior to commencement of works, all site workers will have obtained the relevant permits and licences for plant and machinery.

## 5.2 Transport and Access

A Transport Management Plan (TMP) will be produced prior to the commencement of the works which will detail access procedure and mitigation for transport of components and materials and will be subject to approval by DGC. The route for abnormal loads and construction traffic will be agreed with DGC. The Plan will interface with existing arrangements.

Transport vehicles have the potential to disperse dust and debris and cause hazardous road conditions by depositing soil and debris from the construction site onto road networks. In order to mitigate this, wheel wash facilities will be implemented at the Proposed Development site entrance and a road sweeping team engaged when required.

All site vehicles will adhere to strict speed limits through the delivery route with escort vehicles employed for abnormal load delivery to reduce disruption to road users. Signage will be erected providing routing information and diversions where required as part of a routing strategy. Abnormal load delivery will be restricted to times outside rush hour or school movements in order to minimise disruption to road users.

## 5.3 Pollution Prevention

The Final CEMP will include details and responsibilities for environmental management onsite for environmental aspects and will outline the necessary surface water management, oil and chemical delivery and storage requirements, waste management, traffic and transport management (in relation to pollution prevention) and will specify monitoring requirements for waste water and water supply including an Environmental Incident Response Plan and appropriate method statements and risk assessments for the construction of the Proposed Development. This will comprise an appropriate Pollution Prevention Plan (PPP).

On-site storage will include the provision of secure facilities for the storage of potentially hazardous solutions and materials. Appropriately secure containment arrangements

will be put in place for the storage of potentially polluting substances such as fuel and oil for the plant and machinery on site. Temporary storage within these facilities should limit the risk associated with leakage and run off.

Guidance and procedures recommended in the Water Environment (Oil Storage) (Scotland) Regulations 2006 will be followed along with those contained within the Construction and demolition sites, *Pollution Prevention Guidance (PPG6)* (EA, 2012).

Subject to agreement with stakeholders, the Final CEMP pollution protection measures are likely to include:

- Storage of fuel in excess of 10m from any waterbody;
- All re-fuelling of mobile plant on site to take place a minimum of 10m away from watercourses and drains;
- Relevant Outline buffer strips in relation to watercourses identified by the EnvCoW will be maintained;
- Containment measures, spill kits placed on site (labelled with easy access)
- All plant to have spill kits;
- Mobile plant use adjacent to watercourses to be in accordance with *GPP5 Works and maintenance in or near water* (Netregs, 2017);
- Plant/ equipment and vehicles to be checked daily for damage/ leaks before use – Daily Pre-Start Checks;
- All static plant (pumps/ gensets etc) to have 110% built in containment or be located on plant nappy/ drip trays;
- Plant nappies/ drip trays to be placed on ground adjacent to fill points to capture any drips during filling/ decanting of fuel;
- Plant/ Equipment/ Vehicles will not be left unattended, or delivery valves jammed open during refuelling;
- Personnel involved in refuelling activities to be briefed on refuelling and spill response procedures;
- Plant nappies to be placed under plant and machinery when undergoing repair or maintenance;
- Road brush to be deployed as required to bituminous roads and hardstandings affected by construction activity;
- Where plant/ vehicle washing is necessary it shall be carried out in a designated area a minimum 10m from watercourses and drainage systems using a pressure washer. Any run-off shall be contained; and
- Wash areas to be cleaned regularly to prevent build-up of mud and monitored for evidence of hydrocarbons.

## 5.4 Drainage Management

Measures will be developed to treat and deal with all the surface runoff from the site, will be designed in accordance with Sustainable urban Drainage System (SuDS) principles. The Final CEMP will include a location map of all areas of disturbance with the potential to generate silt-laden run-off, with details of the proposed mitigation at each point as recommended by the prevailing CIRIA guidance documents. These measures will comprise an appropriate Drainage Management Plan (DMP).

The drainage design will comply with General Binding Rules (GBR's) 10, 11 and 21 for the track drainage, under the Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 (as amended) (Scottish Environment Protection Agency (SEPA), 2011) and follow guidance set out in SEPA Pollution Prevention Guidance (PPG) 5

Drainage design will be developed in response to a risk appraisal undertaken by the contractor and will be proactive, rather than being reactive to any events arising once works commence.

Silt-laden water generated from the construction works will be settled out as much as possible through drainage mitigation measures (silt traps etc.) and channelled into vegetated areas at least 20m from any water body to allow the settlement of suspended solids. The proposed location of discharge points and mitigation which may be required will be agreed in advance with the EnvCoW. Silt traps, gravel, sandbags, silt fencing and anchored straw bales may be required at the discharge points in order to prevent erosion at the outlet, alleviate flow and aid in flow dispersion across a wider area of vegetation to prevent potential scour and remobilisation of deposited silt.

Between November and May, when precipitation rates are likely to be higher, activities would require increased monitoring by the EnvCoW combined with deployment of appropriate measures for surface water drainage management to ensure impacts are minimised. Measures may include the addition of flocculants to sediment traps, or the use of straw bales to divert additional run off and prevent erosion. The use of chemical additives, if deemed necessary, will be discussed with the EnvCoW and a method statement prepared in consultation with SEPA. This approach will be of increased importance following periods of heavy rainfall when the potential for site surface drainage impacts on local watercourses may be increased.

The design of the drainage systems will ensure that waters are kept within their original drainage catchments and the tracks will be constructed to be as permeable as practicable, to prevent the build-up of large volumes of water and to prevent direct discharge to surface watercourses. This design will reduce the risk of sedimentation (from loose material) and pollution (from accidental spillage) on all downstream watercourses. All drainage systems will be designed to withstand a 1 in 200-year rainfall event (including an allowance for climate change).

Where groundwater is encountered along the construction footprint, temporary dewatering may be required but will be kept to a minimum to prevent altering the water table by drawdown. Where necessary a temporary drainage system, either a temporary drainage ditch or a pumped system, depending on the local gradient, will be established to deal with groundwater ingress.

Measures will be taken to ensure no chemical or sediment contamination will occur. These measures will include:

- Maintenance of existing track side drainage to ensure no sediment laden runoff reaches the spring;
- Ensuring no fuels and oils are kept within 250m of any spring source; and
- Regular monitoring (visual and suspended solids) of the water supply and surface water runoff in the area.

Design and implementation of all drainage processes will comply with General Binding Rules (GBR's) for the track drainage (GBR10, 11 and 21) under the Water Environment

(Controlled Activities) (Scotland) Regulations (CAR) 2011; and follow guidance set out in SEPA Pollution Prevention Guidance (PPG) 5:

*'Works and maintenance in or near water' for all other drainage related process on site not affiliated with access track construction.*

Impacts on the water environment will be minimised by incorporating check dams, silt traps, settlement ponds and buffer strips where required. These features will have the dual purpose of attenuating peak flows, by slowing the flow of runoff through the drainage system and allowing sediment to settle before water is discharged from the drainage system. The sizing and location of the various elements of the drainage system will be influenced by the topography, gradient, catchment runoff characteristics and the volumes of runoff intercepted by each drain. These factors will be determined at the detailed design and, subject to agreement in the Final CEMP, may include:

- Tracks with camber design;
- Trackside drains will have infiltration trenches with check dams;
- Cross drains at regular intervals along access tracks and check dams will be installed immediately above cross drain inlets; and
- Temporary cut-off drains will be used to prevent water entering excavations.

Drainage/ pumping will be minimised but where necessary water will be repumped to the vicinity of excavations. Routine maintenance of tracks will be undertaken by the EnvCoW. The EnvCoW will review the need for culverting the many unmarked drains and channels which will have to be crossed to avoid blockages and local flooding.

A Drainage Impact Assessment (DIA) will be prepared well in advance of construction and sent for approval by SEPA. It will include drainage features for infrastructure including turbine foundations, watercourse crossings and access tracks. Further information is provided in Chapter 8: Hydrology.

## 5.5 Groundwater Protection

In areas where there are Groundwater Dependant Terrestrial Ecosystems (GWDTE), any shallow groundwater encountered during construction and requiring dewatering should be pumped to a small holding sump to allow removal of suspended sediment. Once the solids have been removed, groundwater should either be discharged direct to or via a small down-slope trench up- gradient of the surrounding GWDTE allowing infiltration back into the ground. Possible mitigations will include:

- Micro siting to minimise wetland take for turbines and associated infrastructure
- Installation of permeable layers in track bases
- Cross drains under track at regular intervals up gradient of moderately dependent GWDTE. The cross drains will initially catch the water on the uphill side of the track or yard and transfer it to a suitable diffuse outfall above the GWDTE on the down gradient side of the track where it will not cause new erosion or runoff issues
- Indirect loss of habitats caused by dewatering at turbines will also be minimised by minimising any period of dewatering and designing dewatering in compliance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)

The work will be supervised by the EnvCoW. Designs will be incorporated into the DMP.

A monitoring regime will be developed by the EnvCoW to measure potential effects of permanent and temporary works on GWDTE and within a format which may be provided to regulators upon request. Monitoring should also ensure that sediment blockages in the cross drains are regularly cleaned.

Pollution prevention measures to protect groundwater will be in accordance with best practice guidance including that detailed in section 5.3. Further measures are detailed in Chapter 8: Hydrology, HMP and PMP.

There are no private or public water supplies in hydrological continuity with the Proposed Development.

## 5.6 Coal Mining

In order to reduce the estimated risk to development associated with mining hazards, the following mitigations are proposed.

Site investigations should be undertaken to confirm the absence of shallow mine workings below T29 and T30, and by default prove the absence of opencast backfill at T30.

Ground gas monitoring should be undertaken in the (non-peat) soils and bedrock adjacent to T30 to determine the level of carbon dioxide and methane possibly being produced in the backfilled quarry, along with the flow potential.

During any soil stripping as part of the site investigation or development works at T29 and T30, a watching brief for unrecorded mine entries should be undertaken.

On the basis that site investigations be carried out prior to development to prove the absence of unrecorded shallow coal mines, unrecorded mine entries, and mine gas, there shall be considered negligible risk to the development.

In the unlikely event that either mine workings or mine gas are encountered; further mitigation measures would be required to reduce risk to development and to enable the development to continue. Subject to consultation with relevant stakeholders these measures may include:

- Stabilisation of shallow mine workings, typically drilling and grouting;
- Relocation of turbines / roads to avoid mine entries, and thereby avoid requirement to treat and cap the mine entry; and
- Ground gas protection measures in turbine foundations.

## 5.7 Watercourse Crossings

The Proposed Development has been designed to minimise works in the vicinity of mapped watercourses and to minimise the need for new water crossing in order to minimise reduce the risk of pollution and changes to watercourse morphology.

Three watercourse crossings will be crossed required for by the proposed new access tracks within the Proposed Development Footprint: one within Polhote Burn (W1) and two tributaries to the Polhote Burn (W2 and W3). These locations are shown on Figure 3-2c.

The three watercourse crossings will be constructed by installing an arch/ bottomless culvert at each location. Figure 3-8 shows an indicative plan of this type of structure. The DIA will include drainage features for watercourse crossings,

It is proposed that the final detailed design for all water crossings will be addressed through an appropriately worded condition.

## 5.8 Water Monitoring and Remedial Actions

Details of monitoring proposals including a Water Quality Monitoring Plan (WQMP), to monitor amongst other parameters pH and turbidity, will be implemented by a designated appointed person on-site. The WQMP will be accompanied by a specific Emergency Response Plan for water environment incidents and address both surface and ground water quality and protection and include measures for different rainfall and flow conditions.

Water quality monitoring will be undertaken prior to construction works to establish a baseline condition; during construction to monitor effects of construction activities; and post construction to confirm conditions are similar to the original baseline. Surface water locations close to the development area are to be monitored (close to the source of pollution) and also watercourses near water abstractions (sensitive receptors) are also to be monitored where accessible so that potential pathways of pollutants can be monitored.

Visual and basic field water quality monitoring (such as pH, turbidity, total dissolved solids and electrical conductivity) should be regularly undertaken by the EnvCoW on site. These records should be available to be supplied to the Regulator if required.

Regular inspections will be made of sediment management systems, to ensure they are effective, and that swift corrective action is taken where problems are encountered.

## 5.9 Peat Management

The strategy for peat management for the Proposed Development follows guidance for developments on peat and uses of waste peat (SEPA/SR, 2012 and 2014). The hierarchy is as follows: Prevent, Reuse, Recycle and Dispose. A combination of prevention and reuse has formed the peat management strategy for the Proposed Development. Full details of excavation and reuse proposals are provided in Appendix 8-2: Section 4.

The peat depth survey as shown in Chapter 8 found the deepest peat in the western extension whereas prevailing conditions in the northern extension were up to 0.5m depth, with localised areas up to 2m. In the western extension, the prevailing depth was between 0.6-1.5m but large areas of deeper peat, up to 3m, were present in the southern part where infrastructure was originally proposed. As such, areas of deep peat were avoided through the design review process. The PMP set out detailed prescriptions relating to each infrastructure element (e.g. turbines, access tracks) with measures for excavation and handling, storage, reinstatement, restoration, and monitoring.

To maximise peat reinstatement excavated peat will be restored within the existing borrow pit of Sandy Knowe Wind Farm. The location of borrow pit is shown on Figure 3-1a and 3-1b. Wherever possible, temporary excavations will also comprise restoration sites on completion of works.

Access tracks will be floated on areas where the track crosses more than 2m of peat and more generally, wherever possible.

A micro-siting margin to allow for adjustment of turbine, track, and equipment positions to suit actual ground conditions is proposed within 50m of infrastructure locations as per Chapter 3: Description of the Development.

The EnvCoW will oversee all peat stripping and removal.

## 5.10 Ecological Protection Measures

A summary of habitat protection and enhancement measures from the HMP and Mitigation with regards to protected species potentially utilising the Proposed Development site is detailed below.

### 5.10.1 Habitats

Working areas would be kept to a practical minimum and clearly defined by pegging out the footprint of the Proposed Development prior to the commencement of works. This will be carried out by the EnvCoW and the Contractor to ensure sensitive habitats are avoided where possible. The aim of this is to restrict the footprint of the Proposed Development to a minimum and to reduce the risk of unnecessary damage to these retained habitats. Existing habitats to be retained would be securely fenced prior to the commencement of site clearance. Fencing will be fit for purpose ("Netlon" or similar is not generally considered suitable) and be clearly visible to drivers of large construction vehicles. No materials storage or fires would be permitted within the fenced areas. The fences would be maintained to ensure their continued function throughout construction but would be removed from site on completion of the works.

Where vegetation must be cleared to facilitate the installation of proposed infrastructure, this will be undertaken using a strimmer first to avoid disturbing ground prior to excavation. All vegetation clearance works will be undertaken under the supervision of an EnvCoW who will adopt a surveillance programme for protected places of rest, refuge and/or breeding prior to vegetation stripping or construction works.

A Habitat Management Plan will be implemented and can be viewed in full in Appendix 14-2. In summary the objectives are as follows.

- Objective 1: To create new habitats for Black grouse.
- To establish appropriate native mixed-leaved tree planting, heath habitats with diversity of age and structure, and species rich-grasslands.
- Objective 2: Remove fencing which may be a collision risk to Black grouse.
- A site walkover should be carried out between the Applicant and EnvCoW to identify redundant fencing.
- Objective 3: Protect and ensure maintenance of groundwater supply to GWDTE.
- Objective 4: Peatland restoration/ditch-blocking.

### 5.10.2 Protected Species

No earlier than 12 months, and preferably within 6 weeks prior to commencement of works, an EnvCoW would be commissioned by the Applicant to carry out a walkover survey of the entire Proposed Development in conjunction with the Project Manager (or nominated individual) and a representative of the Contractor(s), with the aim of micro-siting and agreeing, insofar as possible, all elements of the Proposed Development,

such that the impacts of the Proposed Development on sensitive ecological features are managed by design. Whilst not assessed in the EIA as Important Ecological Features (IEFs), water vole will be considered in the pre commencement walkover.

Concurrently, or shortly thereafter, in the appropriate survey season and under suitable weather conditions, the Applicant would commission an EnvCoW to carry out a Final check for the presence of protected species and to advise on Final mitigation requirements in a Pre-Construction Ecological Mitigation Strategy report.

Ecological requirements will be agreed between the Applicant, the EnvCoW, DGC and NS prior to the commencement of works and would be incorporated into the Proposed Development-specific Ecological Mitigation Strategy (EMS).

### **Badgers**

A final check for badger setts within approximately 50m of working areas will be conducted prior to the commencement of the site clearance phase, preferably within the spring or autumn periods, in line with the Protection of Badgers Act 1992, as amended in Scotland.

All excavations shall be covered and/or provisions made to allow mammals which have inadvertently fallen into an excavation over night to escape by themselves.

Where dense vegetation/scrub has to be cleared to facilitate the installation of access track and/or turbine bases, if the potential for hidden setts has been indicated during the site walkover referred to above, clearance will be undertaken using a strimmer/hand saws to avoid disturbing ground prior to excavation. Vegetation clearance works where a hidden sett is considered likely will be undertaken under the supervision of an EnvCoW.

If a previously undiscovered mammal burrow was confirmed as a sett following discovery during vegetation clearance, then works would stop immediately within 30m of it. If it was not possible to retain a small undiscovered sett then mitigation would be agreed between NS and the EnvCoW. If the sett has been identified to be within 30m of the proposed access track and rerouting is not possible, then a licence from NS could be required before works could lawfully proceed.

### **Otter**

A final pre-construction check for the presence of otter will be conducted prior to the commencement of the site clearance phase. This will include a survey for otter holts and couches to ensure legal compliance with Conservation (Natural Habitats, &c.) Regulations 1994, as amended.

A distance of 200m from proposed infrastructure will be checked for otter resting places (holts, layups and couches) and natal dens (dens). Drains and ditches within 200m of proposed infrastructure and upstream and downstream of crossing points will be surveyed, to ensure that no otter places of rest or dens are present. The outcome of these surveys will be reported to the Contractor prior to the start of site works so that ecological constraints can be taken into consideration by all parties.

In the event that a previously undiscovered place of rest is confirmed during vegetation clearance, works shall stop immediately until a safe working area has been determined (e.g., >30m) and/or a way forward has been identified between NS and the EnvCoW. If the place of rest has been identified to be within 30m of the proposed access track or crossing point, and rerouting is not possible, then liaison would be held with NS and that

in all likelihood a licence from NS would be required before works would be allowed to proceed.

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).

All excavations shall be covered and/or provisions, e.g., ramps, made to allow mammals which have inadvertently fallen into an excavation over night to escape by themselves.

### **Bats**

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.

In line with the guidelines in Mitchell-Jones and Carlin (2014) and SNH et al (2019), which provides a methodology for determining the minimum buffer distance required between a feature of potential value for bats (e.g., the edge of a tree canopy) and a wind turbine, a minimum stand-off buffer of 50m will be maintained between the rotor-swept area and the nearest woodland edge to any turbine. The calculation for the recommended minimum 50m buffer from blade tips is calculated using the formula:

- Buffer distance from edge/feature =  $\sqrt{(50m + bl)^2 - (hh - fh)^2}$ ,
- where "bl" = blade length, "hh" = the hub height and "fh" = feature height. For plantation up to 15m in height and the proposed turbine specifications, this corresponds to a minimum buffer of 75.3 m between turbine towers and the nearest woodland/edge feature.

If micro-siting occurs, pre-construction re-surveys will not be required. However, if the wind farm design changes and potential impacts are identified, further surveys may be required.

### **Red squirrel**

As set out above, the final pre-construction check for protected species prior to the commencement of the site clearance phase will also incorporate searches for signs of red squirrel within approximately 50m of the working area. This will specifically involve a search for dreys to identify whether red squirrel have become resident on the Proposed Development site.

In the unlikely event that a previously undiscovered drey is confirmed as red squirrel following the survey, works shall stop immediately until a safe working area has been determined (e.g., >30 m) and/or a way forward has been identified between NS and the EnvCoW. If the drey has been identified to be within 30m of the proposed access track or crossing point, and rerouting is not possible, then liaison would be held with NS and that in all likelihood a licence from the NS would be required before works would be allowed to proceed.

### **Aquatic Ecology**

Field surveys confirmed the presence of trout parr within the Survey Area, along the Pockmuir Burn, however, there will be no loss of habitat for fish. There may be potential for a low magnitude impact during the construction phase should there be run off from construction areas into the watercourses. Standard pollution control measures as

detailed within section 5.3 of this CEMP should provide suitable mitigation. No additional or specific aquatic ecology mitigation is required.

Post construction electrofishing surveys will be undertaken at years 1 and 3 and water quality monitoring undertaken by the EnvCoW immediately prior to construction and throughout the construction period. SEPA and Nith District Salmon Fisheries Board will be consulted prior to construction on further requirements in relation to fish populations.

### 5.10.3 Ornithology

Before construction commences, species management plans (SMP) will be developed for Hen harrier and Black grouse and a generic 'birds' plan which will identify the measures to be put in place to ensure birds will be protected during construction. These management plans, to be agreed with NatureScot and DGC, would include a monitoring regime prior to and during construction to ensure breeding attempts within distances in which disturbance would occur (Ruddock, 2007) would be detected and protection, identified within the SMP but based upon buffering breeding attempts in line with the disturbance distances in Ruddock, put in place.

No tree felling or removal of ground vegetation will occur within the period mid-March - August (inclusive). If vegetation removal is required, then it would be searched by an experienced ecologist or the EnvCoW no more than 24 hours before removal.

Weekly surveys will be undertaken between mid-March and mid-May to identify any lekking locations for Black grouse.

No works will commence in the construction area for turbines T29 and T30 before 08:30 between mid-March – mid May, to avoid disturbance to any Black grouse which may be lekking in this area.

## 5.11 SSSI Integrity

The Polhote Burn gorges which form part of the Polhote and Polmeur Burns Site of Special Scientific Interest (SSSI) is approximately 600m north of the nearest infrastructure. However, parts of the SSSI gorges of the Polmeur Burn are immediately adjacent and indeed form the western boundary of the northern extent of the Proposed Development Footprint.

During construction of the Proposed Development Footprint the fence and signage around the Polmeur Burn will be maintained and extended to cover the frontage within the Proposed Development to ensure that there is no incursion towards the burn. It is not considered necessary to fence the Polhote Burn, but markings will be placed at its southern extent to ensure there is no incursion.

The SSSI will be marked on the DMP and drainage from construction activities will be marked on site using coloured pegs to ensure that construction staff are aware of their presence.

The markings and 50m minimum watercourse and drainage buffers will be rigorously enforced to avoid accidentally emplacing waste excavated material near the banks threatening the integrity of the SSSI. Similarly, discharge of drainage and dewatering discharge will not be allowed within 50m of the SSSI gorge.

## 5.12 Cultural Heritage Protection Measures

Desk-based assessment and walkover survey have identified 24 non-designated heritage assets within the Proposed Development Footprint (Assets 20, 31, 34, 36, 38-40, 42, 46, 50-53, 56-63, 79, 82 and 84), which include evidence of agricultural and pastoral activity, quarrying, a bridge and a cairn. The Non-Statutory Register (NSR) Deil's Dyke (Asset 15) crosses the Proposed Development Footprint at its northern extent. See Chapter 10: Cultural Heritage for further information.

The scope and method of any archaeological mitigation works would be agreed with the DGC archaeologist as advised by the applicant's archaeologist through a Written Scheme of Investigation.

## 5.13 Construction Noise and Working Hours

A number of measures exist to control and minimise the impact of noise and vibration from construction sites. These include:

- European Commission (EC) Directives and United Kingdom (UK) Statutory Instruments in place to control noise emissions from construction plant;
- The guidance within BS5228:2009 on the control of noise from construction sites; and
- Section 61 of the Control of Pollution Act 1974 and Section 80 of the Environmental Protection Act which gives Local Authorities the power to control noise from construction sites.

The proposed normal hours of operations for construction activity are between 07:00 - 19:00 Monday to Saturday, with deliveries on a Saturday restricted to the hours of 07:00 to 12:00. During the installation phase, there may be a requirement for extended working hours as some critical elements of installation cannot be stopped once started such as concrete pouring, this will be agreed in advance with DGC. Although it is not anticipated that construction noise levels will exceed the guideline noise level limits of BS5228, the general principles of construction site noise control as described in BS5228:2009 will be implemented prior to construction management plans or schedules being Finalised.

Specific mitigation measures which will be considered are:

- Location of equipment, taking account of local topography and natural screening;
- Working methods, including phasing of the works, location and gradient of access tracks, equipment to be employed and working hours;
- Selection of plant, taking account of the characteristics of noise emissions from each item of plant and their cumulative effect;
- Deployment of plant, in particular the timing of movement of plant within the site, and reducing the duration of noisier operations near occupied properties;
- Working hours, where restrictions are applied to operations where emissions of noise may have an adverse effect on residential properties; and
- Operation of plant, including fitting and proper maintenance of silencers and/or enclosures, avoiding excessive and unnecessary revving of engines and parking of equipment in locations which avoid possible effects on residential properties.

Sandy Knowe Wind Farm construction noise and vibration mitigation measures put in place as a result of adherence to consent 20/1798/S42 and Borrow pit noise mitigation

measures put in place as a result of adherence to consent 20/0809/FUL will also be adopted for the Proposed Development as applicable.

## 5.14 Handling of Excavated Materials

Materials, where possible, will be sourced on-site, and materials excavated from works such as turbine foundations will be reused on site for the reinstatement or reduction of access tracks and other above ground construction areas. This process will reduce transport activity, spoil storage/removal and assist in the limitation imported materials.

The ground excavation methods would vary depending on the local ground conditions and the nature of the surface vegetation. The general processes would be as follows:

- Earthworks extents, including haul routes and storage areas, to be pegged out prior to commencement to minimise/ control exposed soils and damage;
- Soils removed from the excavated area would be stored separately in piles on suitable dry, flat ground no greater than 3m in height a minimum of 50m from watercourses;
- The EnvCoW will undertake a walkover to determine which stockpiles require silt fencing based on proximity to sensitive receptors;
- Stockpiles will be tamped by light compaction prior to heavy rain to prevent wash-out;
- Surplus excavated material would be removed from the site, or used for track maintenance during construction, as appropriate;
- After the foundation has been poured the area would be backfilled as soon as practicable with spoil, pending turbine installation;
- Once the turbines have been installed, the immediate construction area around the turbine bases would be restored using the retained topsoil or turf to within approximately 1m of the tower bases;
- Surplus topsoil would be used to restore track edges after construction or removed from the site; and
- Material won from foundation excavations would, if suitable, be used in the landscaping of access tracks and other site infrastructure as stated above. If not suitable, it would be disposed of off-site to a suitably licensed facility.

All excavation, handling and storage of materials will follow guidance set out in SEPA PPG6: Working at construction and demolition sites.

Where possible, in order to avoid multiple handling of peat, excavated materials will be transported directly to their point of reuse. Where this is not possible, for example due to construction phasing e.g., a requirement to temporarily store adjacent to foundation working areas prior to reinstatement, storage will be required locally. In these cases, it is important to ensure peat is stored safely with minimal risk of instability of stored materials while they are kept in good condition prior to reinstatement. Peat Management Plan (Chapter 8: Appendix 8-2 provides good practice advice on peat storage.

## 5.15 Resource Management and Site Waste

Water for the construction facilities will be provided by a licensed abstraction from a local water course or will be imported to site. Should abstraction be used this will be

subject to CAR licencing with SEPA. No connections with the mains water systems or sewers are proposed.

During construction and operation, materials to be removed from site will be separated into recyclable types (where possible) to be disposed of by suitably licensed waste management companies, in accordance with the Waste Management Licensing Regulations 1994, (SI 1994) and best practice at the time.

Foul water and effluent would be treated either via septic tank with soakaway designed to SEPA guidelines (including PPG4: 'Treatment and disposal of sewage where no foul sewer is available' and PPG6: 'Working at construction and demolition sites') or by the use of chemical facilities with periodic material for off-site disposal. Treatment facilities would be subject to agreement with SEPA.

Guidance and procedure recommended in the Water Environment (Oil Storage) (Scotland) Regulations 2006 will be followed along with that contained within PPG6 in relation to waste oils or fuels.

Good construction site management will be implemented to avoid/minimise generation of litter, dust, noise, and vibration. Requirements for waste storage shall be detailed and implemented through a Site Waste Management Plan (SWMP).

Surplus peaty soil will be re-used on-site for the road edgings, verge profiling, restoring borrow pits, reinstating ground around turbines, and temporary construction compounds. All of the peat material generated from excavations will be able to be re-used on site and no peat disposal is anticipated as part of the application.

Waste will be removed off-site for safe disposal at a suitably licensed waste management facility in accordance with current waste management regulations. Wherever possible, excavated stone or soils will be re-used on site, primarily for the restoration of disturbed ground. Details of this will be included within the Final CEMP, as agreed with DGC and SEPA.

The main items of construction waste and their sources are:

- Hardcore, stone, gravel from temporary surfaces to facilitate construction waste, and concrete;
- Subsoil from excavations for foundations and roads;
- Timber from temporary supports, shuttering and product deliveries;
- Miscellaneous building materials left over from construction of the control building;
- Sanitary waste from chemical toilets (if used);
- Plastics packaging of material; and
- Lubricating oils, diesel - unused quantities at end of construction period.

Subsoil not required for reinstatement purposes will be collected at the end of the construction phase and disposed of according to best practice and existing waste legislation. Waste oils and diesel will be removed from the Proposed Development Site and disposed of by an approved waste contractor in accordance with provisions of the Special Waste Regulations 1996 (Scottish Government, 1996).

## 5.16 Reinstatement and Restoration

Reinstatement will be carried out as soon as possible after each part of the project is completed and will involve the restoration of disturbed ground caused by the

construction of and dismantling of the construction compound. This will be undertaken to restore a natural profile.

Areas of the site would be reinstated as per planning condition requirements.

Materials and other temporary infrastructure will be removed off-site and the temporary storage area will be reinstated.

The site access tracks will be reduced where possible but left in place after completion of the construction phase to provide ongoing access for maintenance, repairs, and the eventual decommissioning phase.

Once the turbines have been installed, the immediate construction area around the turbine bases would be restored using the retained topsoil or turf to within approximately 1m of the tower bases. Material won from foundation excavations would, if suitable, be used in the landscaping of access tracks and other site infrastructure. If not suitable, it would be disposed of off-site to a suitably licensed facility.

Hardstanding areas at each turbine location will be retained for use in on-going maintenance operations, with the edges as far as possible blended to the adjacent contours with natural vegetation being allowed to re-establish.

Reuse of peat will comprise reinstatement of temporary excavations of the Sandy Knowe Wind Farm borrow pit to minimise visual impacts of this infrastructure element.

The following is abridged from the PMP (Appendix 8-2) but the PMP should be consulted in its entirety when reading this document.

*Temporary excavations comprise those for the boom assemblies, blade fingers and turning heads. Peat will be stored locally, separated into acrotelmic and catotelmic peat, and reinstated in reverse order to the sequence of excavation, with acrotelmic turves placed over catotelm.*

*Details of the borrow pit restoration will depend on the Final geometry of the borrow pit, which has been consented for up to 2 m of peat reinstatement (Roadbridge, 2021a). The Borrow Pit Restoration Plan for the consented scheme states that:*

- *Following reinstatement of overburden (non-peat soils), a clay liner will be installed for moisture retention followed by catotelmic and then acrotelmic peat reinstatement, with turved blocks as the top layer.*
- *Temporary cutoff drains around the borrow pit perimeter installed to ensure safe working will be infilled post-reinstatement to enable the peat to re-wet.*
- *Slope levels within the pit will be designed to be appropriate to retain peat in a hydrated condition.*
- *If any bare areas remain, these will be seeded with a seed mix appropriate to the location and setting and agreed with the ECoW (who will have full oversight of the reinstatement works).*

Restoration will be overseen by the EnvCoW and in compliance with all planning conditions, SEPA and NS guidance.

## 5.17 Monitoring

A monitoring regime will be developed by the EnvCOW to measure potential effects of permanent and temporary works on GWDTE and within a format which may be

provided to regulators upon request. Monitoring should also ensure that sediment blockages in the cross drains are regularly cleaned. The EnvCoW will also oversee monitoring according to the WQMP as detailed in the Final CEMP.

During construction, monitoring should be undertaken in any areas where peat is stored. Key to the success of the strategy for peat management will be careful monitoring of the post-construction works and any restoration activities. A monitoring programme should be initiated once restoration and peat reinstatement works have been completed. Monitoring should be carried out for a minimum of five years after construction and reinstatement works have concluded.

Ecology and ornithology monitoring requirements are detailed in section 5.10.

Post construction electrofishing surveys will be undertaken at years 1 and 3 and water quality monitoring undertaken by the EnvCoW immediately prior to construction and throughout the construction period. SEPA and NDSFB will be consulted prior to construction on further requirements in relation to fish populations

A monitoring protocol will be devised by the EnvCoW in relation to habitat enhancement measures to encourage Black grouse (see Appendix 14-2 for further information).

To reduce the estimated risk to development associated with mining hazards ground gas monitoring should be undertaken by a specialist in the (non-peat) soils and bedrock adjacent to T30 to determine the level of carbon dioxide and methane possibly being produced in the backfilled quarry, along with the flow potential (see Chapter 8: Hydrology for further information).

## 5.18 Environment Incident Response and Reporting

Two action plans will be produced; an Accident Management Plan (AMP) to detail emergency contingency and spillage plans, and an Emergency Response Plan (ERP) for pollution incidents (fuel leak or sediment entering a watercourse). All plans will be compiled using guidance from *SEPA PPG 21: Incident Response Planning* (SEPA/NEIA, 2021) and include protocols for:

- Delivery and use of materials;
- Overfilling containment vessels;
- Plant or equipment failure;
- Containment failure;
- Fires, explosions or failure to contain firefighting water;
- Wrong connections of sewers and pipes;
- Incompatible materials coming in contact;
- Uncontrolled reactions;
- Discharge of partially treated or raw effluent;
- Vandalism; and
- Flooding of part or all of the site.

These incidents could affect:

- Drainage systems, surface waters, aquatic ecosystems, groundwater and soil; and
- Air quality by producing toxic fumes and airborne pollutants which may damage human health, wild and domestic animals, and ecosystems.

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