Appendix 2.5 Schedule Of Mitigation And Monitoring Measures

The table below provides a consolidated list of all additional mitigation and monitoring measures which have been identified in the EIA Report, and which will be implemented during construction, operation and decommissioning of the proposed development. Measures are presented on a topic-by-topic basis, reflecting the chapter of the EIA Report.

Embedded mitigation and standard good practice construction measures are presented in the EIAR Report Chapters and in **Appendix 4.1 Outline Construction Environmental Management Plan**.

Chapter		Proposed Mitigation and Monitoring Measures
Chapter 6 Landscape and Visual		None
Chapter 7 Geology, Hydrogeology and Hydrology	**Excavations and Access**	All excavation works have been kept to a practical minimum. Temporary construction access would be gained by use of trackway panels and bog mats, with sections of temporary stone tracks only used where necessary. Temporary stone access tracks may require localised temporary trackside drainage to help maintain integrity of the track surface while the tracks are in use.
	Soils and Peat	Incursion into areas of peatland has been kept to a practical minimum and would be further reduced by pre-construction peat depth surveys and local micrositing in order to minimise disruption to peatland ecosystems and hydrology. Soil stripping would be undertaken with care and would be restricted to as small a working area as practicable. The requirement for soil stripping would be minimised by use of trackway panels and bog mats for temporary access where possible, and use of temporary stone tracks only where trackway panels and bog mats are not suitable. Topsoil would be removed and laid in a storage bund, up to 2 m in height, on unstripped ground adjacent to the working area. Where possible, the turf layer would be maintained vegetation-side uppermost, although ground conditions may make this challenging. Care would be taken to maintain separate stockpiles for separate soil types in order to preserve the soil quality. For work within areas of peat, acrotelmic peat (the uppermost 0.5 m) would be removed as for the topsoil. As with topsoil, where possible the acrotelm would be maintained vegetation-side uppermost, although ground conditions may make this challenging. The underlying catotelmic peat would be stored in stockpiles up to 1 m in height. Catotelmic peat is sensitive to handling, and loses its internal structure easily, so would be transported as short a distance as possible to its storage location. Excavation of catotelmic peat would be limited by careful infrastructure design. All soil and peat stockpiles would be left with rough, unsmoothed surfaces to minimise soil loss from rainfall erosion. Stockpiles on sloping ground would have sediment control measures installed near the base, on the downslope side, to collect and retain any sediment mobilised by rainfall. Soils and peat would be stored for as short a time as practicable, in order to minimise degradation through erosion and desiccation. Should prolonged periods of dry weather occur, a damping spray would be employed to maintain surface moisture on the soil and peat stockpiles. This would help to maintain vegetation growth in the turves and to retain the soil structure. Construction work would make use of current best practice guidance relating to developments in peatland areas. A risk management system, such as a geotechnical risk register, would be compiled and maintained at all stages of the project and developed as part of the post-consent detailed design works, and would be updated as new information becomes available. Micrositing would be used to avoid possible problem areas identified during ground investigation or other detailed design works. This would be assisted by additional verification of peat depths, to full depth, in any highlighted areas where construction work in peatland is required. Trackside drainage would be installed alongside temporary stone tracks in accordance with published good practice documentation and would be minimised in terms of length and depth in order to minimise concentration of flows. Construction activities would be restricted during periods of wet weather, particularly for any work occurring within 20 m of a watercourse or within areas of peatland. Careful track design and use of trackway panels and bog mats to minimise requirement for temporary stone tracks would ensure that the volume and storage timescale for excavated materials would be minimised as far as practicable during construction works. Vegetation cover would be re-established as quickly as possible on temporary track verges and cut slopes, by re-laying of excavated peat acrotelm, to improve slope stability and provide erosion protection. Additional methods, including hydroseeding and/or use of a biodegradable geotextile, would be considered if necessary, in specific areas.

Chapter		Proposed Mitigation and Monitoring Measures
		Surface Watercourses, PWS and Groundwater A Pollution Prevention Plan would be established for the proposed route which would outline the detailed methods for dealing with watercourse, PWS and groundwater pollution risk. The PPP would accompany any required applications for authorisation under the Controlled Activities Regulations (CAR). Silt fencing or appropriate alternative sediment control protection would be installed on the downhill side of excavations to prevent inadvertent discharge of silty water into or towards any site watercourse. All engineering works adjacent to watercourses and PWS, including temporary access tracks and watercourse crossing structures, would have appropriate sediment control measures established prior to any groundworks. Vegetation would be retained along watercourse banks to act as additional protection to the watercourses. All works through and adjacent to wetland areas would be supervised by the Environmental Clerk of Works. This aspect would be informed by the GWDTE assessment (please refer to **Appendix 8.2: National Vegetation Classification and Groundwater Dependent Terrestrial Ecosystems Report**).
	Drainage Infrastructure	Trackside drainage would be no longer or deeper than necessary to provide the required temporary track drainage. Cross-drains under tracks would be installed at an appropriate frequency to mimic natural drainage patterns and to minimise concentration of flows. All required licences for watercourse crossings and construction site works would be in place prior to works on site beginning. All temporary drainage infrastructure would be established on a running-basis ahead of excavation works. This includes temporary bunding and cut-off drains around hardstanding and laydown areas. Where possible, trackside drainage would be laid up to 20 m ahead of temporary track construction works on a running basis. Temporary water control measures would be implemented as necessary adjacent to areas of excavation, notably the construction compounds and laydown areas. These measures are likely to take the form of temporary settlement ponds or filter drains. Details would be provided within the Pollution Prevention Plan(s) required for the Construction Runoff Permit and suitability would be determined following appropriate on site soil tests. Earthmoving activity would be restricted during periods of wet weather, particularly for work occurring within 20 m of a watercourse or within areas of peatland, to minimise mobilisation of sediment in heavy rainfall.
	Development High Risk Areas	Mitigation for the proposed route through the Development High Risk areas would be provided by pre-construction non-intrusive and intrusive ground investigation works to identify and delineate at-risk areas. Non-intrusive techniques such as near-surace geophysics would be used to identify any sub-surface structures below the proposed route that have not been identified through the desk study and to ground-truth structures identified as part of the desk study. There are several methods that can be used to detect sub-surface voids, including Ground Penetrating Radar, gravimetry measurements, seismic measurements and electromagnetic methods measuring changes in resistivity. With the non-intrusive techniques identifying sub-surface structures, the proposed route can be microsited away from potential hazards or intrusive techniques can be targeted for further investigation. Intrusive techniques would typically include trial pits, drilling of boreholes into superficial material, bedrock and mine voids, and groundwater and mine gas sampling and monitoring. Once the conditions below the proposed route have been identified, any required remediation works would be established to mitigate any identified hazards. Remediation techniques could include capping and stabilisation of mine shafts, grouting old works and gas control measures.
	Monitoring	A water quality monitoring programme would be established. Details would be agreed with SEPA but are anticipated to include at least the following: • Visual checks for entrained sediment; • In situ measurements of pH, temperature, specific conductivity. In-situ measurement of turbidity and dissolved oxygen may be recommended for locations with particular sensitivity, such as upstream of PWS sources. Monitoring adjacent to Coalburn Moss SAC is recommended owing to its designated status but other water quality monitoring locations would be identified post-consent by SPEN's environmental advisor in consultation with South Lanarkshire Council's Environmental Health Department. During construction, the monitoring would be undertaken by the Environmental Clerk of Works or suitably experienced alternative individual. Any change from baseline conditions of pH and/or specific conductivity would potentially indicate an incident and additional investigation would be required in order to identify the origin of the change. Control locations, intended to help differentiate between incidents arising within the development area and incidents that are unrelated to the development, would be identified by SPEN's environmental advisor as part of the monitoring programme.
	Designated sites	Production of a comprehensive CEMP detailing how pollution and run-off etc will be prevented. Diesel and other materials should be stored in bunded containers and spill kilts and spill remediation procedures should be developed.

Chapter		Proposed Mitigation and Monitoring Measures
Chapter 8 Ecology and Biodiversity	**Habitats of conservation concern**	Production of a comprehensive CEMP and peat management plan detailing how sensitive habitat will be protected. Avoidance of sensitive habitats by micro-siting pole locations as far as possible. Avoidance of sensitive habitats when constructing access tracks. Use of bog mats when areas of sensitive habitats cannot be avoided. If any aggregate or substrate is used to construct a track, it must be laid over a geotextile to allow removal of the substrate on completion of the works. No materials should be stored on sensitive habitat types and all compounds and storage areas should not be located on sensitive habitat types. Diesel and other materials should be stored in bunded containers and spill kilts and spill remediation procedures should be developed. Clean water should not be diverted into the same areas as dirty runoff from construction surfaces. Pollution prevention control measures such as the use of silt fencing, silt traps and other suitable filtration methods can be employed. These mechanisms are intended to reduce the speed of flow, filter runoff and allow suspended silts and particulates to settle out naturally.
	GWDTE	Production of a comprehensive CEMP and peat management plan detailing how sensitive habitat will be protected. Avoidance of GWDTE by micro-siting pole locations as far as possible. Avoidance of sensitive habitats when constructing access tracks. Use of bog mats when areas of sensitive habitats cannot be avoided. If any aggregate or substrate is used to construct a track, it must be laid over a geotextile to allow removal of the substrate on completion of the works. Drainage ditches should be constructed on both the upslope and downslope if necessary, to control the routing of water and prevent it from getting onto the construction area. Drains or ditches carrying natural clean water must be prevented from being contaminated by dirty runoff from open construction surfaces. Upon completion of works any drainage ditches would be filled in to prevent alteration local hydrological regime.
	Bats	Avoidance of trees with bat roost potential as far as possible. Pre-construction surveys of any trees which must be removed to determine the presence of bat roosts, to include ground level tree assessments, climbing surveys and emergence/re-entry surveys as required. Toolbox talks for all site contractors. Lighting strategy to limit light spill onto foraging habitat and if possible, avoid lighting when works not occurring.
	Badger	Pre-construction badger surveys of all suitable habitat to be affected to locate any new setts. Microsite works to avoid sett locations. Toolbox talks for all site contractors. No trenches to be left open overnight.
	Otter	Pre-construction otter surveys of all watercourse crossings to be affected to locate any holt or lying up sites. Toolbox talks for all site contractors. No trenches to be left open overnight. Pollution prevention control measures.
	Reptiles	Watching brief in areas of suitable reptile habitat and vegetation clearance works to be carried out in accordance with a precautionary method of working. Toolbox talks for all site contractors.

Chapter		Proposed Mitigation and Monitoring Measures
	Water vole	Pre-construction water vole surveys of all water course crossing points to be affected. Avoiding areas where water vole burrows are present by micro-siting pole locations and water course crossing locations. Toolbox talks for all site contractors. Pollution prevention control measures.
Chapter 9 Ornithology		**<u>Pre-Construction Surveys</u>** Prior to any work commencing on site, ecological surveys would be undertaken to identify any potential constraints. This would include surveys for nesting birds. The information gathered during these surveys will be used to develop an Ecological Management and Mitigation Plan and a Breeding Bird Protection Plan. These will be live documents, which would be updated regularly in accordance the project requirements. They will outline relevant best practice construction measures to safeguard nesting birds, including the establishment of buffer zones around active nest sites to avoid disturbance of specialist protected birds that are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). **<u>Construction Mitigation</u>** In order to reduce the impact on the assemblage of breeding birds present in the vicinity of the proposed development, any vegetation removal that is necessary to facilitate construction would be undertaken during the bird non-breeding season (September-February), where possible. Should this not be possible for any reason, such as due to inclement weather conditions, for example, then inspections of the vegetation will be undertaken within 24 hours prior to its removal, to first confirm the absence of nesting birds. Such best practice mitigation measures will be outlined within the Ecological Management and Mitigation Plan and a Breeding Bird Protection Plan, which will include procedures for the timing and methods of vegetation removal to safeguard nesting birds. In order to prevent any birds identified on site as potential breeders from settling, deterrence measures would be considered. These may include: • Distributing iridescent tape across the Site prior to construction; • Bird deterring devices which produce intermittent loud noises; and • Walking of the cleared areas on a regular basis to prevent birds settling and to monitor if any birds are settling to nest on areas close to planned construction activity. As a precaution, it is proposed that deflectors would be installed on the earth wires between poles 1 and 28, between poles 50 and 60, between poles 83 and 103, and between poles 110 and 120. The exact positioning of the deflectors would be confirmed during the development of the detailed design for the proposed development. **<u>Operational Mitigation</u>** Any maintenance required on the OHL and underground cable will be timed to take place outside of sensitive periods such as the bird breeding season. Where this is not possible, surveys will be undertaken to first identify any bird constraints and confirm any resultant mitigation requirements. Such measures will be outlined in the Ecological Management and Mitigation Plan and a Breeding Bird Protection Plan.

Chapter	Proposed Mitigation and Monitoring Measures
Chapter 10 Cultural Heritage and Archaeology	**Pre-Construction Mitigation** A programme of archaeological assessment and mitigation will be agreed in consultation with the WoSAS in advance of construction, and will be subject to a Written Scheme of Investigation (WSI), including a suitable programme of post excavation assessment and publication. The WSI will be agreed with WoSAS in advance of its implementation. Should additional information that has a bearing on the archaeological baseline become available prior to construction (e.g. borehole logs), these will be used to inform the programme of works presented in the WSI. Any off-easement activities (e.g. activities associated with the OHL construction with the potential to impact on cultural heritage resources outside the elements of the proposed development currently assessed, such as temporary access roads, laydown areas, compounds, etc.) will be assessed for likely impacts against the historic environment baseline data. Any further re-alignment of the OHL route, for whatever purpose, will be assessed for likely impacts against the historic environment baseline data by a suitably qualified archaeologist. The information obtained from the pre-construction archaeological assessments will be used to define site-specific and, where appropriate, area-specific mitigation strategies confirmed in the WSI. Specific management proposals will include consideration of direct and indirect impacts and associated works, such as drainage and reinstatement. Adequate time will be allowed in the programme for archaeological mitigation. The following site-specific mitigation be adopted: • RSK14 Carmacoup, Mill / Douglas Water Water Mill: during the detailed design stage, if possible the location of the woodpole within 30 m of the asset will be micro-sited further away from the extant remains of the asset to reduce setting impacts. To mitigate the direct physical effects, if physical impacts have not been avoided by micro-siting, a programme of appropriate excavation, recording, analysis, publication and archiving of elements of the mill affected by the construction of the proposed development will be undertaken. This will take the form of a standing building survey (if any standing elements of the asset might be affected) followed by targeted excavation and recording of the asset where it is subject to direct, physical effects. • RSK31 Caledonian Railway Muirkirk Branch: during the detailed design stage, if possible the location of the two woodpoles within 30 m of the asset will be micro-sited further away from the asset to reduce setting impacts. To mitigate the physical direct and indirect effects, if physical impacts have not been avoided by micro-siting, a programme of appropriate excavation, recording, analysis, publication and archiving of elements of the railway affected by the construction of the proposed development will be undertaken. This will take the form of an earthworks survey, followed by targeted excavation and recording where it is subject to direct, physical effects. **Construction Monitoring** *Archaeological Monitoring* Monitoring in the form of a targeted archaeological watching brief will be carried out during construction by qualified archaeologists to deal with any unanticipated archaeological remains encountered during groundworks associated with the proposed development. It is anticipated that the watching brief will focus on all areas where a moderate or greater level of archaeological potential has been predicted (see 10.5.4 above), and on the working areas requiring topsoil strip and trench excavation for the installation of buried cables (Fields 0/1 to 1/4). The areas where a watching brief will be required will be identified in the WSI in consultation with WoSAS and defined in a WSI (see above). If necessary, the impact on any important archaeological remains encountered during the watching brief will be minimised where possible by reduction of the working area to a minimum practical level, the placement of geotextile matting or bog mats and/or careful reinstatement (e.g. avoidance of ripping). Archaeological remains that cannot be preserved *in situ* will be archaeologically excavated and recorded. The level of recording (e.g. sampling strategies) will be agreed with the WoSAS through the WSI. *Curatorial Monitoring* All of the works identified above will be subject to consultation with WoSAS. WoSAS will be invited to monitor archaeological assessment, mitigation and construction works in the field . **Post-Excavation Mitigation** On completion of archaeological fieldwork, a programme of post-excavation assessment, analysis, reporting and publication will be designed and implemented in consultation with WoSAS. The post excavation programme will be undertaken in accordance with the relevant WoSAS guidelines and best practice applicable at the time of analysis. A full archive including plans, photographs, written material and any other material resulting from archaeological fieldwork associated with the project will be prepared following completion of the project, and lodged in an appropriate place.
Chapter 11 Forestry	As the proposed development involves the permanent removal of woodland for the purposes of conversion to another type of land use, compensatory planting would be required in line with CWR. The maximum area of land that would need to be planted (the SF default position) is an area equivalent to the area being felled and left unplanted, which in this case is estimated to be 3.514 ha.