Chapter 16
Schedule of Commitments

SCOTTISHPOWER RENEWABLES

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Chapter 16
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15.1 Introduction

1. The Schedule of Commitments provides a summary of good practice, mitigation measures and commitments that have been proposed throughout the Environmental Impact Assessment (EIA) Report to prevent, reduce or offset the effects of the proposed Development on the environment.

2. Good practice and mitigation measures have been integral to the design evolution of the proposed Development as described in **Chapter 2: Site Description and Design Evolution**. A series of environmental and technical constraint lead design reviews were undertaken to minimise potential significant environmental impacts prior to finalising the final design of the proposed Development. Areas which were examined in depth include landscape and visual constraints, peat, sensitive habitats, cultural heritage and hydrological constraints.

16.1 Schedule of commitments

3. The mitigation measures and best practice commitments in **Table 16.1** are those which would be applied prior to construction, during construction and during operation of the proposed Development. A number of these measures are embedded mitigation, undertaken through good practice and to adhere to relevant legislation during all stages of the proposed Development.

16.2 Overall statement of significance

4. Provided that the proposed mitigation measures are successfully implemented, the residual effects related to most environmental disciplines would not be considered significant effects in the context of the EIA regulations, with the exception of landscape and visual effects and traffic and transport impacts.

5. All renewable energy developments incorporating wind turbines are likely to give rise to some significant landscape and visual effects. In the case of the proposed Development, the significant effects on landscape character and visual amenity would be contained within a relatively moderate area (approximately 6 km around the Site). It is considered that the landscape can accommodate the proposed Development, alongside nearby windfarms including those operating and those which are in the planning process as either submitted or consented schemes.

Table 16.1: Schedule of commitments

EIA Report Chapter	Matter / effect requiring mitigation	Timing / phase	Mitigation Measure
Chapter 3: Description of proposed Development	Environmental management	Construction	The developer would engage an Environmental Clerk of Works (ECoW) onsite during the construction phase. The Principal Contractor (PC) will ensure construction activities are carried out in accordance with the mitigation measures outlined in this EIA Report and any planning conditions, this will be monitored by ScottishPower Renewables (SPR) and the ECoW. An outline Construction Environmental Management Plan (CEMP) is provided as **Technical Appendix 3.1.** This sets out SPR requirements for inclusion within a detailed CEMP and other documents including guidance and best practice for adoption during construction of the proposed Development. The outline CEMP provides an overview of the following aspects of environmental management required to mitigate any potential environmental incidents during construction: • surface water management; • oil and chemical delivery and storage; • wastewater and water supply monitoring and control; • waste and resource management; • air, noise, vibration, land and flora and fauna; • emergency environmental spill response; • spill kits; • method statements and risk assessments; andtraffic and transport. To ensure all mitigation measures outlined within this EIA Report are carried out onsite, contractors will be required to develop a Construction Environmental Management Plan (CEMP) which will form an overarching document for all site management requirements, including: • a Construction Traffic Management Plan (CTMP); • a Construction Methodology Statement (CMS) • a Pollution Prevention Plan (PPP) (including monitoring, as appropriate); • a Site Waste Management Plan (SWMP); and

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			• a Water Management Plan (WMP). Dumfries and Galloway Council (DGC) and other stakeholders, as required, would be consulted on these documents prior to commencement of construction, and performance against the CEMP would be monitored by SPR, the ECoW and PC throughout the construction period.
	Compensatory planting	Construction / Pre-operation / Operation	There would be a 67.6 ha net loss of stocked woodland area as a result of the proposed Development. In order to comply with the criteria of the Scottish Government's Control of Woodland Removal Policy, compensation planting would be required. The Applicant is committed to providing appropriate compensatory planting which would be off-site. The extent, location and composition of such planting to be agreed with Scottish Forestry, taking into account any revision to the felling and restocking plans prior to the commencement of operation of the proposed Development.
Chapter 7: Landscape and Visual Impact Assessment	Wind turbine layout and height of turbines	Operation	The design of the wind turbine layout has taken into account the local and winder landscape and visual receptors to best design a scheme which minimises the impact on the landscape. This takes account of adjacent and nearby windfarms and those in the planning system
	Aviation Lighting	Operation	SPR is committed to reducing significant environmental effects predicted during the development of its sites and therefore propose that the following mitigation measures are deployed at the proposed Development as part of the Indicative Aviation Lighting Landscape & Visual Impact Mitigation Plan (IALLVIMP), in addition to the standard use of reduced intensity lighting. SPR shall seek approval to deploy lights that reduce intensity below zero degrees of horizontal to reduce the intensity of light at close proximity ground-based receptors. SPR shall also undertake exploratory discussions with SNH and CAA to consider whether a reduced lighting scheme would be appropriate and whether it could sufficiently reduce the level of night time landscape and visual effects at the proposed Development to address consultee concerns. SPR note that there are likely to be site specific challenges to deploying a reduced lighting scheme in this instance.

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			SPR shall work with aviation and landscape conservation stakeholders to develop and agree a specification and working protocol for installation and operation of a Transponder Activated Lighting system at the proposed Development. The details of this and the final specification of all of the agreed mitigation measures shall be included in a detailed ALLVIMP to be developed in consultation with all stakeholders to confirm the approved measures, post consent and prior to erection of turbines at the proposed Development. SPR propose that this is controlled by way of a planning condition applied to the consent for the proposed Development.
Chapter 8: Ecology	Protected species: Otter, Water Vole, Badger, Red Squirrel, Pine Marten	Pre-construction	A pre-construction survey for otter, badger, water vole and pine marten would be undertaken prior to tree felling and construction taking place. This would cover all watercourses and other suitable habitat (focussing on forest edges and rides) within 250 m of infrastructure and associated working areas. The results of the pre-construction surveys would inform the need for further mitigation (if required) in respect of working practices or to consult with SNH if required. In addition, pre-felling checks for red squirrel dreys would be undertaken. If necessary further mitigation in respect of working practices would be developed, licences obtained and consultation with SNH undertaken if required.
	Invasive Species (American Signal Crayfish)	Pre-construction	A pre-construction and pre-felling survey would also be undertaken for invasive non-native species, including American signal crayfish, and appropriate mitigation put in place to reduce the risk of transferring this species among watercourse/ catchments (e.g. on vehicle wheels). The nature of this mitigation will depend on the outcome of the surveys and be agreed with SNH, NDFB and GFT.
	Fish	Pre-construction	Prior to construction commencing a fish monitoring plan including surveys pre-construction, during construction and post construction would be agreed with NDFB, GFT and SNH. This would likely include electro-fishing surveys to establish and monitor fish population sizes and demography. These data would facilitate identification and mitigation of any impacts to fish that may occur during the construction period.
	ECoW	Pre-construction	A suitably qualified ECoW would be employed for the duration of the construction and reinstatement periods, to oversee the safeguarding of natural heritage interests, although this may not necessarily be a full-time role throughout. The role of the ECoW would include the following tasks:

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			• give toolbox talks to all staff onsite, e.g. an ecological induction, so staff are aware of the ecological sensitivities on the Site and the legal implications of not complying with agreed working practices; • agree and monitor measures designed to minimise damage to retained habitats; • undertake pre-construction surveys and advise on ecological issues where required; and • pre-construction inspections of areas which require species-specific mitigation and supervision of relevant mitigation measures.
	Bats	Pre-construction	As a precaution if the maternity roost is confirmed to be occupied, in order to prevent possible disturbance to the soprano pipistrelle maternity roost in The Bothy, any works to upgrade the access track within 100 m of The Bothy would not take place during the maternity period (June to August inclusive). Occupation of the maternity roost during the construction period would be monitored by the ECoW, or a licensed bat worker reporting to the ECoW.
	Wet modified bog	Construction	The Draft HMP outlines proposals for the restoration of an area of 23 ha of wet modified bog in the central and northern sections of the Site, which is scheduled to be felled and left as open ground, and is of a lower quality than would be expected of intact blanket mire. The Draft HMP aims to restore underlying conditions for modified blanket bog and improve the quality of blanket mire habitat within the HMP area. This would be achieved by the damming of drains across the HMP areas, using a special technique developed and used successfully on other similar projects by SPR.
	Protected species (Otter and water vole, badger, squirrel, pine marten)	Construction	All potentially dangerous substances or materials within the construction compound would be carefully stored to prevent them causing any harm to otters or other mammal species which may enter the compound at night. During construction, all excavations greater than 1 m depth would either be temporarily covered at night or designed to include a ramp to allow otters and other animals a means of escape should they fall in.
	Bats	Operation	Following the assessment methodology included in current (Scottish Natural Heritage, et al., 2019) guidance the level of risk to *Pipistrellus* and *Nyctalus* bat species is assessed to be medium across the

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			Site. Additional analysis carried out by SPR also predicts that without mitigation there is potential for fatality rates to be high for both *Pipistrellus* and *Nyctalus* bats. Mitigation will therefore be implemented during operation in order to reduce the risk of turbine-related bat mortality. The mitigation measures will comprise curtailment of the operation of all wind turbines during certain weather conditions at certain times of year. A summary of the mitigation is presented below, for more detail, please refer to **Technical Appendix 8.10: Bat Mitigation and Monitoring Plan**. Based on work done at other operational windfarms in upland forested sites in south-west Scotland, 90% of *Pipistrellus* bat activity occurs when wind speeds are below 5.5 m/s and temperatures are above 11^{o}C at nacelle height (**Technical Appendix 8.10, Figure 4**). The curtailment will therefore apply between 30 minutes post-sunset and 40 minutes pre-sunrise and will be implemented at each turbine between 1st April – 31st October each year. The mitigation will be implemented for the lifetime of the Development, unless monitoring results necessitate a change in curtailment regime. The implementation of the curtailment will be via software which will automatically send a “pause” command to the relevant turbine, when the parameters are met, initiating a feathering of the blades. This will slow the rotation speed of the blades to below 1 RPM (i.e. slower than the second hand of a clock). This is a tried and tested method, already being successfully applied on another SPR site. Monitoring would comprise measurement of bat activity and fatality rates and would be undertaken annually until validation of the initial curtailment parameters and any amendments are established in consultation with SNH. Bat activity monitoring would comprise the use of static bat detectors (based at ground level) at six randomly selected wind turbines during July – September inclusive which is when most fatalities are found to occur. This represents a precautionary approach, because if bat fatality rates are sufficiently low during this period, they are unlikely to be greater at other times of year - if the mitigation is effective during this period, it will also be effective during periods of lower levels of activity. The use of six turbines is considered to provide a representative sample (29 % of turbines to be sampled) and is coincident with the number of turbines which can reliably be searched by a dog team in a single day.

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			Carcass searching would be undertaken within a 50 m radius at the same six turbines every two weeks from 1st July until end of September i.e. seven searches in total. The estimate of two weeks persistence of corpses, and therefore the intervals between search dates will be further confirmed by undertaking a carcass persistence trial at the Site prior to undertaking carcass searching. Carcass searching will be undertaken using dogs, so that an effective observer efficiency rate of 80% or more can be achieved. Following each annual monitoring period, if the number of bat fatalities is less than two bats per turbine per year, the operator shall be entitled to propose amendments to reduce the curtailment parameters. If the number of bat fatalities is greater than two bats per turbine per year, the operator shall be obligated to propose amendments to strengthen the mitigation. Any changes proposed will be consulted on with SNH and implemented the following year with repeated monitoring using the methods described above unless otherwise varied (e.g. to investigate condition in which fatalities are occurring).
Chapter 9: Ornithology	Birds	Pre-construction / Construction	A Bird Protection Plan would be in place prior to the onset of construction activities. The BPP will describe survey methods for the identification of sites used by protected birds and will detail protocols for the prevention, or minimisation, of disturbance to birds as a result of activities associated with the proposed Development. The BPP would be overseen by the Ecological Clerk of Works. The BPP will include a description of surveys to locate the nests or other key sites (e.g. roosts) of birds listed in Schedules 1 and 1A of the Wildlife and Countryside Act, 1981, in advance of construction works progressing within the Site of the proposed Development. In the event that an active nest or roost of a Schedule 1 or Schedule 1A species is discovered within distances given by Ruddock & Whitfield (2007) (or within a 500 m radius of the nest for Schedule 1 species not listed), a disturbance risk assessment will be prepared under the BPP and any measures considered necessary to safeguard the breeding attempt or roost (e.g. exclusion zones or restrictions on timing of works), would be submitted to SNH for agreement before recommencing work. If felling is required near to or including any nest locations this would be carried out during the non-breeding period. (Petty, 1996). Should the nest of any other wild bird not listed on Schedule 1 be located, construction activities within 50 m of the nest site should be halted and the Ecological Clerk of Works (EcoW) informed immediately. A

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			disturbance risk assessment should be undertaken and any measures considered necessary to prevent disturbance to the nest site be implemented. For some species breeding in some locations, no actions may be necessary but for others, buffers may be required around the nesting attempt to prevent unnecessary disturbance until the nest is no longer active.
Chapter 10: Hydrology, Hydrogeology, Geology and Soils	Pollution risk, sediment management and management of surface runoff rates and volumes	Construction	The CEMP will outline the necessary surface water management, oil and chemical delivery and storage requirements, waste management, traffic and transport management and would specify monitoring requirements for waste water, water supply including an Environmental Incident Response Plan (EIRP) and all appropriate method statements and risk assessments for the construction of the proposed Development. Prior to construction, section specific drainage plans would be produced. These would take into account any existing local drainage which may not be mapped and incorporate any section specific mitigation measures identified during the assessment. Measures would be included in the final CEMP for dealing with pollution/sedimentation/flood risk incidents and would be developed prior to construction. This would be adhered to should any incident occur, reducing the effect as far as practicable. The final CEMP would contain details on the location of spill kits, identify 'hotspots' where pollution may be more likely to originate from, provide details to site personnel on how to identify the source of any spill and state procedures to be adopted in the case of a spill event. As identified in the outline CEMP (**Technical Appendix 3.1**), a specialist spill response contractor would be identified to deal with any major environment incidents. A wet weather protocol would be developed. This would detail the procedures to be adopted by all staff during periods of heavy rainfall. Tool box talks would be given to engineering/construction/supervising personnel. Roles would be assigned and the inspection and maintenance regimes of sediment and runoff control measures would be adopted during these periods.

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			In extreme cases, the above protocol would dictate that work onsite may have to be temporarily suspended until weather/ground conditions allow. Good practice measures would be applied in relation to pollution risk, sediment management, peat management and management of surface runoff rates and volumes. This would form part of the CEMP to be implemented for the proposed Development and would be prepared prior to construction.
	Pollution risk	Construction	Good practice measures in relation to pollution prevention would include the following: • refuelling would take place at least 50 m from watercourses and where possible it would not occur when there is risk that oil from a spill could directly enter the water environment. For example, periods of heavy rainfall or when standing water is present would be avoided; • foul water generated onsite would be managed in accordance with PPG4; • a vehicle management plan and speed limit (15 mph) would be strictly enforced onsite to minimise the potential for accidents to occur; • drip trays would be placed under stationary vehicles which could potentially leak fuel/oils; • areas would be designated for washout of vehicles which are a minimum distance of 50 m from a watercourse; • washout water would also be stored in the washout area before being treated and disposed of; • if any water is contaminated with silt or chemicals, runoff would not enter a watercourse directly or indirectly prior to treatment; • water would be prevented as far as possible, from entering excavations such as borrow pits (refer to **Technical Appendix 10.6 Borrow Pit Assessment**); • procedures would be adhered to for storage of fuels and other potentially contaminative materials in line with the Controlled Activity Regulations, to minimise the potential for accidental spillage (e.g. stored in 110% bunded storage facilities); and • a plan for dealing with spillage incidents would be designed prior to construction, and this would be adhered to should any incident occur, reducing the effect as far as practicable. This would be included in the final CEMP for the proposed Development.
	Erosion and sedimentation	Construction	Good practice measures for the management or erosion and sedimentation would include the following:

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			• all stockpiled materials would be located out with a 50 m buffer from watercourses; • where possible, stockpiled material would either be seeded or appropriately covered; • water would be prevented as far as possible, from entering excavations such borrow pits through the use of appropriate cut-off drainage (refer to **Technical Appendix 10.6 Borrow Pit Assessment**); • where the above is not possible, water that enters a borrow pit would pass through a number of settlement lagoons and silt/sediment traps to remove silt prior to discharge into the surrounding drainage system. Detailed assessment of ground conditions would be required to identify locations where settlement lagoons would be feasible; • clean and dirty water onsite would be separated, and dirty water would be filtered before entering the water environment; • if the material is stockpiled on a slope, silt fences would be located at the toe of the slope to reduce sediment transport; • the amount of ground exposed, and time period during which it is exposed, would be kept to a minimum and appropriate drainage would be in place to prevent surface water entering deep excavations, specifically borrow pit excavations; • a design of drainage systems and associated measures to minimise sedimentation into natural watercourses would be developed - this may include silt traps, check dams and/ or diffuse drainage; • silt/sediment traps, single size aggregate, geotextiles or straw bales would be used to filter any coarse material and prevent increased levels of sediment. Further to this, activities involving the movement or use of fine sediment would avoid periods of heavy rainfall where possible; and • SPR construction personnel and the Principal Contractor would carry out regular visual inspections of watercourses to check for suspended solids in watercourses downstream of work areas.
	Fluvial flood risk	Construction	It is proposed to adopt Sustainable Drainage Systems (SuDS) as part of the proposed Development. SuDS techniques aim to mimic pre-development runoff conditions and balance or throttle flows to the rate of runoff that might have been experienced at Site prior to development. Good practice in relation to the management of surface water runoff rates and volumes and potential for localised fluvial flood risk would include the following:

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			• drainage systems would be designed to ensure that any sediment, pollutants or foreign materials which may cause blockages are removed before water is discharged into a watercourse; • onsite drainage would be subject to routine checks to ensure that there is no build-up of sediment or foreign materials which may reduce the efficiency of the original drainage design causing localised flooding. • appropriate drainage would attenuate runoff rates and reduce runoff volumes to ensure minimal effect upon flood risk; • where necessary, check dams would be used within cable trenches in order to prevent trenches developing into preferential flow pathways; and • as per good practice for pollution and sediment management, prior to construction, section specific drainage plans would be developed and construction personnel made familiar with the implementation of these. Further information on ground conditions and drainage designs would be provided in the final CEMP.
	Water abstractions	Construction	Abstraction of water for construction and batching activities may be required from a suitable source yet to be identified. An application for a CAR Licence would be made to SEPA and managed through the regulation of the CAR Licence. Should a suitable source not be identified, a water bowser would be used. Good practice that would be followed in addition to the CAR Licence regulations includes: • water use would be planned so as to minimise abstraction volumes; • water would be re-used where possible; • abstraction volumes would be recorded; and • abstraction rates would be controlled to prevent significant water depletion in a source.
	Water course quality	Construction	The sub catchments of the River Nith and the Water of Ken catchment have been highlighted as being at risk of potential construction effects due to the nature of the works within the catchments as well as their high sensitivity. Water quality monitoring before and during the construction phase would be undertaken, to ensure that the tributaries of the main channels identified at risk from the proposed Development have no

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			significant impacts to water quality and/or quantity. Monitoring would be carried out at a specified frequency (depending upon the construction phase) on these catchments. This monitoring would continue throughout the construction phase and immediately post construction. Monitoring would be used to allow a rapid response to any pollution incident as well as assess the impact of good practice or remedial measures. Monitoring frequency would increase during the construction phase if remedial measures to improve water quality were implemented. Water quality monitoring plans would be developed during detailed design (SEPA, DGC, NDSFB and DDSFB would be consulted on the plan) and would be contained within the Construction Management Plan. The performance of the good practice measures would be kept under constant review by the water monitoring schedule, based on a comparison of data taken during construction with a baseline data set, sampled prior to the construction period.
	Water course crossings	Construction	18 new and 25 upgraded watercourse crossings are required during the construction phase and would remain in place during the operational phase. The upgraded crossings would be reinforced for construction vehicles and at least the same hydraulic conveyance capacity of the existing crossing. Good practice in relation to new water crossings involves the following aspects: • the design of the watercourse crossings would be agreed with SEPA prior to construction and be regulated in accordance with CAR; • the appropriate crossing type would be identified from SEPA's good practice guidance and would take into account any ecological and hydrological constraints; and • the crossing would be sized and designed so as to minimise effect upon flood risk (sized to accommodate at least the 200 year flow).

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	Peat management	Construction / Pre-operation / Operation	**Peat Management Plan** <u>Temporary Construction Areas:</u> In relation to crane hardstanding and the construction compound and maintenance area, guidance is to avoid their full reinstatement post-construction, given the likelihood of re-use for maintenance activities associated with the wind turbines. In relation to the compound areas, the following good practice guidance applies: • peat stripped from temporary areas would require particularly careful storage due to its volume, and the relatively long residence times for stored peat; • stripped turves are generally used for final restoration, however, where turves are insufficient or vegetation regeneration requires reseeding, temporary fencing may be considered around compound areas undergoing restoration in order to prevent grazing; and • the choice of seed mix for reseeding would be appropriate to the ecological and hydrological conditions of the restored compound location and surrounding habitats. • where an excess of peat is generated on permanent structures such as the construction compound the material generated would be used for landscaping and for restoration around the compound area and on access tracks. <u>Borrow Pits:</u> Peat may be re-used within borrow pits for the purpose of their restoration provided the method of reuse is consistent with the environmental reinstatement objectives of the Site and presents no residual risks from pollution of the environment or harm to human health (SEPA, 2012). Key issues for borrow pit restoration are: • prevention of desiccation and carbon losses from peat used in the restoration; • development of complete vegetation cover through emplacement of peat or seeding with an appropriate species; and

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			• fencing where required, to exclude grazing stock and to encourage vegetation establishment. <u>Floating Access Tracks:</u> The following issues should be considered during detailed design of floating access tracks: • adopting conservative values for peat geotechnical properties during detailed design (post-consent); • applying a maximum depth rule whereby an individual layer of geogrid and aggregate should not normally exceed 450 mm without another layer of geogrid being added; • on gently sloping ground and where the access track runs transverse to the prevailing slope, accommodating natural hydrological pathways such as flushes and peat pipes through installation of a permanent conduit within or underneath the track and allowing for as much diffuse discharge (while minimising disturbance to existing peatland) on the downslope as possible; • ensuring transitions between floating tracks and excavated tracks (or other forms of track not subject to long term settlement) are staged in order to minimise likelihood of track failure at the boundary between construction types; • scheduling access track construction to accommodate for, and reduce peat settlement characteristics; and • re-use of existing roads (with upgrading if required), where possible. • the settlement characteristics of peat; should be accommodated by appropriate scheduling of access track construction, as follows: • prior to construction works, the setting out the centreline of the proposed access track to identify any ground instability concerns or particularly wet zones; • identifying ‘stop’ rules, i.e. weather dependent criteria for cessation of access track construction based on local meteorological data; • maximising the interval between material deliveries over newly constructed access tracks that are still observed to be within the primary consolidation phase; • retaining rather than stripping the vegetation layer (i.e. the acrotelm, providing tensile strength), and laying the first geotextile/geogrid directly on the peat surface; • adding the first rock layer; • adding the second geotextile/geogrid, and add overlying graded rock fill as a running surface;

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			• heavy plant and Heavy Goods Vehicles (HGV) using the access tracks during the construction period should be trafficked slowly in the centre of the track to minimise dynamic loading from cornering, breaking and accelerating; • ensuring wheel loads should remain at least 0.5 m from the edge of the geogrid, markers should be laid out, monitored and maintained on the access track surface to clearly emphasise these boundaries; and • initial 'toolbox' talks and subsequent feedback to construction and maintenance workers and drivers to emphasise the importance of the implementing the above measures. <u>Use of Peat as Trackside Shoulders</u> A key opportunity to re-use peat is to employ it in landscaping of constructed access tracks. Wedge-shaped reinstatement at the margins of a floating access track (which is elevated above the peat surface) is termed shoulders, and good practice guidance is as follows: • re-using peat excavated from elsewhere on site as shoulders adjacent to the floating track; • peat shoulders should taper from just below the track sides (thereby preventing over high shoulders from causing ponding on the track surface) to join the surrounding peat surface, keeping as natural a profile as possible to tie in with existing slope profiles; and • limiting the width of peat shoulders to avoid unnecessary smothering of intact vegetation adjacent to the floating track. <u>Excavated tracks:</u> Excavated tracks require complete excavation of peat to a competent substrate. Excavated tracks are generally undertaken where peat depths are less than 1m. This peat would require storage ahead of re-use elsewhere on site. Good practice guidance relates mainly to drainage in association with excavated tracks: • trackside ditches should capture surface water (within the acrotelm) before it reaches the road; • interceptor drains should be shallow and flat bottomed (and preferably entirely within the acrotelm to limit drawdown of the water table);

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			• any stripped peat turves should be placed back in the invert and sides of the ditch to assist regeneration; and • culverts and cross drains should be installed under excavated tracks to maintain subsurface drainage pathways (such as natural soil pipes or flushes). Discharge from constructed drainage should allow for as much diffuse dispersion of clean (silt free) water as possible while minimising disturbance to existing peatland as far as possible. Silt mitigation measures will be incorporated into all constructed drainage as per the requirements of the CEMP. Although excavation is normally undertaken in thin peat (< 1.0 m), there is a possibility of minor slippage from the cut face of the peat mass. Accordingly: • free faces should be inspected for evidence of instability (cracking, bulging, excessive discharge of water or sudden cessation in discharge); and • where significant depths of peat are to be stored adjacent to an excavation, stability analysis should be conducted to determine Factor of Safety (FoS) and an acceptable FoS adopted for loaded areas. As with floating tracks, monitoring would be scheduled post-construction to ensure that hydrological pathways and track integrity have been suitably maintained. <u>Cable Trenches</u> Cable trenches either require peat excavation specifically for this purpose, or they can be constructed within landscaping of shoulders adjacent to floating tracks. Guidance is as follows: • utilise peat shoulders for cable lays where possible to minimise peat excavations specifically for this purpose, in this case, peat shoulders should be 1.0 m to 1.5 m thick; • where cable trenching is constructed adjacent to a floating road, ensure the trench is backfilled to prevent void filling by material migration; • minimise time between excavation of the cable trench and peat reinstatement, preferably avoiding excavation until the electrical contractor has cables on-site ready for installation; and • avoid incorporating substrate materials in the excavation, to minimise contamination of the peat to be reinstated. Replace excavated materials sequentially.

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			<u>Peat Excavation:</u> • if possible, excavated peat should be excavated as turves, including the acrotelm (surface vegetation) and a layer of adjoining catotelm (more humified peat) typically up to 0.5 m thick in total, or as blocks of catotelm; the acrotelm should ideally not be separated from its underlying peat; • the peat turves should be as large as possible to minimise desiccation during storage; • contamination of excavated peat with substrate materials should be avoided; and • consider timing of excavation activities to avoid very wet weather and multiple handling to minimise the likelihood of excavated peat losing structural integrity. If possible, extract intact full depth acrotelm layers from the top surface of the peat deposit. This technique will maintain connectivity between the surface vegetation and the partially decomposed upper layers of the catotelm. <u>Temporary Storage:</u> Any peaty soils/peat to be removed during construction would require a temporary storage area near to the construction works. Where peat cannot be transferred immediately to an appropriate restoration area, short term storage will be required. In this case, the following good practice applies: • stockpiling of peat should be in large volumes to minimise exposure to wind and sun (and desiccation), but with due consideration for slope stability; • stockpiles should be isolated from watercourses or drains with appropriate bunding to minimise pollution risks; • peat should be stored around the turbine perimeter at sufficient distance from the cut face to prevent overburden induced failure, • local gullies, diffuse drainage lines (or very wet ground) and locally steep slopes should be avoided for peat storage; • stored upper turves (incorporating vegetation) should be organised and identified according to NVC community (assisted by the Environmental Clerk of Works, ECoW) for reinstatement adjacent to like communities in the intact surrounding peat blanket;

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			• drying of stored peat should be avoided by irrigation (although this is unlikely to be significant for peat materials stored less than 2 months). For crane pads, borrow pits and compounds (with longer term storage requirements), the following good practice applies: • peat generated from crane pad locations should be transported directly to its allocated restoration location, to minimise the volume being stockpiled with the possibility of drying out; • stores of catotelmic peat should be bladed off to reduce their surface area and minimise desiccation; • Where transport cannot be undertaken immediately, stored peat should be irrigated to limit drying and stored on a geotextile mat to promote stability; • monitoring of large areas of peat storage during wet weather or snowmelt should be undertaken to identify any early signs of peat instability. Prior to the excavation of relevant infrastructure, vegetation, peat and superficial geology will be removed and stored in overburden stockpiles (or used directly in restoration of other areas; see below); • care will be taken to segregate peat from other materials, to ensure that turves are kept reasonably intact, and to store turves right-side-up to form a protective layer on top of any deeper peat stockpiles; • overburden stockpiles will be located adjacent to the infrastructure at least 50 m from watercourses in order to reduce the potential for sediment to be transferred into the wider hydrological system; • run-off from overburden stockpiles will be directed through the infrastructure SUDS measures (as described in the CEMP), including silt fences and mats, drainage measures and settlement lagoons, as appropriate; and • peat will not be allowed to dry out in the overburden stockpiles. Storage areas and dimensions will remain largely unknown until the site work has commenced and the peat condition and requirements are better known. <u>Transport:</u>

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			• movement of turves should be kept to a minimum once excavated, and therefore it is preferable to transport peat planned for translocation and reinstatement to its destination at the time of excavation; and; • if HGVs/dump trucks that are used for transporting non-peat material are also to be used for peat materials, measures should be taken to minimise cross-contamination of peat soils with other materials. <u>Handling:</u> Following refinement of the windfarm peat model, a detailed storage and handling plan should be prepared as part of the CEMP, including: • best estimate excavation volume at each infrastructure location (including peat volumes); • volume to be stored locally and volume to be transferred directly on excavation to restoration areas elsewhere (e.g. disused quarries, borrow pits or forest drains) in order to minimise handling; • location and size of storage area relative to turbine foundation, crane hardstanding and natural peat morphology / drainage features; • irrigation requirements and methods to minimise desiccation of excavated peat during short term storage. These parameters are best determined post-consent in light of detailed ground investigation with the micro-siting areas for each element of infrastructure. <u>Restoration:</u> During restoration, the following best practice should be followed: • carefully evaluate potential restoration sites, such as borrow pits for their suitability, and agree that these sites are appropriate with the ECoW, landowners and relevant consultees; • undertake restoration and revegetation work as soon as practically possible; and • Where required, consider exclusion of livestock from areas of the site undergoing restoration, to minimise impacts on revegetation; and

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			• as far as reasonably practicable, restoration should be carried out concurrently with construction rather than at its conclusion.
	Peat landslide hazard	Construction	A Design and Geotechnical Risk Register would be compiled to include risks relating to peat instability, as this would be beneficial to both SPR and the Contractor in identifying potential risks that may be involved during construction. Good construction practice and methodologies to prevent peat instability within areas that contain peat deposits are identified in the PLHRA (**Technical Appendix 10.1**). These include: • measures to ensure a well-maintained drainage system, to include the identification and demarcation of zones of sensitive drainage or hydrology in areas of construction; • minimisation of 'undercutting' of peat slopes, but where this is necessary, a more detailed assessment of the area of concern would be required; • careful micro-siting of turbine bases, crane hardstandings and access track alignments to minimise effects on the prevailing surface and sub-surface hydrology; • raising peat stability awareness for construction staff by incorporating the issue into the Site Induction (e.g. peat instability indicators and good practice); • introducing a 'Peat Hazard Emergency Plan' to provide instructions for Site staff in the event of a peat slide or discovery of peat instability indicators; • developing methodologies to ensure that degradation and erosion of exposed peat deposits does not occur as the break-up of the peat top mat has significant implications for the morphology, and thus hydrology, of the peat (e.g. minimisation of off-track plant movements within areas of peat); • developing robust drainage systems that would require minimal maintenance; and • developing drainage systems that would not create areas of concentrated flow or cause over-, or under-saturation of peat habitats. Notwithstanding any of the above good construction practices and methodologies, detailed design and construction practices would need to take into account the particular ground conditions and the specific works at each location throughout the construction period. An experienced and qualified engineering

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			geologist / geotechnical engineer would be appointed as a supervisor, to provide advice during the setting out, micro-siting and construction phases of the proposed Development.
	Erosion and sedimentation	Operation	Immediately post-construction, newly excavated drains and track dressings may be prone to erosion as any vegetation would not have matured. Appropriate design of the drainage system, incorporating sediment traps, would reduce the potential for the increased delivery of sediment to natural watercourses. Potential effects from sedimentation or erosion during the operational phase are considered to come from linear features on steeper slopes, where velocities in drainage channels are higher. Immediately post-construction, flow attenuation measures would remain and be maintained to slow runoff velocities and prevent erosion until vegetation becomes established. Should any non-routine maintenance be required at the sections of track crossing wet areas (defined visually onsite by a contractor or operational personnel) there would be potential for erosion and sedimentation effects to occur due to the existence of disturbed material. Should this type of activity be required, then the good practice measures, as detailed for the construction phase, would be required on a case by case basis. Extensive work at water crossings/adjacent to the water environment may require approval from SEPA under the CAR (depending upon the nature of the activity).
	Pollution risk	Operation	Storage of fuels/oils onsite would be limited to the hydraulic oil required in turbine gearboxes and this is bunded to (110% bund capacity) to prevent fluid escaping.
	Infrastructure and man-made drainage	Operation	Drainage may be required to service new sections of access track.
	Maintenance	Operation	It is anticipated that routine maintenance of infrastructure and tracks would be required across the Site. This may include work such as maintaining access tracks and drainage and carrying out wind turbine and energy storage facility maintenance.
Chapter 11: Archaeology and Cultural Heritage	Protection of on-site assets	Construction	Appropriate mitigation undertaken during construction would be in the form of:

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			• fencing off and avoidance of known heritage assets in close proximity to the proposed Development that could otherwise be accidentally damaged during the construction works; and • a watching brief on elements of the ground works that have potential to have direct impacts on unrecorded buried archaeology;
	Accessibility and information of on-site assets	Operation	The proposed Development would improve access and provide information boards relating to the covenanters monument called Allan's Cairn. In close proximity to the Southern Upland Way, the installation of information boards and signage as part of the proposed Development would facilitate greater understanding and appreciation of the historic land use and settlement of the area; thereby enhancing the experience of the general public. Such experiences may aid the public knowledge of the people who worked in these landscapes and stimulate interest in historic landscapes of Upper Nithsdale.
Chapter 12: Access, Traffic and Transport	Construction Traffic Management Plan	Construction	An Outline CTMP has been provided with this consent application (**Technical Appendix 12.4**) which is designed to provide preliminary details of proposed traffic management measures and associated interventions that would be implemented during the construction phase of the proposed Development in order to minimise disruption and ensure safety. The Outline CTMP would be supplemented with additional information as appropriate by SPR's appointed contractor(s), prior to commencement of construction activities. Should consent be granted, the Outline CTMP would be updated to a CTMP, the content of which would be agreed with Dumfries and Galloway Council, East Ayrshire Council, Ayrshire Road Alliance and Transport Scotland through consultation and enforced via a planning condition. The CTMP would be used during the construction phase of the proposed Development to ensure traffic to, from and on the site is properly managed. The Outline CTMP describes the following measures: <u>Speed Limit -</u> It is proposed to impose a maximum 30 mph speed limit for all construction related traffic on the immediate approaches to the site on Access Route A on the A76 and 15 mph on private roads / tracks, which will be reinforced through temporary construction traffic speed limit signs. Local residents will be

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			advised to report any instances of speeding to the site Liaison Officer who will take necessary action to prevent a repeat. On-site operatives will be briefed on the speed limit through induction sessions and through regular staff briefings. Other parties responsible for site deliveries will also be instructed on the restrictions and made aware of the requirements relating to existing road users. Signage - Any signage required on the public highway will be erected and positioned in accordance with the requirements of the Traffic Signs Manual and Safety at Street Works and Road Works – A Code of Practice, and in consultation with the DGC, ARA and TS. Any permanent signs and street furniture which are required to be relocated to allow abnormal loads to pass will be identified in consultation with the relevant Roads Authority. Warning signage on the Site must be complied with at all times. The two most important signs are “no entry” and “no unauthorised vehicles”. In order to proceed beyond these signs, vehicle drivers must stop and contact the ganger/ foreman in control of the area to be escorted through the local area. Abnormal Load Management - An Abnormal Loads Assessment would set out the key points and issues associated with the selected route for the abnormal loads, to verify that the route is feasible for the selected turbine delivery, subject to physical and operational mitigation works. Detailed abnormal load delivery traffic management measures would need to be identified and included in the final CTMP (or provided as stand-alone report) setting out the mitigation required to address the potential issues the Abnormal Loads Assessment might identify. Prior to the movement of abnormal loads, extensive public awareness is required to allow residents to plan and time their journeys to avoid disruption. The haulage Contractor shall remain responsible for obtaining all necessary permits from the relevant road and bridge authorities along the access route. The movement of abnormal loads will be timed to avoid periods of heavy traffic flow (i.e. it is proposed to move the loads during the night) to minimise disruption to the public. Specific timing restrictions imposed by the police or local authority have not been determined at this stage. Through urban areas temporary parking restrictions may be necessary to guarantee a clear route for the abnormal loads, and these need to be arranged in advance through the appropriate local authority. The parking restrictions would need to be locally enforced. Due to the size of vehicles required to transport these loads, escorts would be required for the entire route to control oncoming and conflicting traffic.

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			Adverse Weather Conditions - All works would be forward planned wherever practicable taking into account the anticipated weather conditions. At the start of the day, the Site foreman would assess the weather conditions prior to permitting their operatives to access the Site. Due to the location and topography of the Site the weather can be severe, resulting in an adverse effect on visibility. The weather would be constantly monitored and if necessary, all plant / vehicle movements would be stopped / suspended by the Site foreman if they deem it is unsafe for work to continue. The site foreman would assess the track and site conditions at the start of each day to determine if conditions are suitable to allow access to plant or vehicles. During winter or poor weather, a separate procedure would be introduced to allow the track conditions to be communicated to all parties accessing the Site. An assessment would be carried out every morning by the general foreman or the foreman in control of site operations which would then be communicated to the gatehouse. Contractors should contact the Principal Contractors general foreman to find out the situation at the Site prior to arrival to the Site, if required. All Contractors would be required to make their own assessment of track conditions during access or egress from the Site and take appropriate action determined during their assessment. During the course of the day, and in the event of weather conditions deteriorating, the Principal Contractor would notify the nominated personnel from the Contractors on site to the present condition. Contractors would be reminded that they have a duty to consider the weather and track conditions throughout the day and come back down off the hillside if they feel unsafe at any time. On-Site Management On-site Safety - All personnel entering the working area would wear hi-visibility vest or jacket, head protection, safety footwear, eye protection and gloves at all times when out with the vehicle. Everyone required to work within the Site would be made aware that they have a responsibility for the safety of themselves and others. All site operatives and visitors have a “duty of care” to themselves and others and need to be conscious of the surroundings and ongoing activities locally. In the event of an emergency, right of way to all emergency services would be given at all times. Emergency services and control of access would be carried out in compliance with the Site emergency procedures.

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			Parking - Parking areas located at the Site construction compound would have safe and secure barriers to segregate all personnel from site plant and vehicle routes. All signage within designated car parking areas must be followed, with no vehicles parked in a way which restricts either vision or access. No parking whatsoever would be allowed on public roads; all cars that are directed to the Site car park would be required to reverse park to comply with ScottishPower Renewables and the Principal Contractors requirements. On-Site Tracks - Access tracks would be monitored on a daily basis to identify any deterioration of the track condition. Non-emergency remedial works to the track would be carried out at times outside peak times of usage and significant emergency repairs would be undertaken immediately and adjacent track sections would be restricted from use as required to safely accommodate works. All routes would be monitored for dust and control or suppression methods would be deployed as appropriate through the use of dust suppression systems. Site Traffic - All traffic visiting the Site would be required to report to site security where they would obtain clear instructions, before further movement is acceptable. If applicable an induction would be completed, vehicle permits would be issued, and the Site rules & emergency procedure would be explained. All traffic would use the signed site passing places and all drivers would accommodate other track users in a courteous manner. Reversing (other than to park) within the compound areas is not permitted. Full time site traffic (vehicles/plant situated on-site for majority of construction phase) that requires re-fuelling would follow the instructions supplied at their induction and also the guidelines within their method statement for the works. Heavy site traffic would be equipped with audible reversing warning with additional visual aids e.g. reversing cameras, mirrors utilised on all plant. All safety features must be inspected on a daily basis with faults immediately reported to the Foreman Fitter who would assess and repair any damage to the plant. Management would ensure that all loads are covered fully to limit the loss of material in transit. Vehicle Cleaning - Given the length of the access tracks to and from Access A or B, it is likely that the majority of loose materials will not be deposited on the public highway. Should there be evidence of this following the commencement of construction, a wheel and body wash will be operated within the Site to

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			ensure materials are not transferred onto the highway, and road cleaning will take place when required to remove any deposits that are carried from the Site. Driving and Speed Restrictions - All vehicles (cars, LGVs, HGVs and ALs) shall be driven in a safe and defensive driving manner at all times within speed limits. A zero-tolerance policy shall be adopted by all Contractors, such that any infringement results in that person not returning to site. All cars and drivers of site operative vehicles used for commuting to and from site must be road worthy and legally compliant. All commercial vehicles and drivers must be road worthy and legally compliant.
Chapter 13: Noise	Construction noise	Construction	An outline CEMP is provided as **Technical Appendix 3.1** and the final CEMP would be secured through a planning condition. This would include measures to control construction noise including: • As proposed in **Chapter 3,** construction works that may give rise to audible noise at the surrounding properties and heavy goods vehicle deliveries to the Site would be limited to the hours 07:00 to 19:00 Monday to Friday and 07:00 to 16:00 at weekends, unless otherwise approved in advance by DGC/EAC (except in case of an emergency); • should Access Route B be used, some construction activities will be further restricted. Specifically, no construction HGV traffic will use Access Route B during Saturday afternoons and Sundays and light vehicles will be phased to spread the intensity of use so there are no more than approximately 35 vehicle movements per hour. In addition, activities related to upgrading of the access track or construction of the temporary site compound within 500 m of the Euchanbank receptor would be restricted to weekdays (07:00 to 19:00) and Saturday mornings (07:00 to 13:00); • all construction activities shall adhere to good practice as set out in BS 5228; • all equipment would be maintained in good working order and any associated noise attenuation such as engine casing and exhaust silencers shall remain fitted at all times; • where flexibility exists, activities would be undertaken away from residential properties, set back by the maximum possible distances; • a Construction Traffic Management Plan (CTMP) would be developed to control the movement of vehicles to and from the Site, including the above described restrictions for Access Route B;

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			• construction plant capable of generating high noise and vibration levels would be operated in a manner to restrict the duration of the higher magnitude levels; and • in particular, if noise-generating activities could occur outside of the stated working hours, this could potentially lead to increased effects of potentially minor significance, but it is considered unlikely that significant effects could arise due to construction due to the large distances involved for the proposed activities in the wide majority of cases.
	Blasting operations	Construction	Unless otherwise agreed in consultation with DGC or EAC, for example due to large separation distances, if blasting is to be employed at some of the borrow pits, the potential noise and vibration effects of blasting operations would be reduced (unless otherwise agreed with DGC or EAC due to important separation distances) according to the guidance set out in the relevant British Standards and PAN50 Annex D: • blasting should take place under controlled conditions with the agreement of the relevant authorities, at regular times within the working week, that is, Mondays to Fridays, between the hours of 10:00 and 16:00. Blasting on Saturday mornings should be a matter for negotiation between the contractor and DGC/EAC; • vibration levels at the nearest sensitive properties are best controlled through onsite testing processes carried out in consultation with DGC/EAC. This site testing-based process would include the use of progressively increased minor charges to gauge ground conditions both in terms of propagation characteristics and the level of charge needed to release the requisite material. If required, the use of onsite monitoring at neighbouring sensitive locations during the course of this preliminary testing can then be used to define upper final charge values that would ensure vibration levels remain within the criteria set out previously, as described in BS 5228-2 and BS 6472-2; • blasting operations would adhere to good practice as set out in BS 5228-2, and in PAN50, Annex D, Paragraph 95 in order to control air overpressure; and • a scheme would be submitted to DGC/EAC for approval of blasting details, which would outline the mitigation measures to be adopted

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	Operational noise	Operation	The selection of the final turbine to be installed at the Site would be made on the basis of enabling the ETSU-R-97 noise limits to be achieved at surrounding properties, including any relevant tonality corrections. ETSU-R-97 noise limits would apply to the cumulative noise from all windfarms in the area.

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