SSEN Transmission

Bingally 400 / 132 kV Substation

Environmental Appraisal

Volume 1

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16. SCHEDULE OF ENVIRONMENTAL MITIGATION

16.1 Introduction

16.1.1 The chapters above discuss the potential likely significant effects of the Proposed Development and present additional mitigation measures for managing identified effects where applicable. There additional measures are listed in **Table 16-1** and are a commitment of the Applicant.

16.1.2 Embedded mitigation comprising 'Design Mitigation' and general 'Construction Good Practice' has been incorporated into the description of the Proposed Development and as such has been assessed as being part of the development proposals. The Applicant's General Environmental Management Plans (GEMPs) and Species Protection Plan (SPPs) are included within the schedule of environmental mitigation for completeness (refer to **Volume 3, Appendix S**).

16.1.3 The following mitigation codes are used in this section:

- EM – Embedded Mitigation;
- LV – Landscape and Visual Impact;
- E – Ecology;
- O – Ornithology;
- CH - Cultural Heritage;
- TT – Traffic and Transport;
- HG – Hydrology, Hydrogeology, Geology and Soils; and
- CG – Climate Change.

Table 16-1 Schedule of Environmental Mitigation

Ref.	Title	Description of Mitigation	Timing
EM1	Construction Hours of Work	Construction activities would in general be undertaken during daytime periods. Working hours are currently between approximately 07:00 to 19:00 March to September and 07:30 to 17:30 (or within daylight hours) October to February, Monday to Friday. Weekend working would consist of Saturdays only between 7am and 13:00 all year round. Working hour assumptions would be agreed with THC.	Construction
EM2	Lighting requirements	Proposed buildings would not be illuminated at night during normal operation. Floodlights would be installed but would only be used in the event of a fault during the hours of darkness; or during the overrun of planned works; or when sensor activated as security lighting for night-time access. The access track would not be lit under normal operation. As far as possible, works should be carried out in daylight to minimise the risk of disturbing protected or notable nocturnal species. If any temporary artificial lighting is required for construction works, this should be strongly directional and directed only on to the works area, and be turned off when not required, to minimise light spill and adverse effects on nocturnal wildlife.	Construction, Operation
EM3	Delivery and sourcing of structures and materials.	Materials would be a mix of site won and locally sourced materials. Concrete would be delivered to site pre-mixed, where possible. Hardcore and earthworks materials for the construction of the Proposed Development would be a combination of site won, through cutting of the existing surface to construct the platforms and locally imported materials. Site won materials would be prioritised over imported materials to reduce the impact on local roads and the environment.	Construction
EM4	Screening of Proposed Development	All landscape and visual mitigation are embedded and covered in detail in **Volume 1, Chapter 7 Landscape and Visual** and **Appendix G**. Key embedded mitigation measures relevant to landscape and visual impacts include: • Siting of the substation infrastructure within an area of existing clear felled plantation forestry, therefore limiting wider landscape fragmentation; • Native broadleaf woodland planting within the site boundary to screen and aid landscape integration; and • Peatland restoration within the site and creating transitions between the hard surfaces and woodland proposals.	Preconstruction, Construction, Commissioning
EM5	Contractor's Environmental Management Team	An Environmental Manager would be appointed by the Principal Contractor for the duration of the construction phase. Their role would include coordinating input from specialists, reviewing incoming information from additional surveys, and coordinating any subsequent recommendations of mitigation measures and licensing requirements. The Environmental Manager would be responsible for continued review of incoming information and coordinating any additional specialist input to meet the Proposed Development's environmental obligations.	Preconstruction, Construction

Ref.	Title	Description of Mitigation	Timing
		An Ecological/ Environmental Clerk of Works (ECoW/ EnvCoW) would be appointed by the Principal Contractor to monitor, report and advise on the environmental and ecological compliance of the construction works. The ECoW/ EnvCoW would report to the Environmental Manager and Applicant. The ECoW/ EnvCoW would be competent, demonstrated by relevant experience and accreditations.	
EM6	Construction Environmental Management Plan (CEMP), General Environmental Management Plans (GEMPs), and Species Protection Plan (SPPs)	Mitigation measures will be implemented through the use of a CEMP which will cover all the receptors associated with the Proposed Development. The adoption of the applicable GEMPs will reduce the probability of a pollution incident occurring and reduce the magnitude of any incident due to a combination of good site environmental management procedures, including minimising storage of soil volumes, soil management, staff training, availability of contingency equipment and emergency plans. The adoption of applicable SPPs will provide guidance and agreed procedures for the protection of species and their habitat during construction works. The relevant GEMPs can be found in **Appendix S.**	Preconstruction, Construction
EM7	Construction Traffic Management Plan (CTMP)	A CTMP would operate throughout the duration of the construction programme **Volume 3, Appendix K** contains a draft CTMP. A detailed CTMP including the following is expected to be conditioned and provided once a Principal Contractor is appointed: • Site and the entry / exit arrangements from public roads; • Traffic routeing plans – defining the routes to be taken by HGVs to the Site avoiding sensitive locations; • Construction traffic hours and delivery times; • Strategy for traffic management and measures for informing construction traffic of local access routes, road restrictions (statutory limits: width, height, axle loading and gross weight), timing restrictions (if applicable) and where access is prohibited; • Measures to protect the public highway (e.g. wheel wash facilities and regular inspection of road condition throughout Proposed Development construction); • Measures for the monitoring of the CTMP to ensure compliance from construction drivers and appropriate actions in the event of non-compliance; • Mechanism for responding to traffic management issues arising during the works (including concerns raised from the public) including a joint consultation approach with relevant road authorities; and • Staff Travel Plan designed to reduce the number of staff Car / LGV trips to and from Site.	Construction

Ref.	Title	Description of Mitigation	Timing
EM8	Biodiversity Net Gain (BNG)	A BNG assessment has been undertaken for the Proposed Development. A BNG Report (**Volume 3, Appendix E**) and Landscape and Habitat Management Plan (**Volume 3, Appendix G**) have been prepared as part of the measures necessary to achieve SSEN Transmission's target BNG figures. The Landscape and Habitat Management Plan (LHMP) details specific requirements for enhancement measures (e.g. blanket bog restoration, woodland creation / enhancement).	Pre-commencement, Construction, Commissioning, Operations
EM9	Reinstatement	Following commissioning of the Proposed Development, all temporary construction areas would be reinstated. Reinstatement would form part of the contract obligations for the Principal Contractor and would include the removal of all temporary access tracks and work sites.	Commissioning, Operations
EM10	Access track alignment: habitat	The proposed access track makes use of and follows the existing access track, except where it passes through the outer north-western part of Corrimony RSPB Reserve. By this means, habitat losses have been kept to a minimum.	Commissioning, Operations
EM11	Construction noise	Construction noise would be managed by embedded mitigation implemented as outlined within the CEMP and CTMP. This includes but is not limited to: • Avoiding high intensity activities outside of standard hours when in close proximity to NSRs, these activities should be planned for standard hours where practical; • Abiding by any agreed construction noise limits at nearby NSRs; • Avoidance of working in the more sensitive evening and night times where possible; • Ensuring that processes are in place to minimise noise before works begin and ensuring that BPM are being achieved throughout the construction programme; • Ensuring that modern plant is used, complying with the latest European noise emission requirements. Selection of inherently quiet plant where possible; • Hydraulic techniques for breaking to be used in preference to percussive techniques where practical; • Use of rotary bored rather than driven piling techniques where this is possible; • Off-site pre-fabrication where practical; • All plant and equipment being used for the works to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use; • All contractors to be made familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2)**Error! Bookmark not defined.Error! Bookmark not defined.**;	Pre-commencement, Construction, Commissioning

Ref.	Title	Description of Mitigation	Timing
		• Loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials within the Site to be conducted in such a manner as to minimise noise generation; • Where possible, the noisiest items of plant would be located the furthest distance from the nearby NSRs. Plant known to emit noise strongly in one direction would, where practicable, be orientated so that the noise is directed away from NSRs; • Machines such as cranes that may be in intermittent use would be shut down between work periods or would be throttled down to a minimum. Machines would not be left running unnecessarily; • Appropriate routing of construction traffic on public roads and along access tracks, to minimise noise level increase; • Consultation with THC and local residents to advise of potential noisy works that are due to take place when they may be considered a cause of disturbance; and • Noise complaints should be monitored, reported to the contractor and immediately investigated. Regular communication with the local community throughout the construction period would also serve to publicise the works schedule, giving notification to residents regarding periods when higher levels of noise may occur during specific operations, and providing lines of communication where complaints can be addressed. A communication plan would be included in the Final CEMP as required. The appointed Principal Contractor would be encouraged to be a member of the 'Considerate Constructors Scheme'[1]. A Final CEMP would be prepared prior to works commencing, including setting out provisions to ensure that noise and vibration impacts relating to construction activities are minimised based on the measures outlined above. To assist in the preparation of the Final CEMP and CTMP, a detailed noise and vibration assessment would be undertaken, if required, once the Principal Contractor is appointed to identify specific mitigation measures for the Proposed Development (including construction traffic).	
LV1	Landscape	All landscape and visual mitigation proposals are covered in detail in **Volume 3, Appendix G**, which include the following: • Landscape and Habitat Management Plan report (LHMP); • Landscape Restoration Plan Substation Area; and • Landscape Restoration Site Wide Plan.	Construction, Commissioning
LV2	Visual	Visual mitigation is limited to ensuring established native woodland cover remains southwest and east of the Proposed Development and proposed Scots pine and wet woodland helps to mitigate new electrical infrastructure from views along the northern boundary, experienced by recreational users along the core paths (refer to Viewpoint 5 within **Volume 3, Appendix D**).	Construction, Commissioning

[1] Considerate Contractors Scheme, n.d. Available at: https://www.consideratecontractors.com/.

Ref.	Title	Description of Mitigation	Timing
E1	Compensatory habitat planting and restoration	A Landscape and Habitat Management Plan (LHMP) (**Volume 3, Appendix G**) has been produced detailing the necessary compensatory habitat measures to ensure an overall Biodiversity Net Gain (BNG). These measures would include blanket bog restoration, in accordance with Peatland ACTION guidance, and woodland planting. The details of the BNG assessment are available in **Volume 3, Appendix E**.	Construction, Commissioning
E2	Habitat protection	• Permeable tracks to be constructed (via use of suitably sized material to maintain flows of surface / ground water, or via the use of culvert(s)) on tracks that directly or indirectly impact groundwater dependent terrestrial ecosystems (GWDTE). • Works near or at any retained native trees or semi-natural woodland to follow guidance in British Standard 5837:2012 Trees in relation to design, demolition and construction - Recommendations (British Standards Institution, 2012). • Where there are micro-siting tolerances, ECoW / EnvCoW to advise on best placement to minimise habitat damage. • Pollution controls also required for habitats but covered by EM6 (and the design regarding SuDS).	Construction
E3	Bat mitigation	Survey of trees BT01 and BT02 prior to the commencement of works (see **Volume 2, Figure 8-5**), since these will be lost and have potential for bat roosts. The following to be implemented if bat roosts are discovered • Provision of compensatory roost habitat (a proportionate number of bat boxes; type and placement to be advised by ECoW following survey of the above two trees); • European Protected Species disturbance licences (if required) via NatureScot; • Artificial lighting mitigation (where needed) as outlined in EM2 and general mitigation measures covered by EM6 or SPP.	Pre-commencement, Construction
E4	Otter mitigation	• Pre-construction survey for otter in appropriate habitat; • European Protected Species disturbance licences (if required) via NatureScot (i.e. in the unlikely event that pre-construction survey finds new resting sites at risk of disturbance by the works); • Pollution and construction traffic controls also required but covered by EM6 and EM7; • Standard animal protection measures also required but covered by EM9and EM10.	Pre-commencement, Construction
E5	Water vole mitigation	• Pre-construction survey for water vole to be carried out along watercourses within 50 m of proposed infrastructure in appropriate habitat, during spring; • Protected Species disturbance licences (if required) via NatureScot (i.e. if works will result in loss of burrows); • Pollution and construction traffic controls also required but covered by EM6 and EM7; and • Standard animal protection measures also required but covered by EM9 and EM10.	Pre-commencement, Construction

Ref.	Title	Description of Mitigation	Timing
E6	Red squirrel mitigation	• Pre-construction survey for active red squirrel dreys in woodland that will be felled, and in retained woodland where the ECoW determines that works may cause disturbance (with cognisance of NatureScot guidance that active dreys in use for breeding may be disturbed at up to 50 m from works during the breeding season, and other active dreys at up to approximately 5 m); • ECoW to supervise works causing loss or disturbance of dreys and advise as necessary; • Protected Species disturbance licences (if required) via NatureScot; • Pollution and construction traffic controls also required but covered by EM6 and EM7; and • Standard animal protection measures also required but covered by EM9and EM10.	Pre-commencement, Construction
E7	Badger / pine marten mitigation	• Pre-construction survey for active setts / dens; • Protected Species disturbance licences (if required) via NatureScot (i.e. active setts / dens will be destroyed or lost); • Pollution and construction traffic controls also required but covered by EM6 and EM7; and • Standard animal protection measures also required but covered by EM9 and EM10.	Pre-commencement, Construction
E8	Reptile mitigation	• Potential reptile refugia / hibernacula to be avoided as far as possible, with ECoW guidance; • Where potential reptile refugia / hibernacula will be lost (in localised areas within the northern section of the Site), ECoW to supervise careful destruction and re-creation of potential hibernacula during the period mid-May to mid-September, inclusive, and ECoW to re-locate any reptiles found; If good quality reptile habitat will be cleared in the period mid-May to mid-September (inclusive), two-stage cutting / strimming of vegetation to be carried out before stripping, under ECoW supervision.	Pre-commencement, Construction
E9	General animal protection	• Trenches, holes and pits will be kept covered at night or during periods when no constructions works are taking place or if this is not possible, provide a means of escape for mammals, reptiles and amphibians that may become entrapped, such as a ramp or battered slope; and, • Plant and machinery to be inspected before use each day to check for the presence of animals that may have taken shelter within or beneath.	Pre-commencement, Construction
E10	General ECoW / EnvCoW tasks	ECoW / EnvCoW to be appointed and to: • Carry out pre-construction surveys for protected species; • Monitor protected species during construction period; • If found necessary, obtain licences from NatureScot and develop proportionate mitigation; • Construction personnel to be made aware of the ecological features within the ZoI and the mitigation measures and working procedures to be adopted, through the induction process and delivery of Toolbox Talks where required; • Advise on exact infrastructure placement within micro-siting tolerances; • Monitor and advise on storage of overburden to minimise habitat damage;	Pre-commencement, Construction

Ref.	Title	Description of Mitigation	Timing
		• Monitor any peat / vegetated turves that may be stored for later reinstatement; • Advise on habitat reinstatement; and • Monitor pollution control measures and advise on placement of ditches, settlement ponds, etc. to minimise habitat damage.	
O1	Black grouse mitigation (both within and outside Corrimony RSPB Reserve)	Specific mitigation will be set out in a Black Grouse Species Protection Plan produced by the Applicant and approved by relevant stakeholders, and will require the following: • Appoint an Ecological Clerk of Works (EcoW); • ECoW to carry out pre-construction survey for black grouse, in the breeding season prior to survey (and during construction if deemed relevant); • Clear vegetation as far as possible outside the breeding season (March to August, inclusive); Where construction works within 1 km of leks (as confirmed by pre-construction survey) cannot avoid the breeding season, then a) works to be restricted to start at least two hours after dawn in the lekking season (March to mid-May, inclusive), including nearby passage of construction-related vehicular traffic and pedestrians; b) where potential black grouse nesting habitat will be lost or is close enough to works that the ECoW deems that nest abandonment may occur, then all such habitat to be checked by the ECoW for active black grouse nests, and if active black grouse nest(s) are found then exclusion zones to be established around them from which works are prohibited until the ECoW determines the breeding attempt(s) have finished; and c) ECoW to monitor black grouse during the breeding season (potentially reducing the implementation of this mitigation to a zone of less than 1 km from works if the ECoW can determine that black grouse are behaving normally at a closer distance).	Pre-commencement, Construction
O2	Other bird species	Other bird species were scoped out of detailed assessment because it is clear that no significant impacts are possible. However, standard breeding bird mitigation is still required, comprising: • ECoW checks for active bird nests within construction vehicles, plant and materials, especially those not in use for a long period of time; • Vegetation clearance outside the breeding season as far as possible; • Where not possible, ECoW checks for active bird nests, establishment of exclusion zones around active nest(s), and exclusion of works from exclusion zones until breeding attempt(s) finished. The latter option may not be feasible for large areas and is liable to cause project delays therefore vegetation clearance outside the breeding season is strongly advised.	Pre-commencement, Construction
CH1	Cultural Heritage	It is recommended that a phased approach to mitigation is developed, with initial works consisting of a detailed survey of the final access track alignment and other works to confirm the location of previously recorded assets (including the clearance cairns) and their positioning in relation to the final track design. This should also map other previously unrecorded assets. All works to be agreed as part of a mitigation strategy with The Highland Council Archaeological Advisor.	Pre-commencement, Construction

Ref.	Title	Description of Mitigation	Timing
CH2	Cultural Heritage	Archaeological evaluation excavation / investigation to characterise any heritage assets recorded / identified within work areas. All works to be agreed as part of a mitigation strategy with The Highland Council Archaeological Advisor.	Pre-commencement, Construction
CH3	Cultural Heritage	Archaeological excavation, recording, and post-excavation analysis and publication. All works to be agreed as part of a mitigation strategy with The Highland Council Archaeological Advisor.	Pre-commencement, Construction
CH4	Cultural Heritage	Archaeological monitoring of works in areas of archaeological potential. All works to be agreed as part of a mitigation strategy with The Highland Council Archaeological Advisor.	Pre-commencement, Construction
CH5	Cultural Heritage	Protective measures, such as fencing and signage, should be used to demarcate areas of previously recorded heritage assets that will not be impacted as part of the Proposed Development to avoid accidental damage and disturbance. All works to be agreed as part of a mitigation strategy with the Highland Council Archaeological Advisor.	Pre-commencement, Construction
TT1	Cumulative Traffic and Transport	• A CTMP will operate throughout the duration of the construction programme, refer to EM7. The requirement to liaise and coordinate with construction contractors and respective CTMPs for cumulative development sites is to be included within the CTMP to ensure that peak traffic generation periods are not scheduled for the same months.	Pre-commencement, Construction
HG1	Water Quality and Flow	A Water Quality and Flow Monitoring Plan and subsequent delivery of that monitoring is proposed for the following requirements: • Any works directly to a water body should be monitored before, during and after construction. • The water quality monitoring programme will be developed by the Principal Contractor in consultation with SEPA and other relevant stakeholders during the process of obtaining CAR licences for works affecting, or for temporary discharges to, the water features and watercourses in and around the Proposed Development. Water quality monitoring will be required of all potentially affected water features and may include daily visual and olfactory observations or after heavy or prolonged rainfall, in situ monitoring using a calibrated hand-held probe, and potentially grab samples on a regular or ad hoc basis for analysis at an accredited laboratory. • A key water feature which will require monitoring is Kerrow Burn (F2). Due to the close proximity between the water features and the earthworks for Temporary Compound 5 (10 m), there is potential sediment-laden runoff to enter the watercourse. Specifically, turbidity should be monitored downstream of the earthworks and specified within a Water Quality and Flow Monitoring Plan. Similarly, F10, F12 and F13 will directly and indirectly receive drainage water from	Pre-construction, construction, commission

Ref.	Title	Description of Mitigation	Timing
		the proposed Bingally substation. F2, F10, F12 and F13 should be at a minimum included in any monitoring plans. However, the monitoring plan does not need to be limited to these features. Should turbidity be recorded downstream of the Site, an emergency response plan should be implemented. • To ensure that monitoring during construction is effective it will be necessary to carry out pre-construction monitoring. There is no guidance on how long or frequent this should be, but it is recommended that as a minimum there are six to twelve monthly visits taking in a range of flow and weather conditions. The scope of pre-construction water quality monitoring, and monitoring during construction will be set out in the Water Quality and Flow Monitoring Plan, pursuant to a pre-commencement planning condition.	