18. Schedule of Environmental Commitments

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18. Schedule of Environmental Commitments

18.1 Introduction

18.1.1 Best practice in Environmental Impact Assessment (EIA) recommends the use of a Schedule of Environmental Commitments, which can act as a quick reference for anyone interested in the mitigation measures to which the Applicant has committed to implementing and upon which the assessment of residual effects presented within the EIA Report. It will be utilised by the Applicant throughout development of the detailed design, and the appointed contractors will be required to allow for, and ultimately implement, each of the measures in this schedule as a minimum.

18.1.2 Table 18.1 presents a Schedule of Environmental Commitments for the Proposed Development, listed according to the relevant environmental topic area.

Table 18.1 – Schedule of Environmental Commitments

Environmental Subject Area	Environmental Commitment	Timing
3. Proposed Development		
Bridge crossing	The proposed new bridge across the Polneul Burn at WC02 will be a single span structure, approximately 20 m long, with concrete abutments located outwith the watercourse. There will be no structures or construction activities within the watercourse, with the exception of removal of the existing culvert which will be completed following a methodology to be agreed with SEPA. It is proposed that the agreement of the detailed design of the bridge, including its foundation and appearance, will be addressed through an appropriately worded condition.	Pre-construction
Watercourse crossing	It is proposed that the final solution and detailed design for all water crossings will be addressed through an appropriately worded condition in accordance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011. It is proposed that there will be a micro-siting allowance of 50 m in all directions for all watercourse crossings to allow for local variations in ground conditions, topography or environmental constraints identified by pre-construction surveys.	Pre-construction
	Following construction of the Polneul Burn crossing, the existing concrete pipe culvert will be removed and this section of the watercourse will be restored to its natural profile.	Construction
	The remaining three watercourse crossings will be constructed by installing an arch/ bottomless culvert at each crossing location.	Construction
Drainage	Surface or sub-surface water flow within the vicinity of the access tracks and hardstanding areas will be routed into drainage channels or will flow across the hardstanding areas. The drainage channels will be situated on the upstream side of the infrastructure and run in parallel with them. These channels will pass under the hard areas, via small diameter carrier drains, to the downstream side where the run-off will percolate to the riparian zone.	Operation
	Where ground conditions permit, channels may connect with infiltration trenches on the downhill side of the hard areas, with a small sump at the inlet to collect silt and treat run-off prior to infiltration to the surrounding soils. Silt traps will also be located along trenches to further facilitate the collection of silts.	Operation
	The edges of the access tracks will be flush to allow the surface water from the road to route directly into the collection channels or infiltration trenches. On steeper sections of track, regular cross drains, connected to infiltration trenches, will be installed to collect surface run-off and ensure longitudinal flow is intercepted, thus avoiding rutting and subsequent breakup of the track surface. Trenches will maintain linear flows to downstream areas avoiding point discharge of large flows.	Operation
	Where the access tracks follow contours, earthworks may be required to accommodate these. Where earthworks are required a collection ditch will be installed at the head of the cutting, with small stone check dams, incorporating sumps, to collect silt and prevent sediment transfer to watercourses.	Construction

Environmental Subject Area	Environmental Commitment	Timing
	Where turbines are located on steep ground, collection drains will be located on the upstream side and will drain into either infiltration or filter trenches on the downstream side.	Operation
	A detailed drainage design will be undertaken and provided to the Scottish Environment Protection Agency (SEPA) and the Local Authority prior to construction.	Pre-construction
Access tracks, substation, temporary construction compounds, hardstanding and turbine locations.	A micro-siting allowance of up to 100 m in all directions is being sought in respect of the infrastructure in order to address any potential difficulties which may arise in the event that preconstruction surveys identify unsuitable ground conditions or environmental constraints that could be avoided. Any variation of between 50 m and 100 m shall only be permitted following prior written approval of the Planning Authority in consultation with the MOD, NATS, Glasgow Prestwick Airport and where relevant SEPA and/or SNH. It is proposed that the final positioning of the access tracks, substation temporary and construction compounds will be addressed through an appropriately worded condition.	Pre-construction
Meteorological monitoring masts	It is proposed that the final positioning, height and aviation lighting requirements be addressed through an appropriately worded condition.	Pre-construction
Compensatory planting	It is proposed that the detailed design of the proposed areas for replacement mixed woodland/scrub planting be confirmed prior to construction commencing through an appropriately worded condition.	Pre-construction
	Timber generated from felling the plantation woodland will be removed from the site and disposed appropriately, by means potentially including sale as timber or recycling.	Construction
	In recognition of this loss of woodland and in order to ensure compliance with The Scottish Government's Policy on Control of Woodland Removal (FCS, 2009), 10.77 ha of compensatory planting will be provided across the site.	Construction
Construction/Decommissioning Environmental Management Plan (CDEMP)	The Applicant shall produce and adhere to the CDEMP in accordance with the joint Scottish Renewables, SNH, SEPA and the Forestry Commission Scotland guidance on Good Practice During Windfarm Construction (SNH, 2013). The CDEMP shall describe how the Applicant will ensure suitable management of, but not be limited to, the following environmental issues during construction of the Proposed Development: - noise and vibration; - dust and air pollution; - surface and ground water; - ecology and ornithology (including protection of habitats and species); - agriculture (including protection of livestock and land); - cultural heritage; - waste (construction and domestic); - pollution incidence response (for both land and water); and	Pre-construction and pre-decommissioning

Environmental Subject Area	Environmental Commitment	Timing
	- site operations (including maintenance of the construction compound, working hours and safety of the public). The Applicant shall provide the following for the above environmental issues: - Details of all the environmental mitigation which is described within this chapter and how the Applicant will implement this mitigation and monitor its implementation and effectiveness. - Details of how the Applicant will abide by the local and national legislative requirements e.g. The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (amended 2013). - Details of how the Applicant will implement and monitor construction best practice techniques e.g. the control of noise and dust. - Details of a Waste Management Plan which will include opportunities to reduce and re-use waste on site, recycling of waste which cannot be reused and disposal of waste to landfill. - Details of a Peat Management Plan, following the principles set out in the joint Scottish Renewables and SEPA guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste (Scottish Renewables and SEPA, 2012). - Details on how the Applicant will liaise with the public and local landowners and how they will respond to any queries and/or complaints.	
	The CDEMP will contain a pollution prevention strategy which will be agreed with SEPA to ensure that appropriate measures are put in place to protect watercourses and the surrounding environment.	
	The CDEMP will, where applicable, cross-reference and correspond with the Construction Traffic Management Plan (CTMP).	
	The Applicant shall consult with SNH, SEPA, Historic Environment Scotland and DGC on the production of the CDEMP.	
	The Applicant shall amend and improve the CDEMP as required throughout the construction and decommissioning period.	Construction and decommissioning
Construction Traffic Management Plan (CTMP)	The CTMP will detail the management of traffic to and from site, including abnormal loads and daily workers' commute. It shall also include mitigation for impacts to public transport, local private access and public foot paths, cycle ways and bridleways. The Applicant shall amend and improve the CTMP as required throughout the construction and decommissioning period.	Pre-construction and pre-decommissioning
Operation and Maintenance	During operation, only site maintenance vehicles and local utility company vehicles will normally be required on the site. Daily visits to the control building by maintenance personnel in four-wheel drive or conventional passenger vehicles will occur following the commissioning phase.	Operation
	Any diesel or oil stored on-site will be held within an appropriately bunded location within the substation building.	Operation
	Health and safety will also be controlled as set out in the construction phase.	Operation

Environmental Subject Area	Environmental Commitment	Timing
	In the unlikely event that a major turbine component requires replacement, vehicles will use the new access tracks and crane pads.	Operation
	The Applicant will implement an Operation Environmental Management Plan (OEMP). Similar to CDEMP the OEMP will set out how the Applicant will manage and monitor environmental effects throughout operation.	Operation
	The OEMP will be developed in consultation with SNH, SEPA and DGC and will include but not be limited to: - details on the track, water crossings and turbine maintenance; - the control and monitoring of noise; - the control and monitoring of surface and groundwater; - a pollution prevention plan and a pollution incidence response plan; - details of how the Applicant will abide by the local and national legislative requirements e.g. The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended 2013); - an operational Peat Management Plan; and - a Habitat Management Plan and relevant protected species management plans.	Operation
Decommissioning	The operational lifespan of the Proposed Development would be approximately 28 years, after which it would be appropriately decommissioned.	Decommissioning
	During the decommissioning phase, vehicles would access the site by the same routes used for delivery and construction.	Decommissioning
	Either the restored temporary construction compound would be re-established or a new construction compound would be developed as agreed with DGC at the appropriate time, to temporarily store decommissioned plant and equipment. The nacelles and blades would be removed using cranes situated on the crane pads as previously constructed. The towers would then be dismantled.	Decommissioning
	All components would be removed from the site for disposal and/or recycling as appropriate and in accordance with regulations in place at that time.	Decommissioning
	If required, exposed parts of the concrete foundations would be ground down to below sub-soil level, however, the remaining volume of the foundations would remain in situ.	Decommissioning
	The turbine base areas, onsite access tracks, temporary compounds and crane pads would be returned to their original appearances unless further consents were granted.	Decommissioning
	The CDEMP will be updated prior to decommissioning by the Contractor to reflect current legislation and policy and will be agreed with DGC, SNH, SEPA and Historic Environment Scotland.	Decommissioning
6. Landscape and Visual		
Landscape and Visual	No specific mitigation has been proposed for landscape and visual effects however the design of the turbine layout took into consideration potential landscape and visual effects and sought to minimise these.	Pre-construction

Environmental Subject Area	Environmental Commitment	Timing
Mitigation by Design - Turbine	Repeated revision to the location of each turbine in order to improve relationship with the underlying landform and key receptor groups.	Pre-construction
Mitigation by Design - Turbine Visibility	Revisions to the proposed layout to close gaps in the turbine array and ensure that Proposed Development is presented as a cohesive and legible single array of turbines from key viewpoints. Revision of turbine model to create a more balanced and well-proportioned image.	Pre-construction
Mitigation by Design - Access Tracks	Relocation of the access for abnormal loads and HGVs away from Head of the Valley road, to minimise disruption to local residents. Existing forestry tracks used for access where possible. Field boundary walls and stream crossings avoided where possible. Track locations and direction modified to suit contours in order to address potential visual effects. Mounding profiles modified from engineered layout to minimise potential visual effects. Re-vegetation and planting strategy agreed with ecologist. Construction materials to be brought in from off-site locations such as existing mineral and coal mining workings to remove need for borrow pits.	Pre-construction
Mitigation by Design - Lighting	Shields to be installed around aviation lights on met masts to reduce visibility within the wider landscape.	Construction and decommissioning
Mitigation by Design - Tree Removal	Tree felling to be kept to a minimum. Re-vegetation and planting strategy agreed with ecologist to suit variety of species found on site.	Construction and decommissioning
Mitigation by Design – Stream Crossings	Number of stream crossings to be kept to a minimum. Temporary bridging structure to be removed upon completion of access track formation. Redundant sections of track to be re-vegetated in accordance and agreed with ecologist. Permanent crossing to be provided and constructed in accordance with the requirements of any planning consent and associated conditions attached to deemed planning permission.	Construction/Operation
Mitigation by Design – Construction Compound	One of the construction compound is located within plantation forest where it is possible to minimise potential effects on views from sensitivity receptors nearby.	Pre-construction
CDEMP	The location of infrastructure (including turbines and all other components) favoured areas of rough grassland and avoided more sensitive habitats and landscape features such as watercourses, small scale topographical features and deep peat.	Construction and decommissioning
7. Ecology and Nature Conservation		
Generic Mitigation	An Ecological Clerk of Works (ECoW) will oversee the implementation of mitigation.	Construction and decommissioning

Environmental Subject Area	Environmental Commitment	Timing
	Not more than 12 months prior to construction of the Proposed Development, the Applicant will engage a Suitably Qualified Ecologist (SQE) to undertake a series of repeat ecological surveys to update the baseline information reported in chapter 7. The aim of these surveys will be to provide up to date information in order to finalise the mitigation proposals, in addition to completing a final check prior to construction for protected species.	Pre-construction
	Regular ecological toolbox talks will be given to all construction personnel on the potential presence of protected species and any measures that need to be undertaken should such species be discovered during construction activities	Construction and decommissioning
	Adherence to SEPA Pollution Prevention Guidance (PPG) in respect to working in and around watercourses.	Construction and decommissioning
	Avoidance of unnecessary disturbance to habitats by minimising the extent of ground clearance and other construction practices as far as practicable.	Construction and decommissioning
	Plant and personnel will be constrained to a prescribed working corridor through the use of temporary barriers, thereby minimising damage to habitats and potential direct mortality and disturbance to species.	Construction and decommissioning
	Works compounds, storage sites and access tracks will avoid, as far as practicable, areas of woodland and wetland or any other habitat identified as being of ecological value by the ECoW.	Construction and decommissioning
	Reduction of in-channel works and translocation of channel substrate.	Construction and decommissioning
	Adherence to best practice guidance with respect to culvert design.	Construction
	Any trenches dug during construction operations will be covered at the end of each day and/or mammal ramps will be positioned in such a way that trapped mammals may be allowed to escape.	Construction and decommissioning
	Regular ecological toolbox talks will be given to all construction personnel on the potential presence of protected species and any measures that need to be undertaken should such species be discovered during construction activities.	Construction and decommissioning
	In order to facilitate restoration, disturbed ground will be restored as soon as practicably possible using materials removed during the construction of access tracks, excavation of cable trenches and turbine foundations. To achieve this any excavated soil will be stored in such a manner that is suitable to facilitate retention of the seed bank. This will aid site restoration and help conserve the pre-construction floristic interests at the site.	Construction and decommissioning
	Where re-seeding is required then seed mixes of local provenance will be used.	Construction and decommissioning

Environmental Subject Area	Environmental Commitment	Timing
	As part of the Proposed Development, it will be necessary to develop and implement a Site Restoration Plan (SRP) as part of the CDEMP to ensure those areas of habitat that have been temporarily lost through development can regenerate.	Construction and post-construction
	A Habitat Management Plan (HMP) within the CDEMP will be produced prior to construction. Detailed Species Management Plans will accompany the HMP prior to construction and it is proposed that this will be addressed through an appropriately worded condition.	Pre-construction
Terrestrial Habitats	3.73. ha of coniferous woodland will be permanently lost to the Proposed Development. In recognition of these losses and in order to ensure compliance with The Scottish Government's Policy on Control of Woodland Removal (Forestry Commission Scotland, 2009), and in response to concerns raised by the Forestry Commission Scotland, it is proposed, to replant approximately 10.47 ha of low canopy species within the Libry Moor plantation and approximately 0.3 ha of new broadleaved woodland within the remaining Proposed Development site in proximity to the Polneul Burn where there is already a small mix of woodland species. These areas will be planted at a density of 400-800 stems per hectare and be designed unevenly, and will include a proportion of open habitats to encourage a mosaic of woodland/scrub and grassland habitats to develop which are of value to priority species such as reptiles, bats and birds, in particular black grouse. As part of the enhancement proposals, the following species of local provenance will be used: ▪ downy birch (15-30%) ▪ rowan (15-20%) ▪ hawthorn (40-50%); ▪ willow (15-30%); ▪ alder (15-20%); ▪ aspen (15%); and ▪ Scots pine and larch (5%).	Pre-construction, construction and post-construction
	In respect to the temporary and permanent loss of grassland during construction and operation, no additional specific mitigation is proposed due to the limited value of these habitats (in respect to marshy grassland) and small area affected (in respect to all other grassland habitats), coupled with the extent of similar unaffected habitats both within the Proposed Development site and wider area. Notwithstanding this, the preservation of the seed bank through the appropriate storage and re-instatement of soil as part of site remediation works following a conclusion to construction will ensure the regeneration of acid and neutral grassland habitats although it is accepted these habitats will remain of a semi-improved character.	Construction and operation

Environmental Subject Area	Environmental Commitment	Timing
Flush, Blanket Bog and Dry Modified Bog	In order to mitigate the loss of the above habitats and achieve a significant beneficial conservation/biodiversity gain through construction and operation of the Proposed Development, at least 25 ha of dry modified and blanket bog habitat will be subject to extensive habitat and wider hydrological management. Detailed proposals in this respect will be included as an integrated Habitat Management Plan (HMP) within the CDEMP for the Proposed Development, following discussion and agreement with stakeholders including SNH and SEPA. As part of the HMP, habitat enhancement/management proposals within the Proposed Development will include the management and control of the water table, and control of burning and grazing.	Construction and operation
	Efforts will be made to elevate the water table within the Proposed Development through the installation of artificial dams, weirs and sluices. Although similar efforts on other operational wind farm sites have obtained mixed results (Peter Robson, Scottish Power, pers. comm. Graham Rankin, 12 September 2012), such proposals to raise and control the water table will need to be carefully considered to ensure the structural integrity of access tracks and other infrastructure (such as turbine foundations) are not compromised. As a consequence, a detailed hydrological assessment of the ecological proposals will be undertaken as part of the HMP to ensure infrastructure is not compromised. In addition, the assessment will also provide hydrological information to ensure that habitat management proposals are focussed in areas where greatest achievement is feasible.	Construction and operation
	In addition to efforts to manage the Proposed Development site's hydrology and re-wet former blanket bog habitats, the control of grazing, and to a lesser extent burning will be undertaken within the above 12 ha management area as part of the above proposals.	Construction and operation
Monitoring and Management	The HMP will outline a programme and methods for the regular monitoring and management of restored/created habitats, and review of the HMP to allow for adjustments in management proposals. These measures will ensure the long-term effectiveness of the mitigation proposals, in addition to ensuring that new areas of woodland/scrub do not counter-affect the productivity of the Proposed Development through, for example, reduced wind yield.	Construction and operation
Badgers	Proposed mitigation for badger is provided in Confidential Appendix 7.5.	
Otter	A pre-construction (and pre-decommissioning) survey of all suitable habitats for otter (including riparian and terrestrial habitats) will be undertaken both within and up to 250 m outside the Proposed Development boundary in order to determine whether any new resting places (holts, couches and/or hovers) have been created and are in active use by otters, in particular for breeding. The results of this survey will be fed into the CDEMP for the Proposed Development. This recommendation will ensure compliance with the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).	Pre-construction and pre-decommissioning

Environmental Subject Area	Environmental Commitment	Timing
	A Construction Method Statement (CMS) will be produced. This CMS will include plans and procedures incorporating drainage management, accident management, water quality monitoring and waste storage plan to ensure that water quality is a priority during the construction.	Pre-construction
	Should any resting sites be identified within 50 m of any working areas during the construction or decommissioning period, all works must cease until the ECoW is contacted and a licence is obtained from SNH.	Pre-construction and construction
	Construction and decommissioning will avoid periods of peak otter activity which are largely taken to include the hours between dusk and dawn.	Construction and decommissioning
	No obstacles/obstructions will be placed either in stream or bankside that may impede the safe passage of otters throughout the site outside of construction or decommissioning periods, or obstruct access to any potential resting sites.	Construction and decommissioning
	All excavations will be covered at the end of the working day and/or escape ramps incorporated to allow any trapped animals who might fall into trenches escape on their own accord. All exposed pipes and trenches will be checked each morning prior to starting construction activities. If trapped animals are found an experienced ecologist or specialist animal handler will be contacted to remove any distressed animals.	Construction and decommissioning
Bats	An assessment of any trees or suitable structure for bats will be undertaken prior to felling/removal to determine whether any new roost features have developed and are in use by bat species. The results of this survey will be communicated to the contractor by the ECoW and fed into the CDEMP for the Proposed Development. This commitment will ensure compliance with the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).	Pre-construction and pre-decommissioning
	It is proposed to undertake addition felling of the coniferous plantation around Turbine T24 such that a woodland edge is established at least 70m for the turbine.	Construction
	The existing trees along the eastern boundary of the plantation will be retained and where this is not practicable, the re-enforcement, enhancement and creation of new woodland edge habitats will be undertaken as outlined above under Terrestrial Habitats.	Construction
	The use of lighting will be minimised as far as practicable but if required directional lighting will minimise disturbance associated with light spillage along woodland edge and into woodland blocks or other high value habitats such as freshwater features located adjacent to the working area.	Construction and decommissioning
	Additional creation of roosting habitats will be undertaken through the provision of bat boxes within areas identified by the HMP at an approximate ratio of ten boxes per sq. km. The location of these will be confirmed within the HMP.	Post-construction
Amphibians and Reptiles	Log and stone piles will be created to form new hibernacula to compensate for the loss of existing structures within the site.	Construction

Environmental Subject Area	Environmental Commitment	Timing
	Mitigation will be discussed and developed prior to construction through detailed consultation with SNH and will be outlined within the integrated HMP.	Pre-construction
	Animals will be encouraged to move to other undeveloped areas of the Proposed Development on their own accord through improving the suitability of these areas for such species coupled with a reduction in suitability of habitats to be developed through the removal or sequential reduction in vegetation height.	Construction and decommissioning
	An ecological watching brief will be provided during the hibernation period (October to March - dependent upon temperature) to ensure that ground breaking works (if undertaken at this time of year) minimise disturbance and mortality effects to reptiles and amphibians and therefore are legally compliant under the Wildlife and Countryside Act 1981 (as amended).	Construction and decommissioning
	If ground breaking works do occur during the hibernation period then measures to reduce impacts will be considered such as the use of bog mats to reduce ground pressure limiting potential to cause injury to subterranean animals.	Construction and decommissioning
	Any habitat considered as being of higher value for reptiles will be clearly demarcated (i.e. with clearly visible tape) to prevent any construction vehicles accidently straying into these habitats.	Construction and decommissioning
Freshwater fish	The HMP will include measures to prevent sedimentation of water courses and reduce potential for pollution incidents, provision of spill kits, and outline on-going monitoring of water quality and fish stocks.	Pre-construction
	Where bridging is not feasible and culverts are required, the length of culverts will be kept to a practical minimum and should not alter the gradients markedly from existing conditions so as to avoid altering flow patterns and resulting habitat loss and to avoid excessive siltation or erosion.	Pre-construction
	Culverts will be bottomless to allow natural bed and bank profiles to remain, where practicable, which will assist in the reduction of the risk of erosion through increased water velocities.	Pre-construction
	Construction works at the identified watercourse crossings will be undertaken in such a way that freshwater fish will be able to move up and downstream of the proposed crossing during construction and operation of the Proposed Development.	Construction and decommissioning
	In-channel works will avoid the salmonid spawning and salmonid egg incubation periods (October - May inclusive) which coincides with the majority of the European eel migration period (late winter to early summer).	Construction and decommissioning
	Run-off will be intercepted and treated according to SEPA PPG guidelines.	Construction and decommissioning
	Culverts will be maintained to an adequate level thereby ensuring continual operation during operation of the Proposed Development. Blocked or poorly screened culverts may impede the migration of fish leading to greater fragmentation effects. In addition, culverts will remain unobstructed at night.	Post-construction
	The CDEMP and HMP will include measures to prevent sedimentation of watercourses and reduce potential for pollution incidents, provision of spill kits, and outline on-going monitoring of water quality and fish stocks.	

Environmental Subject Area	Environmental Commitment	Timing
8. Ornithology		
Generic measures	Not more than 12 months prior to construction of the Proposed Development, the Applicant will engage a Suitably Qualified Ecologist (SQE) to undertake a series of repeat ecological surveys to update the baseline information reported in the Ecological Impact Assessment (EcIA). The aim of these surveys would be to provide up to date information in order to finalise the mitigation proposals in addition to completing a final check prior to construction for protected species and would be discussed and agreed with Scottish Natural Heritage (SNH).	Construction, operation and decommissioning
	Avoidance of unnecessary disturbance to habitats by minimising the extent of ground clearance and other construction practices as far as practicable.	Construction and decommissioning
	Plant and personnel will be constrained to a prescribed working corridor through the use of temporary barriers, thereby minimising damage to habitats and potential direct mortality and disturbance to species.	Construction and decommissioning
	Works compounds, storage sites and access tracks will avoid, as far as practicable, areas of woodland and wetland or any other habitat identified as being of ecological value by the ECoW.	Construction and decommissioning
	Regular ecological toolbox talks will be given to all construction personnel on the potential presence of protected species and any measures that need to be undertaken should such species be discovered during construction activities.	Construction and decommissioning
	As part of the Proposed Development proposals, a Site Restoration Plan (SRP) as part of the CDEMP will be developed and implemented to ensure the regeneration of those areas of habitat that have been temporarily lost through development.	Construction, operation and decommissioning
	In order to facilitate restoration, disturbed ground will be restored as soon as practicably possible using materials removed during the construction of access tracks, excavation of cable trenches and turbine foundations. To achieve this any excavated soil will need to be stored in such a manner that is suitable to facilitate retention of the seed bank.	Construction
Black grouse	A 750 m exclusion zone for construction will be adhered to during the lekking season (April to mid-May inclusive).	Construction and decommissioning
	During the construction phase a temporal exclusion of works will also be established whereby no works will be undertaken from one hour before sunset to one hour after sunrise within the 750m exclusion zone.	Construction and decommissioning
	The Contractor will seek to ensure all vegetation clearance will be undertaken outwith the breeding season (April – mid-May). If this is not possible the adverse impacts will be reduced by undertaking detailed surveys of the area earmarked for clearance. Should a nest be located at this time the ECoW will enforce a suitable stand-off area in which no works will take place.	Construction and decommissioning

Environmental Subject Area	Environmental Commitment	Timing
	The Applicant will provide detailed proposals within the HMP, to be drafted in consultation with SNH and RSPB, prior to construction.	Construction and decommissioning
Woodland bird assemblage	All vegetation clearance will be undertaken out with the bird breeding season, where possible. If this is not possible the adverse impacts will be reduced by undertaking detailed surveys of areas earmarked for clearance.	Construction and decommissioning
	Should a nest be recorded an ECoW will enforce a suitable stand-off area in which no works will take place.	Construction and decommissioning
Waders	Improvement of habitat in the south east of the Proposed Development, in which both curlew territories are located, through the HMP.	Operation
	All vegetation clearance will be undertaken out with the bird breeding season, where possible. If this is not possible the adverse impacts will be reduced by undertaking detailed surveys of areas earmarked for clearance.	Construction and decommissioning
	Should a nest be recorded an ECoW will enforce a suitable stand-off area in which no works will take place.	Construction and decommissioning
9. Hydrology, Hydrogeology and Geology		
Peat reuse and management / Peat Slide Risk	Full intrusive ground investigations and topographical surveys will be undertaken across all areas where infrastructure is proposed, prior to any construction taking place. The results of these intrusive ground investigations and surveys will inform the detailed design of the access tracks and turbine foundations. The results of the ground investigations will also inform any micrositing of turbines or access tracks once a full understanding of the underlying soil and bedrock conditions are known, including aspects such as depth to rockhead, nature of rockhead, bedrock angle and soil permeability. The investigations and surveys will also inform the use of appropriate drainage design and any areas of geotechnical risk that require additional site specific mitigation measures, such as protective fencing along watercourses or identification of areas inappropriate for stockpiling of material.	Pre-construction
	Where peat is required to be excavated, it will be reused and managed in line with the guidance document, 'Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste' (a joint publication by Scottish Renewables and SEPA, 2012).	Construction
	Peat which has been excavated for construction of the Proposed Development will be reused on site. The majority of excavated peat will be used to reinstate the area of felled plantation woodland, including placement within land drains throughout the site.	Construction
	Peat turves will be used to reinstate constructed road verges and the edges of constructed infrastructure.	Construction
	A detailed Peat Management Plan will be prepared by the Applicant prior to construction. This will follow the principles set out in the Scottish Renewables/SEPA 2012 guidance and provided to SEPA for comment and approval prior to works beginning.	Pre-construction

Environmental Subject Area	Environmental Commitment	Timing
Pollution impact from Silt-laden runoff	The Contractor will produce a CDEMP with specific reference to the SEPA 'Guidelines for Water Pollution Prevention from Civil Engineering Contracts' and 'Special Requirements'. It will include a construction method statement which shall include: - A detailed breakdown of the phasing of construction activities. - A pollution risk assessment of the site and the proposed activities. - Identification of all Controlled Waters that may be affected by the works and temporary discharge points to these watercourses. - Planning and design of appropriate pollution control measures during earthworks and construction. - Management of the pollution control system, including dewatering of excavations away from watercourses. - Contingency planning and emergency procedures. - On-going monitoring of construction procedures to ensure management of risk is maintained.	Pre-construction and pre-decommissioning
	All earth moving works or similar operations will be carried out in accordance with BSI Code of Practice for Earth Works BS6031: 1981.	Construction and decommissioning
	Site management will check the local weather forecast daily and prime all site staff to ensure that everyone is aware of their responsibilities to maintain the pollution control system during wet weather.	Construction and decommissioning
	Where topography dictates that working platforms are needed, these will be formed to ensure that surface water drains away from watercourses.	Construction and decommissioning
Pollution impact from chemical contained runoff	All fuel and other chemicals will be stored in accordance with best practice procedures, including in a designated fuelling site located at a safe distance from existing watercourses and in appropriate impermeable bunded containers/areas which will be defined within the CDEMP. They will be designed to capture any leakage, whether from a tank or from associated equipment such as filling and off-take points, sighting gauges, etc., all of which will be located within the bund.	Construction and decommissioning
	Oil booms and soakage pads will be maintained in all work areas and spill kits kept in all vehicles to enable a rapid and effective response to any accidental spillage or discharge. All construction staff will be trained in the effective use of this equipment.	Construction and decommissioning
	Construction vehicles and plant will be regularly maintained and all maintenance, fuelling and vehicle washing will be undertaken on appropriate impermeable surfaces away from watercourses.	Construction and decommissioning
	The Contractor will develop a method statement to address the transport, transfer, handling and pouring of liquid concrete at foundations.	Construction
	Cement, grout and unset concrete will not be allowed to enter the water environment. No operations involving concrete transfer between vehicles or into vehicles will take place within 30 m of watercourses and waterbodies.	Construction and decommissioning
	All vehicles used for delivery of concrete will only be washed out at locations agreed with SEPA. Excess concrete or wash-out liquid will not be discharged to drains or watercourses on site or at compounds. Drainage from	Construction and decommissioning

Environmental Subject Area	Environmental Commitment	Timing
	washout facilities will be collected and treated or removed to an appropriate treatment point/licenced disposal site.	
	The requirement for dewatering will be minimised in all locations by timely and efficient excavation of the foundation void and subsequent concrete pouring and backfilling.	Construction and decommissioning
Soil compaction	The proposed access tracks have been designed to use the shortest area of track possible, while having regard for topographical constraints. The tracks will be designed to spread load over the underlying soils thus minimising compaction of soils.	Construction, operation and decommissioning
Integrity of banking	The Polneul Burn fence will be maintained during construction to ensure there is no incursion towards the burn, other than to construct the bridge crossing and remove the existing culvert. The Polmeur Burn will be fenced in the areas adjacent to construction areas. Clearly labelled 'no entry' signs shall be placed on the fences and all site staff and visitors will be briefed on the importance of these watercourses and field drains.	Construction and decommissioning
	Field drains will be marked on site adjacent to construction areas using coloured pegs to ensure that construction staff are aware of their presence.	Construction and decommissioning
Direct discharge of untreated foul drainage	Welfare facilities will either connect directly to the foul sewer, self-contained storage tanks or to a septic tank, subject to approval from Scottish Water and SEPA.	Construction and decommissioning
	If self-contained or septic tanks are to be used, these will be maintained and emptied on a regular basis by a suitably licensed contractor.	Construction and decommissioning
Geological features within the SSSI	All construction activities will be undertaken in line with the agreed CDEMP.	Construction and decommissioning
	A detailed method statement for construction of the watercourse crossing within the SSSI will be provided to SNH prior to works being undertaken. No unauthorised incursion into the SSSI, other than at the location of the bridge and culvert crossings will be permitted.	Construction and decommissioning
Surface water drainage	A detailed Drainage Strategy (DS) will be developed and agreed with SEPA and DGC. The DS will detail the site drainage design, including the type of surface to be used for the access track, the soft engineering and habitat enhancement measures proposed to slow surface water flows and any necessary ponds, swales, cross drains and bunds to ensure that runoff from hard surfaces will be controlled.	Pre-construction
Acidification	Potential effects from acidification will be mitigated through an appropriately designed drainage system to be agreed with DGC and SEPA.	Pre-construction
Fluvial geomorphology	The detailed design for the watercourse crossings, and the requirements for CAR authorisations or licences will be agreed with SEPA prior to construction in order to ensure that impacts are minimised and acceptable to SEPA.	Pre-construction

Environmental Subject Area	Environmental Commitment	Timing
10. Cultural Heritage		
Preservation in Situ	Two sheepfolds (**3** and **4**) which lie in close proximity to the access track between Turbines T10 and T13 will be marked-off to prevent accidental damage occurring to them during construction activities in the vicinity.	Construction and decommissioning
	Where the access track crosses the Deil's Dyke (**6a**) the required breach in the alignment of the dyke will be kept to a minimum width necessary to facilitate the passage of the track and associated drainage ditch. This section will be subject to additional mitigation.	Construction and decommissioning
Recording, Excavation and Post-Excavation	Where the Deil's Dyke (**6a**) is to be crossed by the western site access track this section will be subject to archaeological investigation. Archaeological sections of the bank (and any associated ditch) will be excavated and recorded, by photography and drawings and the dyke where it is to be breached will be carefully removed under archaeologically controlled monitoring; the purpose being to monitor the dismantlement and recover any artefacts that may come to light.	Pre-construction
	If important discoveries are made during archaeological mitigation works and preservation *in situ* is not possible, provision will be made for an appropriate level of recording that may include excavation, where necessary, of any archaeological remains encountered. Such provision will also include the consequent production of written reports on the findings, with post-excavation analyses and publications of the results of the works, as appropriate. This will be offset mitigation and although it will not reduce the level of significance of the effect, it will fully compensate for the loss of any archaeological value that the affected remains may hold.	Construction and decommissioning
Construction	Written Guidelines will be issued for use by all construction contractors, outlining the need to avoid causing unnecessary damage to known sites. The Guidelines will contain arrangements for calling upon retained professional support in the event that buried archaeological remains of potential archaeological interest (such as building remains, human remains, artefacts etc) should be discovered in areas not subject to archaeological monitoring. The guidance will make clear the legal responsibilities placed upon those who disturb artefacts or human remains.	Construction and decommissioning
Decommissioning	Upon decommissioning of the Proposed Development tracks will be removed and turbine bases and crane hard-standings restored; the access required and works required being similar to those undertaken during the construction phase. The site infrastructure (access tracks and crane hard-standing) will be used in the dismantlement and removal of the turbines.	Decommissioning
	All protective measures (marking off) proposed during the construction phase mitigation will be put in place during and throughout the decommissioning phase to ensure the preservation of important remains *in situ*. Marking out will be removed following the completion of the removal of all infrastructure elements.	Decommissioning

Environmental Subject Area	Environmental Commitment	Timing
11. Noise and Vibration		
Construction and decommissioning noise	Implementation of EC Directives and UK Statutory Instruments that limit noise emissions of construction plant.	Construction and decommissioning
	Implementation of guidance in BS 5228-1: 2009+A1:2014.	Construction and decommissioning
	Implementation of the Section 60 of the Control of Pollution Act 1974 to control environmental noise on construction sites	Construction and decommissioning
	Adoption of Best Practicable Means (as defined in Section 72 of the Control of Pollution Act 1974). This will include the following as appropriate: - any compressors will be silenced or sound reduced models fitted with acoustic enclosures; - all pneumatic tools will be fitted with silencers or mufflers; - the majority of deliveries will be programmed to arrive during normal working hours only; - care will be taken when unloading vehicles to minimise noise; - delivery vehicles will be routed to minimise disturbance to local residents; - delivery vehicles will be prohibited from waiting within or in the vicinity of the site with their engines running; - all plant will be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise; - all plant will be sited so that noise impact at nearby noise-sensitive receptors is minimised; - local hoarding, screens or barriers will be erected as necessary to shield particularly noisy activities; and - working hours will be between 0800 and 1800 all day.	Construction and decommissioning
	Night time deliveries will be minimal and will only be undertaken with special consideration. Care will be taken to minimise noise when unloading vehicles.	Construction and decommissioning
	All requirements will be included in a Construction and Decommissioning Environmental Management Plan (CDEMP).	Pre-construction and pre-decommissioning
Construction Traffic Noise	General construction traffic, arrivals and departures would be timed such that they would be during the working daytime and not at night. Construction traffic would be prohibited from un-necessary idling within the site boundary or at the site access points.	Construction
	Access directly onto the A76(T), which is removed from local receptors, would be used by all HGV traffic. Whilst site access via the C125N would be used by only cars and LGVs.	

Environmental Subject Area	Environmental Commitment	Timing
	These mitigation measures would be committed by inclusion within the CDEMP and the proposed Construction Traffic Management Plan (CTMP).	
Operational noise from turbines	The various measures available for the control of noise from wind turbines include the following: ▪ selection of appropriate turbines; ▪ selection of appropriate turbine locations; ▪ use of turbine management schemes, e.g. to back rate turbine operations under certain wind conditions; and ▪ financial involvement of local residents where appropriate (ETSU-R-97 states that "*the level of disturbance or annoyance caused by a noise source is not only dependent upon the level and character of the noise, but also on the receivers attitude towards the noise source in general*", going on to state that "*if the residents at the noise-sensitive properties were financially involved in the project then higher noise limits will be appropriate.*").	Pre-construction
	A detailed apportionment of the ETSU-R-97 noise level limits will be determined for conditioning purposes, thereby ensuring a commensurate level of protection against wind turbine noise for local residents.	Operation
	The final turbine mode will be subject to a tendering process, and selected to ensure compliance with an appropriate limit apportionment, by operation of noise management scheme where necessary	Operation
Fixed (Non turbine) Plant Noise	Any fixed plant will, where necessary, include a noise mitigation scheme to ensure that the derived plant noise limits will be achieved. This will include measures such as appropriate plant selection, building fabrication, plant enclosures and appropriate plant orientations.	Construction
	If necessary, the derived noise level limits could be incorporated into an appropriately worded conditional planning approval to ensure a commensurate level of protection against fixed plant noise for existing local residents.	Construction
12. Traffic and Transport		
Abnormal Loads and Construction Traffic	Advance warning signs shall be installed on the approaches to the affected road network. Temporary signage advising drivers that abnormal loads and construction traffic will be operating shall be erected on the local road sections of the route.	Construction

Environmental Subject Area	Environmental Commitment	Timing
	A request will be made to Transport Scotland that Variable Message Signs (VSM) warn drivers of abnormal loads operating on the motorway and trunk road sections of the route to warn them of possible delays and to allow them to consider alternative routes if possible.	Construction
	An advance escort will be in place to warn oncoming vehicles of abnormal loads convoy, with one escort staying with the convoy at all times. The escorts and convoy will remain in radio contact at all times where possible.	Construction
	Abnormal loads will be no more than three HGVs long, to permit safe transit along the delivery route and to allow limited overtaking opportunities for following traffic where it is safe to do so.	Construction
	A police escort will be implemented where necessary.	Construction
	Convoy travel times will be agreed with the police. Typical delivery times for similar projects has seen the early morning periods used in constrained sections, as traffic levels are generally lighter than those found in the afternoon.	Construction
	A Construction Traffic Management Plan (CTMP) will be implemented and agreed prior to construction with DGC.	Pre- construction, construction and decommissioning.
13. Socio-Economic, Tourism and Recreation		
Socio- Economic	The proposed Development will not deliver any significant socio-economic effects, but negligible to moderate beneficial effects. Socio-economic mitigation is therefore not required.	
Tourism and Recreation	Mitigation has been implemented already through appropriate iterations in design as set out in Chapter 2 of this EIAR.	Pre-construction
14. Shadow Flicker		
Shadow Flicker	The Applicant proposes that prior to the erection of the first turbine a written scheme (known as the 'Wind Farm Shadow Flicker Protocol') shall be submitted to and approved in writing by DGC.	Pre-construction.
15. RAA		
No specific mitigation has been proposed for residential visual amenity effects however the design of the turbine layout took into consideration potential visual amenity effects and sought to minimise these.		
16. Aviation, Radar and Telecommunications		
Aviation, Radar and Telecommunications	A radar mitigation scheme will be implanted and maintained for the lifetime of the Proposed Development.	Construction, operation and Decommission

Environmental Subject Area	Environmental Commitment	Timing
	Infrared aviation lighting will be installed at the highest practicable point.	Construction
17. Forestry		
Forestry	A Forestry Management Plan will be submitted to the Forestry Commission Scotland to support the maintenance and expansion of forest cover in Scotland in adherence with the Scottish Government's Policy on Control of Woodland Removal.	Pre-construction
	The Forestry Management Plan will last for a period of 20 years. Following this time, the Applicant will undertake a review of the plan and re-consult with SNH, SEPA, DGC and FCS to agree a new plan for the remainder of the operational life of the Proposed Development.	
	The Forestry Management Plan will include the following: ▪ 3.73 ha of woodland will be felled and not re-planted to accommodate the Proposed Development infrastructure. ▪ 0.3 ha of woodland will be felled and replanted with low stature trees and shrub woodlands. This will reduce wind turbulence to the turbines while improving the visual effect of the felling. The species will also be used to improve black grouse habitat and introduce broader species diversity to the site. The planting will be at 1100 stems per ha, however the density will vary across the site. The areas closest to the turbine location will be planted at a lower density with lower stature broadleaved species. The density and the species mix will increase as the planting moves towards the remaining conifer crop to create a more effective interface between the woodland and turbine locations. The replanting will be carried out using the following species: - 40% downy birch (*Betula pubescens*); - 12% rowan (*Sorbus aucuparia*); - 12% hawthorn(*Crataegus monogyna*); - 8% oak (*Quercus petraea*); - 6% hazel (*Corylus avellana*); - 5% willow (*Salix sp.*); and - 5% Scots pine (*Pinus sylvestris*).	Proposed development lifetime

Environmental Subject Area	Environmental Commitment	Timing
	▪ The remaining conifer plantations will be managed as commercial woodlands, as per the existing forestry management arrangements undertaken by the landowner. ▪ 10.47 ha of native shrubs and trees (of similar species and percentages as the re-planted detailed above) will be planted in the areas identified in Figure 17.3 of this EIAR, in group of single species to best match the soils. The density will be 1100 trees per hectare with varied spacing. The Scots pine will be planted in single species groups of a minimum of 30 trees. This planting will avoid peat with a depth of greater than 50 cm and avoid the Site of Special Scientific Interest (SSSI) along the Polneul Burn and its tributaries. The species will also be used to improve black grouse habitat and introduce broader species diversity to the site. ▪ Existing areas of broadleaved woodland will be retained and maintained. ▪ The felling required for the construction of the Proposed Development will produce some timber that can be sold as small roundwood and stakes. The remainder of the timber will be chipped and removed from the site. ▪ All new and re-planting will be established by straight planting or screef planting as considered necessary and individually protected by 1.2 m tubes and stakes, with the exception to the Scots pine which will be protected by 0.6 m tubes and stakes. Potassium and phosphorus fertiliser will be added at the time of planting. ▪ As grazing will resume on site during operation of the Proposed Development stock fencing will be placed around the planting and weeding and on-going maintenance will take place as necessary to ensure successful establishment. Where possible, dead trees will be maintained on-site to encourage biodiversity. ▪ The areas of hybrid larch on-site will be felled and replaced with native broadleaf as they are likely to die from Phytophthora raorum which is increasingly affecting larch in Scotland. The sitka spruce / hybrid larch mix will probably also suffer from P. ramorum, but unless a plant health order is issued to fell the trees, the dying larch will be considered a thinning of the crop for the benefit of the remaining sitka spruce.	

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