VOLUME 2 – CHAPTER 3: DESCRIPTION OF THE PROPOSED DEVELOPMENT

Figures (Volume 3 of this EIA Report)

Figure 3.1: General Arrangement

Figure 3.2: Substation Layout

Figure 3.3: Landscape Design

Appendices (Volume 4 of this EIA Report)

There are no appendices associated with this Chapter.

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Introduction

3.1.1 This Chapter describes the various elements of the works that constitute the Proposed Development for the construction and operation of the proposed 400 kV air insulated substation in Fetteresso Forest and the formation of associated earthworks, access, drainage, landscaping, and security, including the creation of temporary construction compounds. The Proposed Development is also referred to as Hurlie substation.

3.2 Location of the Proposed Development

3.2.1 The Site comprises an area of relatively elevated land with an approximate are of 292 ha (National Grid Reference (NGR) at NO 79597 86586), excluding access tracks, which lies within the eastern extent of the Highland Boundary Fault, a major fault zone which runs from Arran on the west coast to Stonehaven in the east (See **Figure 1.1: Location Plan**). The Site is afforested and comprises a conifer plantation forming part of an active commercial enterprise. The Site is dominated by two bluffs with a steep valley between them containing the upper reaches of the Burn of Day. The bluffs have relatively level upper elevations, where the Proposed Development will be sited, however to the west the landform rises steeply. To the east and south-east the elevation drops sharply with the landform shaped by the Burn of Day and Burn of Baulks.

3.2.2 The wider site setting is similar in character to the Site, comprising steeply undulating, elevated land given over to commercial forestry plantation, interspersed with associated infrastructure. The Site and its surrounds form part of the eastern extent of the Highland Boundary Fault. This geographic feature separates two different geological terrains, the Highlands and the Lowlands. The land to the south, outwith Fetteresso Forest's extent, comprises an area of lowland given over to arable farming. This is broadly mirrored to the east where the land descends into a coastal plain. The land to the west, forms the southern range of the south Deeside Grampians, eventually rising to the elevations that comprise the Cairngorm Mountain range. There is little built infrastructure in the wider environment with exception of the existing Fetteresso Substation.

3.3 Description of the Proposed Development

The Proposed Development comprises the construction and operation of a new 400 kV air insulated substation located on a level platform and the formation of associated earthworks, access, drainage, landscaping, security, and the creation of temporary construction compounds and set-down, equipment and materials storage areas (**Figure 3.1: General Arrangement** and **Table 3.1**).

Figure 3.1: General Arrangement

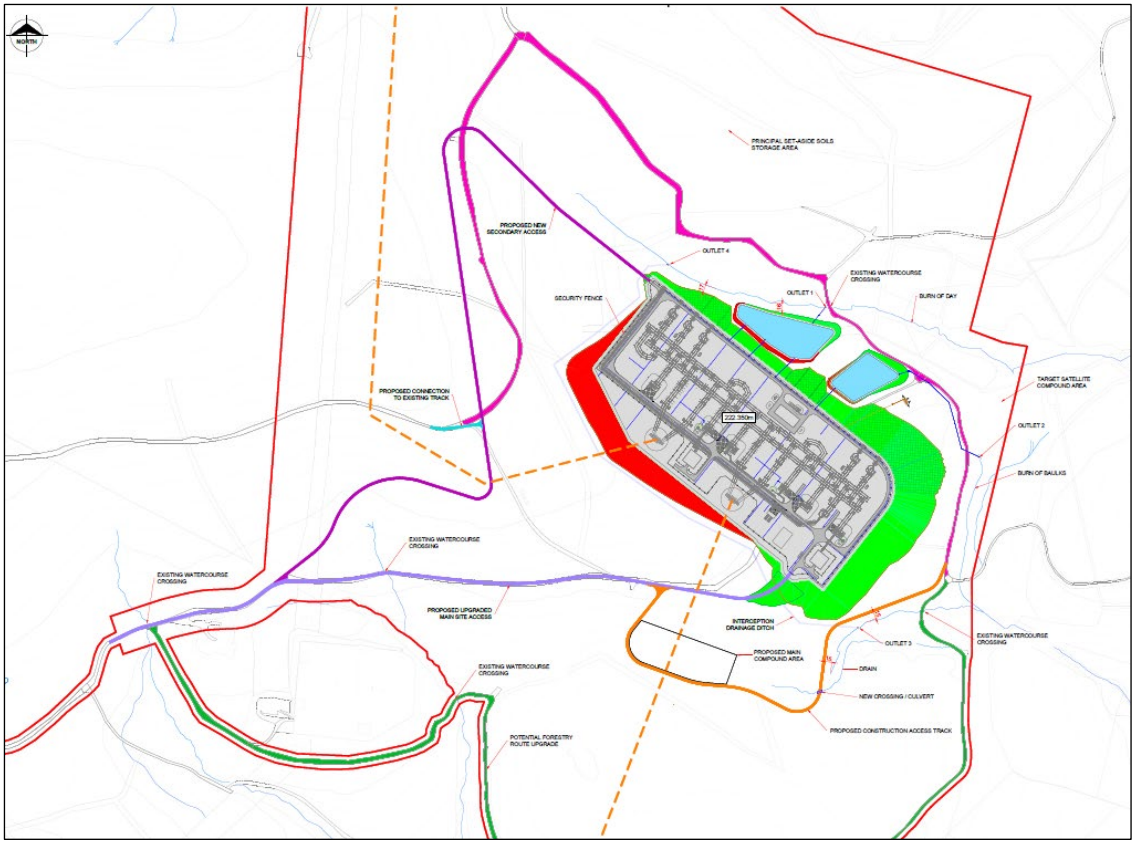


Table 3.1: General Arrangement Key

PLANNING APPLICATION BOUNDARY
PROPOSED UPGRADED MAIN SITE ACCESS
PROPOSED NEW SECONDARY ACCESS
PROPOSED CONSTRUCTION ACCESS TRACK
PROPOSED CONNECTION TO EXISTING TRACK
POTENTIAL FORESTRY ROUTE UPGRADE
EXISTING CATEGORY A FORESTRY TRACK
CUT
LEVEL PLATFORM (222.350m)
FILL (1:3 SLOPE)
FILL (1:5 SLOPE)
INDICATIVE OVERHEAD LINE
PROPOSED SUBSTATION ROADS
PROPOSED SURFACE WATER DRAINAGE
PROPOSED SURFACE WATER PERFORATED PIPE
FOUL DRAINAGE NETWORK
SUDS BASIN AREA
EXISTING WATERCOURSE
PROPOSED SEPTIC TANK
PROPOSED HEADWALL (HW)

3.3.1 The key elements of the Proposed Development are described below:

- Management felling and construction felling to prepare the Site;
- Cut and fill operations to create a development platform to accommodate the electrical infrastructure;
- The formation of new permanent access tracks within the Site.
- The erection and commissioning of electrical equipment;
- The erection of a single storey control building;

- New landscape planting to deliver landscape and visual mitigation, habitat loss mitigation and biodiversity net gain (BNG) measures (both on and off site);
- Creation of Sustainable Drainage System (SuDS), to the north of the platform, draining into the Burn of Baulks and the Burn of Day;
- Internal accesses and vehicle parking within the substation platform area;
- Perimeter fence;
- Operational lighting for use during maintenance only when necessary;
- Temporary site compounds lay down areas and material storage areas and internal access tracks;
- Temporary site offices and welfare facilities for on-site construction workers; and
- Temporary construction lighting.

The substation would use new 400 kV Air Insulated Switchgear (AIS) equipment with an approximate height of 18 m above platform level, including shunt reactors, transformers, connection bays and gantries. **Figure 3.2: Substation Layout** shows the substation layout and equipment. **Table 3.2** lists the substation infrastructure and connection requirements that would be included in the design. The primary and secondary equipment for the substation is listed in **Table 3.3** below.

Figure 3.2: Substation Layout

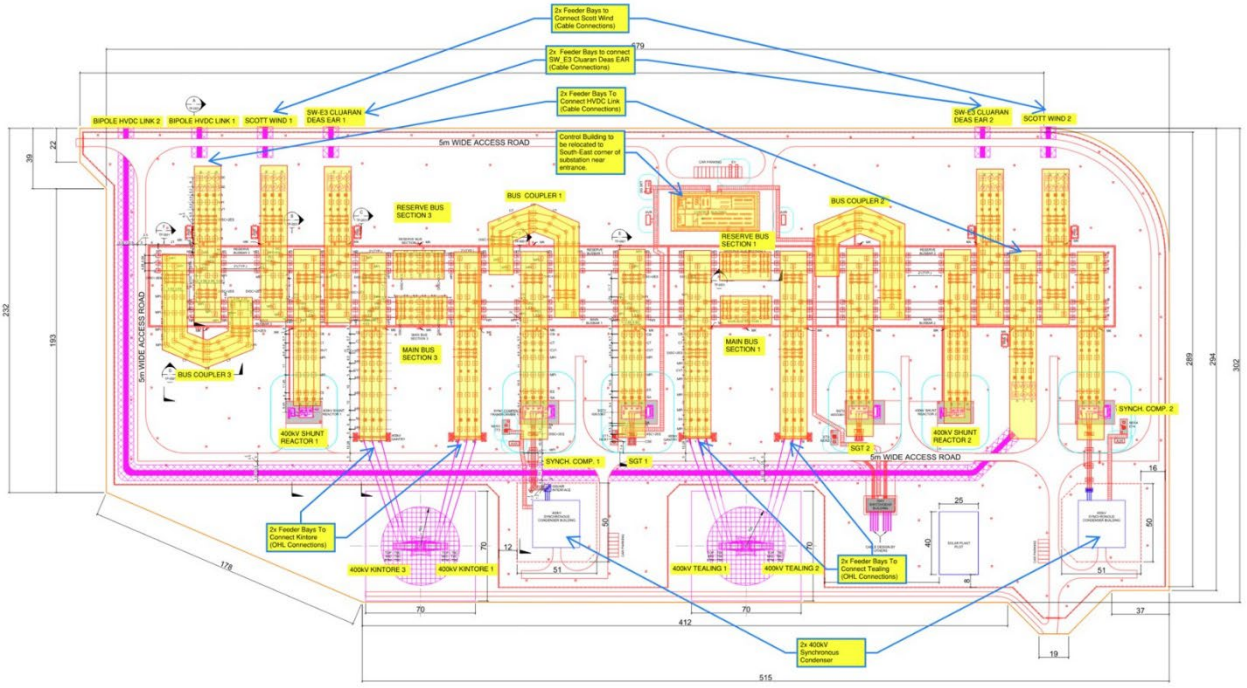


Table 3.2: Substation Infrastructure Requirements

Substation Infrastructure Requirements	Purpose
Large, levelled platform area, sized approximately 685 m x 300 m	Provide foundation for substation structures and equipment
400 kV Control Building	Houses critical equipment for monitoring, controlling, and protecting electrical systems
3 x Bus Couplers	Couple two busbars to perform maintenance on other associated circuit breakers
4 x Bus Sections	Sectionalize bus system for load breaking
2 x Feeder Bays	To connect Kintore (OHL Connection)
2 x Feeder Bays	To connect Emmock (OHL Connection)
2 x Feeder Bays	SW_E3 Cluaran Deas Ear (Cable Connection)

Substation Infrastructure Requirements	Purpose
2 x Feeder Bays	To Connect HVDC Link (Cable Connection)
2 x SGT Bays	To Connect 400kV Super Grid Transformers
2 x Shunt Reactor Bays	To Connect 400kV Shunt Reactors
2 x Synchronous Condenser Bays	To Connect 400kV Synchronous Condenser
Below ground earthing	Ground electrical equipment for safety

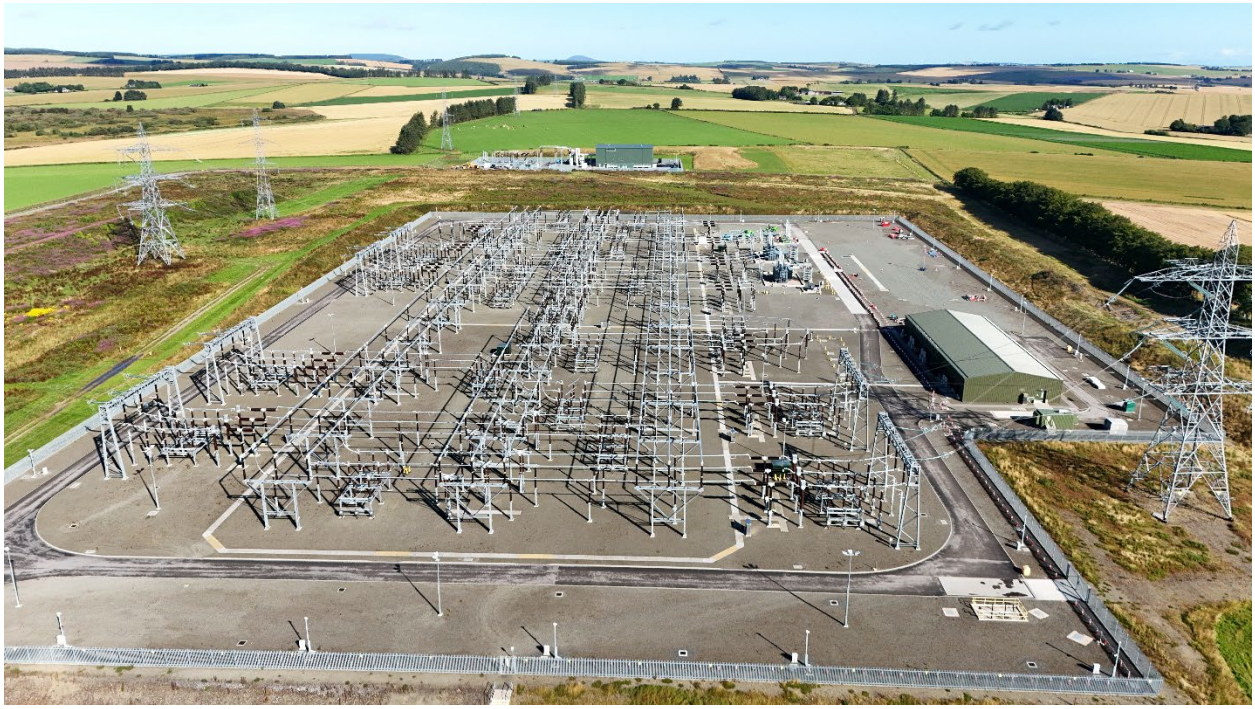
Table 3.3: Substation Equipment

Substation Equipment	Purpose
Primary	
2 x 400 kV Super Grid Transformers	Supergrid transformer to change the voltage from one part of the network to another
2 x 400 kV Shunt Reactors	Assists in managing and controlling system voltage levels across the network
2 x 400 kV Synchronous Condenser	Assists in managing and controlling system voltage levels across the network
2 x 400 kV Synchronous Compensation Transformers	400kV transformers to change the voltage from one part of the network to another
Support structures	Construct, mount, and secure equipment
4 x Gantries	Steel structures to receive and support OHL connections
Switchgear	Disconnectors and circuit breakers to control, protect and isolate electrical equipment to allow work to be done and clear faults downstream
Instrument transformers	Transform voltage or current levels for metering and protection purposes
Surge arrestors	Protect electrical devices in alternating current circuits from voltage spikes with very short duration measured in microseconds, e.g. lightning strikes
Busbars and clamps	Aluminium bars used to transfer the electricity between equipment in the substation
HV Cable	High-voltage cable including a conductor and insulation for electric power transmission at high voltage
Secondary	
Control building steelwork	Construction
Diesel generator x 1	Provide backup power should the normal supply fail, so that the substation can continue operating until permanent supply is restored
AVR x 2	Automatic voltage regulation to stabilise the substation's auxiliary power supply to allow reliable operation
Protection panels & SCS	Protection and control panels that contain relays to protect the substation equipment and allow remote monitoring and control
LVAC, LVDC panels and cables	Panels and cables for Low Voltage Alternating Current / Low Voltage Direct Current
Multicore cables	Combine multiple power feeds into a single jacketed cable
Batteries	Provide auxiliary power supply
PRRs	Portable relay rooms to locate protection and control equipment within the substation compound

Substation Equipment	Purpose
HVAC	Heating, ventilation, and air conditioning

3.3.2 **Plate 3.1** is a photograph of the recently commissioned Rothienorman substation which gives a general impression of the appearance of the substation platform of the Proposed Development. Note that the Rothienorman platform is smaller than that proposed for Hurlie.

Plate 3.1: Newly Constructed Rothienorman Substation. Source: SSEN Transmission



3.4 Substation Design

Evolution of Substation Design

3.4.1 The proposed substation design has been progressed through an iterative process integrating electrical and civil engineering and environmental considerations. The design process has sought to reduce the potential for significant environmental effects at the outset taking account of site topography, slope, drainage, existing land uses and vegetation.

3.4.2 The principal iterations have focused on reducing the extent of the Site and on optimising the cut and fill works. As a result, the overall footprint of the works area has been reduced from approximately 45 ha to just under 24.5 ha, which has allowed an increase in new planting by an equivalent extent.

3.4.3 The main platform length has been reduced from 760 m to 685 m, narrowing the western edge, and rounding the north-east corner. The reduction of the platform has allowed the SuDS to be repositioned allowing areas of new planting eastwards. Work to optimise the alignment of the site access road west of the platform has enabled areas of new woodland block and shrub/scrub planting. The shrub/scrub planting extends further south and along the southern edge of the substation. The western, north and eastern edges of the platform are wrapped in woodland block planting, comprising a mix of deciduous and evergreen species, which will add both biodiversity and strengthen visual screening to what is already a well-screened platform as a result of the topography of the site.

Substation Platform

3.4.4 The platform dimensions are 685 m x 300 m and at an elevation of 220.35 m AOD. The substation platform would be formed by excavating into the slope of the Site. Excavated material would be used to form the platform where the Site slopes away. The platform would comprise a flat, rectangular area accommodating the electrical and built infrastructure.

A number of concrete foundations will be installed to support the electrical equipment, with a stoned finish to the compound. Kerbed tarmac surfaced roads will be installed within the substation boundary.

3.4.5 Drainage will be provided by a network of surface drains with interceptor traps, which will drain to SuDS basins (see Drainage below).

3.4.6 A control building (described below) would be located on the platform.

3.4.7 The platform would be formed largely from site won material although it is anticipated that engineered stone would need to be imported to form the upper drainage/finishing layer.

Control Building

3.4.8 A steel framed and cladded control building would be required to house equipment to monitor, control and protect electrical systems. The control building would have a footprint no greater than 53 m x 23 m with an elevation no higher than 7m. The building, which SSEN Transmission would use to manage the maintenance and operation of the substation, would contain welfare facilities and is likely be located on the southern boundary of the Site. The colour palate would be determined during detailed design and through agreement with Aberdeenshire Council and would likely be consistent with other SSEN Transmission infrastructure. The substation would be controlled remotely and not permanently staffed.

3.4.9 Parking places would be provided within the platform area for control and maintenance personnel.

Security Fencing and Lighting

3.4.10 The platform will be secured by a perimeter fence of up to 4 m high. Access will be via a security gate mid-way along the eastern edge of the platform. Individual light clusters will be low-level, narrow beam, and directed downwards to minimise glare and light spill. Different lighting configurations and designs will be adopted for different parts of the platform. Lighting would only be provided during emergency operations at night-time. No lighting would be used under normal operation.

Landscape Design

The platform is located below the crest of the hills thereby ensuring the platform infrastructure is predominately screened from local receptors by the local landform. **Figure 3.3: Landscape Design** shows the approach to landscaping across the Site. **Table 3.4** lists and describes the planting types. New planting of a variety of habitat types would provide complementary and additional visual screening with improved opportunities for biodiversity.

3.4.11 The planting schedule comprises woodland block, shrub and scrub, grass and wildflower, and wetland planting. Evergreen conifers would be replanted on the proposed temporary set-aside soils storage area to the north of the platform, which is currently forested and would be cleared. Low-lying native shrubs and scrub would be planted along the main access roads to the Site inside the planning application boundary. Native broadleaved woodland would be planted on the lowland slope to the south and east of the platform, including tree and shrub planting on the fill slope adjacent to the platform. To the north-east of the platform native species would be planted around the SuDS basins transitioning into native grass and a mix of wildflower species in the immediate vicinity with shrub and scrub planting to the southeast of the existing access road. The proposed satellite compound area adjacent to and north of the access road (as show in **Plate 3.2** below) would be replanted with native broadleaf woodland to enhance woodland resilience. Tributaries of the Burn of Baulks would be buffered with native species marginal planting transitioning to native grass and wildflower species. The cut slope to the west would be reinstated and wrapped in woodland block planting, comprising a mix of deciduous and evergreen species, which will add both biodiversity and strengthen visual screening.

Figure 3.3: Landscape Design (Excerpt/Not to scale)

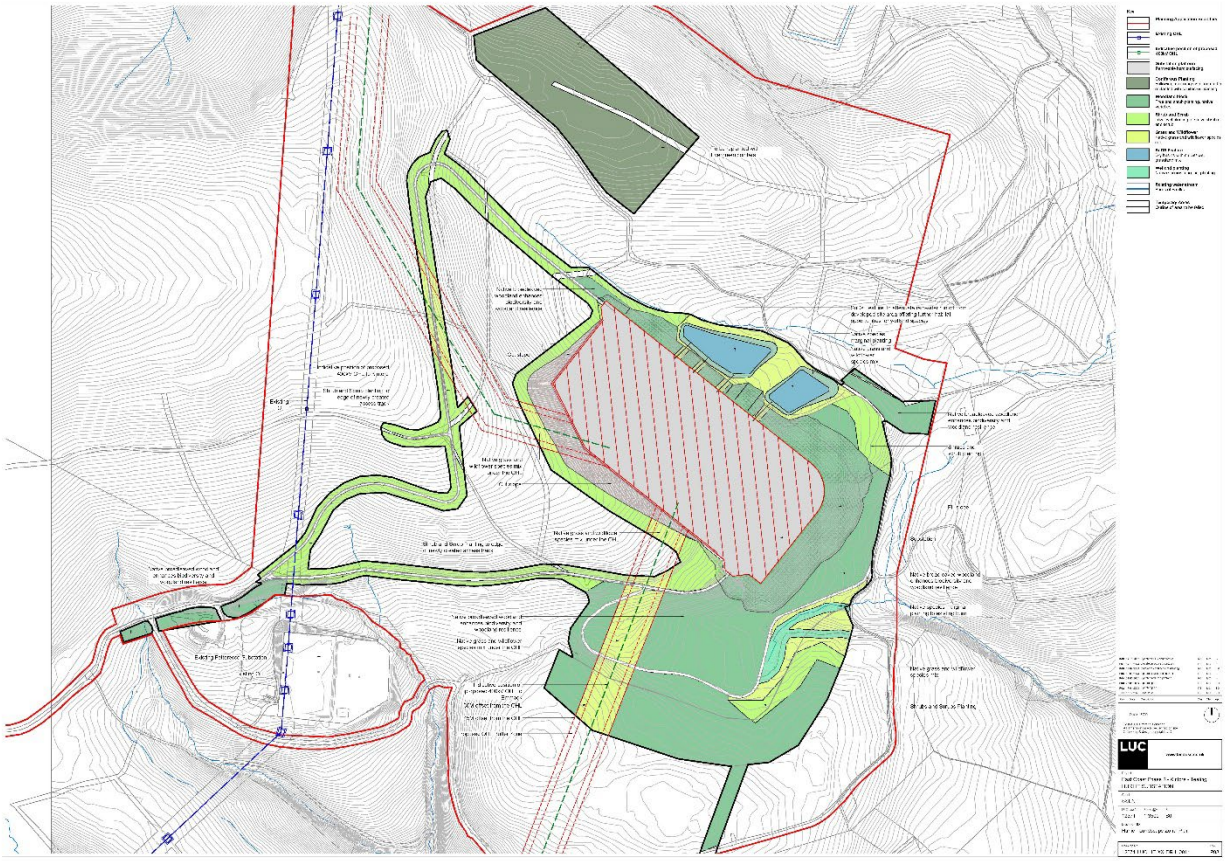


Table 3.4: Planting Types

Key	Type	Description
	Replanting	Evergreen confers
	Woodland block	Tree and shrub planting, native varieties
	Shrub and Scrub	Low level planting of native shrubs and scrub
	Grass and Wildflower	Native grass and wildflower species mix
	Wetland planting	Native species marginal planting
	SuDS Feature	Dry basin SuDS

Water Supply and Drainage

3.4.12 Water supply for construction and once the Proposed Development is operational will be via a private borehole. Opportunities for rainwater harvesting will be explored to provide water for wheel wash and, if necessary, dust suppression. Foul drainage during construction and operation will be via a package treatment plant although the use of a reedbed system will be explored for foul drainage at the operations stage.

A network of surface water drains running through and around the perimeter of the platform will carry run off from the hard-surfaced areas of the platform, and discharge into four outfalls: to the northwest into Burn of Day; to the southeast

into Burn of Baulks, to SuDS Basin 1 to the north into the Burn of Day, and to SuDS Basin 2 to the east into Burn of Baulks. See **Figure 3.4** and **Table 3.5** below.

Figure 3.4: Drainage Layout (Excerpt/Not to scale)

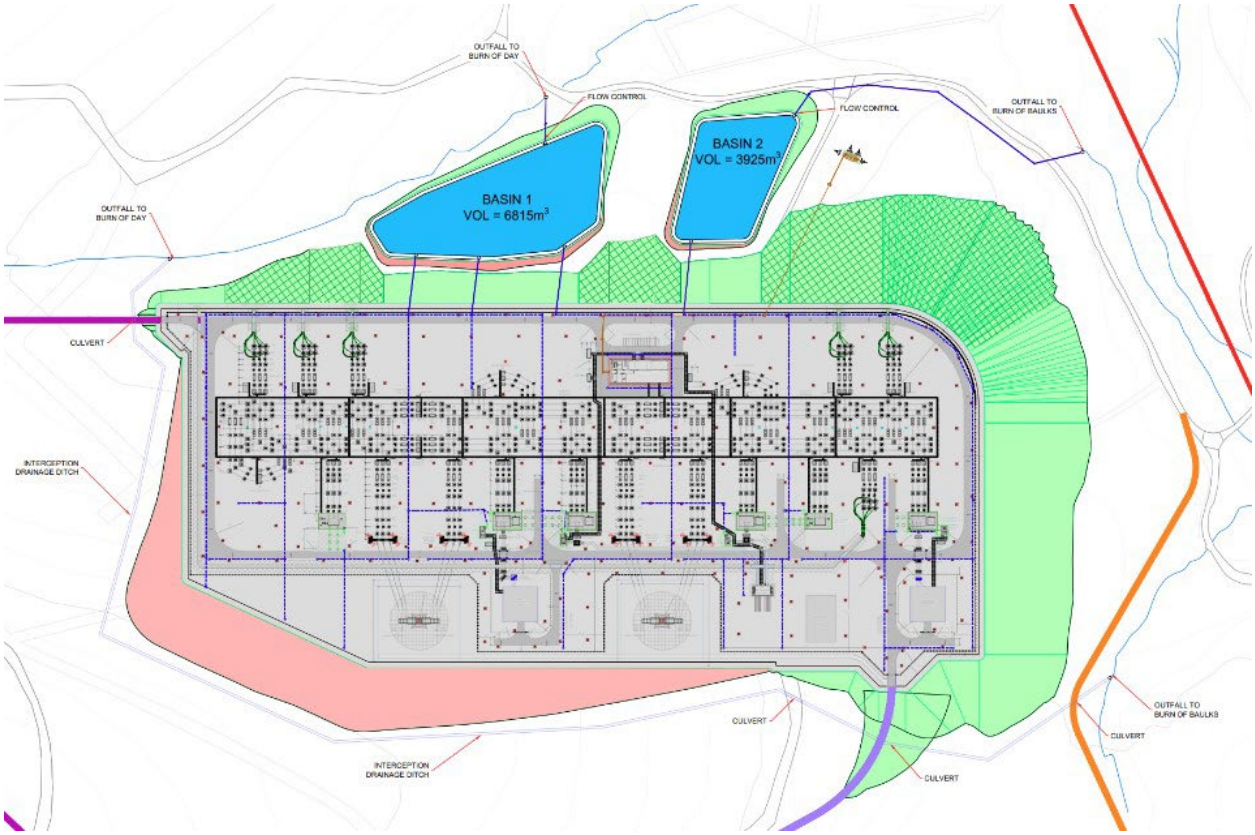


Table 3.5: Drainage Layout Key

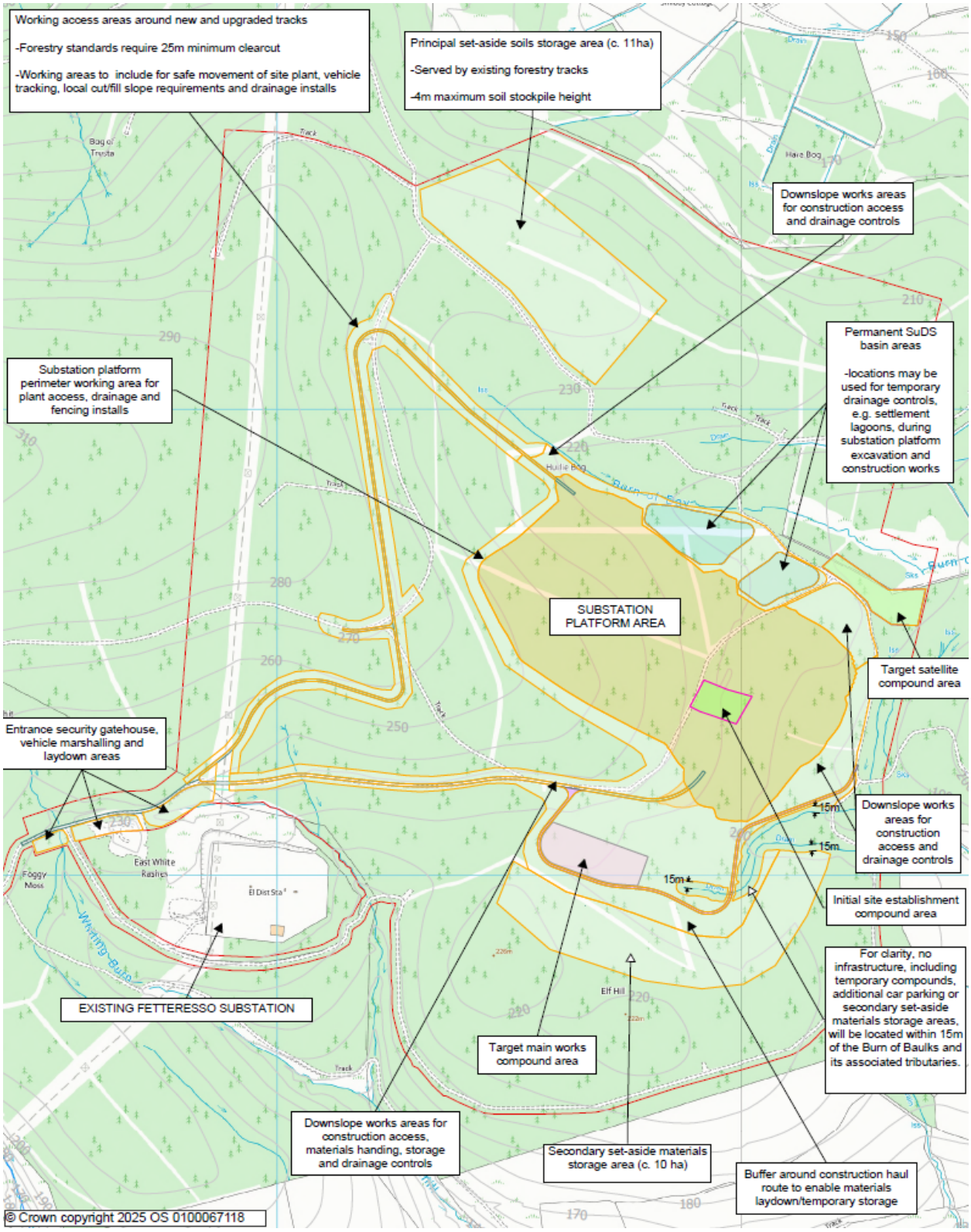
PROPOSED SURFACE WATER DRAINAGE
PROPOSED FOUL WATER DRAINAGE
PROPOSED SURFACE WATER PERFORATED PIPE
PROPOSED INSPECTION CHAMBER WITH PENSTOCK (PC)
PROPOSED FILTERSEPTA BY ANDEL OR SIMILAR
PROPOSED DRAINAGE DITCH

Construction Facilities

3.4.13 During construction, the following temporary facilities will be required:

- An initial site establishment compound would be formed inside the platform area.
- A primary works compound area would be located to the south-east above and adjacent to the access road, while a secondary material storage area (ca. 10ha) would be located below and following the contour of the road.
- A satellite compound area would be located to the north-east of the platform area between the access road and the Site boundary.
- A principal set aside soils storge area (ca. 11ha) would be located to the north and adjacent to the Site boundary.
- Downslope areas to the south and east of the Site would provide construction access, materials handling, storage and drainage controls.

Plate 3.2: Temporary Works Areas (Excerpt/Not to scale)



3.4.14 Surface water runoff from the compounds and storages areas will be drained via a series of cut-off ditches/filter drains and conveyed to suitably sized temporary settlement ponds/lagoons prior to discharge to the water environment or tied temporarily into the permanent SuDS. The storage areas outside the substation platform area would be restored as per the landscape design plan at the end of the construction phase.

3.4.15 Temporary haul roads will be constructed around the extents of the platform area to facilitate transportation and deposition of earthworks materials. Haul road drainage will consist of trackside ditches as required. Check dams,

sumps, settlement lagoons and soakaways will be provided as appropriate for suitable treatment prior to discharge to the water environment.

3.5 Proposed Construction Activities, Programme and Working Hours

Main Construction Activities

The main construction activities, phasing and the associated HGV movements are shown in **Table 3.6** below.

Table 3.6: Indicative High Level Construction Programme

Activity	Estimated HGV movements/ activity duration	2026				2027				2028				2029			
		Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Tree Felling	120																
Mobilisation	20																
Form access road, temporary compound, clear site	220																
Install drainage, form compound	40																
Cut and fill earthworks	60																
Install 75mm whin chip and 225 type one layer over platform	6100																
Permanent Drainage	332																
Services	37																
Substation Roads	270																
Security Fencing	15																
Mobilisation	50																
Concrete and Rebar delivery	920																
Delivery of primary equipment and structures	220																
Delivery and installation of transformers	50																
Building steel work and cladding	60																
Installation of secondary equipment	35																
Commissioning	10																

Site Development

3.5.1 The main construction activities and phasing would be as follows:

- Management felling and construction felling of woodland;
- Set up initial establishment compound;
- Clear and prepare the principal set aside soils area for receiving;
- Clear and set up works accesses/construction haul route;
- Clear and set up main works area perimeter drainage controls;
- Clear and set up main and satellite works compounds;
- Clear soils at lower slope (between the existing forestry access through the site and the access track up from Burn of Baulks) in relevant cells and move cleared soils to set aside storage area;
- Scrape back loose / weathered rock at lower slope in relevant cells and set aside/ test/ process;
- Clear soils from upper slope in relevant cells and set aside;
- Scrape back loose / weathered rock from upper slope in relevant cells. Likely set aside to lower slope area, test/ process;
- Clear works zones for rock drilling and blasting;
- Rock drilling and blasting
- Process realised rock – crushing / grading/ mixing with set aside loose rock;
- Rock placement for platform build from lower slope up towards rock cut areas;

- As main civils platform is complete, install permanent SuDS basins;
- Recover/reuse set aside soils for dressing slopes and landscape restoration works;
- Form ground bearing foundations for structures;
- Erection of control and switchgear buildings;
- Steel work supporting the electrical equipment;
- Installation of the transformers, conductors and associated electrical equipment; and
- As the site is decommissioned, restore soils to temporary works areas - e.g. compounds and cleared set aside storage areas.

Working Hours

3.5.2 Construction hours, including construction deliveries, are proposed to be as follows unless otherwise agreed with Aberdeenshire Council:

- Monday to Sunday – 07:00 to 19:00.

3.5.3 The Principal Contractor may, following prior agreement with Aberdeenshire Council, undertake construction works outside of these hours when there is a programme critical operation that cannot be postponed until the next working day, or where it is more appropriate to undertake the works outside these hours.

3.5.4 There may also be occasions where, for example to deal with emergencies, there is the need to undertake construction work outside of these hours without the prior agreement of Aberdeenshire Council. The Contractor will endeavour to keep these measures to a minimum and for no longer than is strictly necessary.

3.6 Access

3.6.1 The main types of construction traffic to the Site include vehicle movements of low-loaders with one-time delivery associated with mobilization, site set-up and bringing earthworks plant, and accommodation units to Site. HGVs would bring equipment and supplies, make up stone, and steel, while Abnormal loads would include crane, transformers, and other large equipment and structures.

3.6.2 The proposed principal route, from both north and south, would be the A90 Aberdeen Western Peripheral Route (AWPR), exiting at the Peterculter Junction, and joining either the A93 and/or the B9077, then joining the A957 (Slug Road) at Crathes, and arriving at the principal access to the Site from the north. Abnormal Indivisible Loads (AILs) are proposed to use the A93 from the A90 to its junction with the A957 at Crathes.

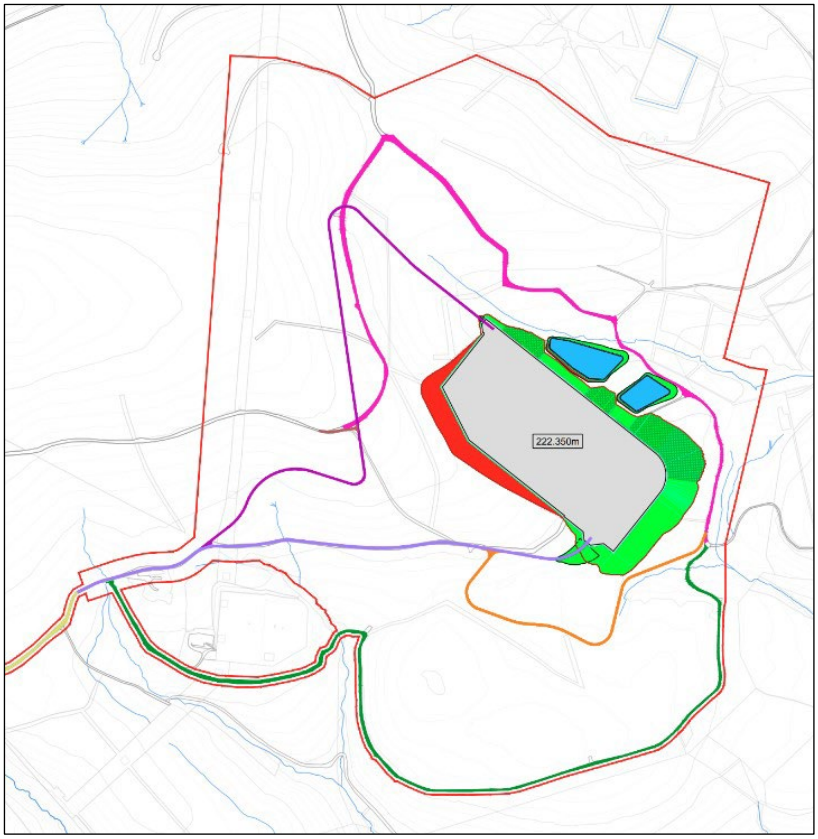
3.6.3 Some construction traffic may access the Site from the south of Slug Road, via west Stonehaven, but these would be limited to smaller deliveries and construction personnel. In addition, some smaller deliveries and personnel may access from the unclassified Auchenblae Road to the south of the Site.

3.6.4 From Slug Road, access to the Site would be along the existing forest tracks which are used currently for commercial forest operations. Some widening of the bellmouth as the track joins Slug Road may be necessary. Existing forest tracks would be surveyed and assessed for plant and large load equipment delivery vehicle swept paths and loads, and upgraded, widened or realigned where necessary.

3.6.5 Some of the existing forest tracks are used for recreation. Where temporary closure or diversions of tracks are necessary, these will be notified to the community in advance and clearly communicated, in the same way as currently to accommodate logging activities.

Figure 3.5 provides an illustration of Site access within the planning application boundary. **Table 3.7** describes the site access as illustrated.

Figure 3.5: Site Access



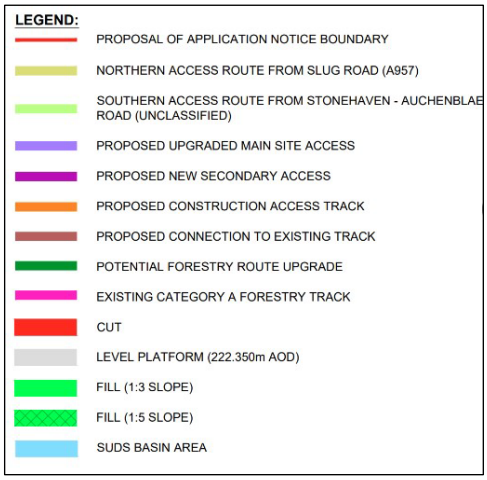
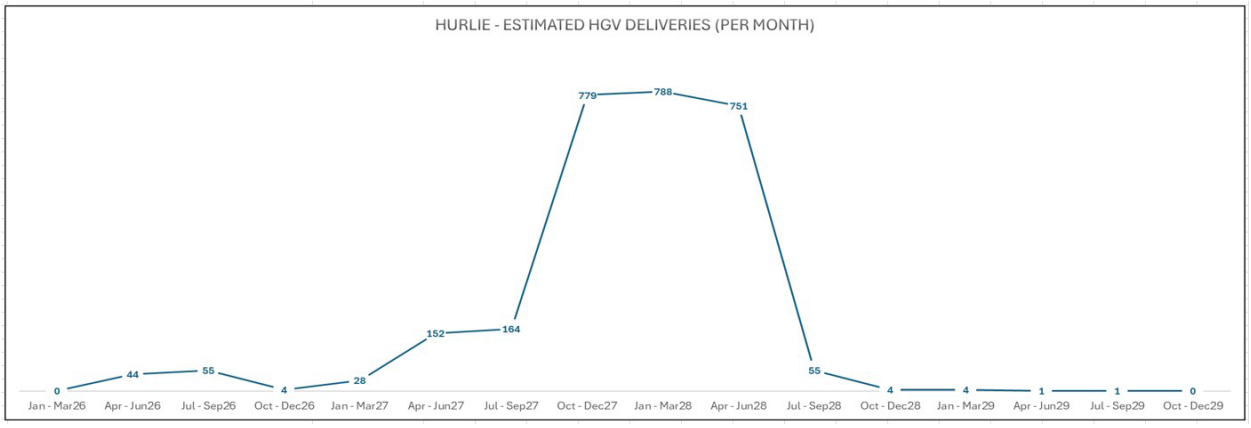


Table 3.7: Site Access Key

3.6.6 The Applicant would prepare a Construction Traffic Management Plan (CTMP) for approval by Aberdeenshire Council, secured through a suitably worded planning condition to any planning permission. The CTMP would confirm the proposed construction traffic volumes and routes and identify any upgrades, surface finishing, or improvements required to adopted roads, which Aberdeenshire Council deems to be required.

3.6.7 See **Figure 3.6** below for a visualization of total HGV construction traffic movements by month from 2026 to 2030.

Figure 3.6: Hurlie Estimated HGV Deliveries



3.7 Environmental Management During Construction

3.7.1 The EIA Regulations require, to the extent relevant to the specific characteristics of the Proposed Development and the environmental features likely to be affected, that the EIAR provides an estimate of expected residues and emissions (such as water, air and soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced) resulting from the construction and operation of the Proposed Development.

Table 3.8: Residues and Emissions provides a summary of the principal residues and emissions for the Proposed Development. Further assessment of potential significant environmental effects of these residues and emissions is set out in **Chapters 7 to 14** of the EIAR.

Table 3.8: Residues and Emissions

Topic	Potential Residues and Emissions
Water	**Construction:** Surface water runoff and discharge is likely during construction. In addition, occasional discharges may arise from pumping, or over-pumping to dewater excavations for the substation platform. Temporary water supply will be provided by a single borehole. Pollution sources may arise as a result of soil erosion or from activities such as oil/fuel or chemical storage and use. Further assessment of environment effects on the aquatic environment is presented in **Chapter 12: Hydrology, Hydrogeology, Geology and Soils**. A Flood Risk Assessment and Outline Drainage Strategy is included in **Appendix 12.1**. The drainage strategy will provide sufficient detail on current and future drainage proposals within the Site, plus ancillary topics. **Operation:** Permanent water supply would be by the borehole established for construction. Drainage from the Proposed Substation Development will be attenuated through use of two SuDS basins designed to discharge flows at greenfield run off rates to the Burn of Day and Burn of Baulks catchments.
Air	**Construction:** The construction phase would require the transport of people and materials by road with associated emissions to the atmosphere. Additionally, construction activities including preparatory works and creation of the earthworks associated with the installation of the civils element of the Proposed Development have the potential to generate dust emissions. There are no air quality management areas within the vicinity of the Proposed Development or along the haulage routes outlined in section 3.6. The potential for environmental effects associated with air emissions is presented in **Chapter 6: Approach to Topics Scoped Out of the EIA**. **Operation:** No significant point source or diffuse air emissions would be produced during substation operation. The Proposed Development would contribute to connecting renewable electricity generation capacity to areas of demand, in turn displacing emissions associated with fossil fuel-based electricity generation elsewhere.
Soil and Subsoil Pollution	**Construction:** Soil and subsoil excavation, handling and storage would be required during construction particularly for substation platform earthworks and new access tracks. All soil and subsoil would be stored temporarily for use in reinstatement. The Applicant will adopt measures in the Construction Environmental Management Plan (CEMP) and Soil Management Plan to avoid contamination of top and subsoil during construction. There will be no offsite disposal of arisings from the construction of the Proposed Development. The potential for environmental effects associated with soil handling during construction is presented in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**. **Operation:** No requirement for soil or subsoil excavation or handling during operation has been identified. No significant sources of soil contamination have been identified for the operational phase.
Noise and Vibration	**Construction:** Noise sources during construction would include increased traffic flows and noise from construction activities and plant at the Site and for forming access tracks. Limited rock blasting may be required. Further detail is provided in **Chapter 12: Noise and Vibration**. **Operation:** Transformers and other electrical equipment emit continuous and consistent tonal noise. The potential for significant operational noise effects is considered in **Chapter 12: Noise and Vibration**.
Light	**Construction:** Temporary construction compounds and platform working areas are likely to be equipped with lighting installations for use during low light conditions and passive infra-red sensor-controlled security lighting. Any effect would be temporary and is not predicted to be significant. The effects of lighting on visual receptors are considered further in **Chapter 6: Landscape and Visual Impact**. **Operation:** No light sources have been identified during normal operation of the Proposed Development.
Heat and Radiation	**Construction:**

Topic	Potential Residues and Emissions
	No heat or radiation sources have been identified during the construction phase which present significant environmental effects; therefore, these sources of impact have not been considered further in the EIA. **Operation:** Electromagnetic fields (EMFs) are emitted from the operation of substations but is typically contained within the boundary of the substation development. Electromagnetic Fields (EMF) arise from electric charges. To prevent known effects of EMFs on health, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) developed health protection guidelines in 1998 for both public and occupational exposure. In the UK, the National Institute for Health Protection's (NIHP) Centre for Radiation, Chemical and Environmental Hazards (CRCE) has set out guidelines for exposure to EMFs. In March 2004, the UK adopted the ICNIRP 1998 guidelines on the advice of the National Radiological Protection Board (now part of NIHP CRCE). These guidelines set conservative exposure levels for the public to electric and magnetic fields, and they are endorsed by the World Health Organisation and the UK Government. The NIHP CRCE keeps under review emerging scientific research and/or studies that may link EMF exposure with health problems and provides advice to the Department of Health and Social Care on the possible need for introducing further precautionary measures. All new transmission and related infrastructure is required to comply with the government policy of adopting the guidelines of the International Commission on Non-Ionising Radiation Protection (ICNIRP) on exposure to EMF. The Applicant ensures at all times that it complies with relevant legislation, which in turn is based on the advice of the UK Government's independent scientific advisers, to ensure the appropriate level of protection for the public from these fields. In determining the level of impact, SSEN Transmission closely observe these independent guidelines which in conjunction with a Code of Practice, published in 2012 by industry and the Department for Energy and Climate Change (now part of the Department for Energy Security and Net Zero), sets out all the practical details needed to apply the exposure limits for substations. EMF resulting from the Proposed Development are compliant with National Policy and Industry Standards as specified with the Energy Network Association Code of Practice and Electricity Safety, Quality and Continuity Regulations 2002. Consequently, in setting out the scope of an EIA, SSEN Transmission can demonstrate that levels of exposure are within the limits set within these standards, within the exposure guidelines as specified in the Code of Practice on compliance, and with the policy on phasing as specified in the Code of Practice on optimal phasing, no significant effects are likely to result from radiation and EMFs.
Waste	**Construction:** Construction operations would generate arisings including both commercial wastes and other material arisings, for example, wood, metals and plastics and stone. Waste will be managed in accordance with good practice guidance and implementation of Site Waste and Materials Management Plans, to implement the waste management hierarchy. Waste that arises is likely to be commercial wastes and other material arisings, for example, wood, metals and plastics, that will be segregated to allow recycling and appropriate disposal of non-recyclable materials and surplus building materials that will be returned to suitable secondary material processors. Office, canteen and hygiene facilities will discharge to a onsite package treatment plant. More information on these measures will be included in the outline Construction Environmental Management Plan (CEMP) that will be prepared by the Principal Contractor, and in SSEN Transmission's Waste Management GEMP **Operation:** Substation operation does not produce any waste. During the operational phase of the Proposed Development, maintenance activities will generate waste, but this will not be in significant quantities and will likely be restricted to waste associated with employees and visiting contractors. It will be managed on site and separated into recyclable waste streams accordingly. All foul drainage and infrastructure will be provided for on-site through the use of septic tank/package treatment plant.

3.8 Mitigation Proposals

3.8.1 SSEN Transmission is committed to protecting and enhancing the environment by minimising the potential impacts from their construction and operational activities through a three-tiered mitigation hierarchy presented in **Chapter 5**, wherein the three tiers are as follows:

- Embedded Mitigation: design stage mitigation;
- Applied Mitigation: standard/best practice environmental discipline/construction industry mitigation; and

- Additional Mitigation: Site-specific bespoke mitigation.

3.8.2 Embedded mitigation has sought to avoid sensitive habitat and watercourses and to minimize construction and operational impacts through design of the platform, access, and drainage solutions. Where necessary, applied mitigation in the form of GEMPs and SPPs, and additional mitigation for site specific impacts and effects will be implemented, as conditions of the Principal Construction Contract.

3.8.3 Effective implementation of mitigation will be assured through an independent auditor appointed by SSEN Transmission who will share findings and reports with statutory consultees.

3.8.4 In addition, the Contractor will be required to prepare additional plans to cover specific requirements that arise through the EIA process, including a Community Engagement Plan to outline how SSEN Transmission, its Contractors and local stakeholders can come together to address issues that adversely affect the community.

3.8.5 The requirement for an Environmental Clerk of Works (ECoW) is provided for under the Applicant's Consents and Environmental Specification which is a contractual requirement between the Applicant and the Principal Contractor. The ECoW will report to the Principal Contractor's Environmental Manager whose responsibilities will include but not be limited to:

- Management and implementation of all environmental requirements of the Proposed Development;
- Provision of environmental reports;
- Delivery of programme of environmental works, inclusive of, but not limited to, surveys, pre-construction mitigation, monitoring of mitigation, watching briefs, and exclusion periods;
- Reporting liaison with external parties;
- Environmental auditing and inspection of the procedures contained within the Principal Contractor's CEMP;
- Reporting of all environmental incidents; and
- Compliance with the project environmental requirements, legislation and consents throughout the site.

3.8.6 The EIA process and methodology and approach to mitigation is detailed in **Chapter 5** of this report. Additional mitigation is detailed within **Chapter 16: Schedule of Mitigation**.

3.9 Reinstatement

3.9.1 Following successful 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 will include the removal of all temporary access tracks and work sites.

3.10 Biodiversity Net Gain (BNG)

3.10.1 Biodiversity Net Gain (BNG) is an approach to development that aims to leave the natural environmental in a measurably better state than it was pre-development. SSEN Transmission has developed a BNG toolkit based upon the Natural England metric, which quantifies biodiversity based upon the value of habitats for nature. It is an efficient and effective method for demonstrating whether development project have been able to maintain or increase biodiversity value of a development site after construction works.

3.10.2 The BNG toolkit has been applied to quantify the overall biodiversity impacts for the Proposed Development; this includes a biodiversity baseline assessment, analysis of habitat losses due to temporary works and permanent structures during construction works, and analysis of biodiversity gains following reinstatement of habitats in areas of temporary construction work. A BNG report for the Proposed Development is included as a supplement to this EIAR.

3.10.3 SSEN Transmission is committed to protecting and enhancing the environment by minimising the potential impacts from their construction and operational activities. As part of this approach, SSEN Transmission plc has made commitments within its Sustainability Strategy (2018), Sustainability Plan (2019) and RIIO-T2 Business Plan, for new infrastructure projects to:

- Ensure natural environment considerations are included in decision making at each stage of a project's development;

- Utilise the mitigation hierarchy to avoid impacts by consideration of biodiversity in project design; positively contribute to the UN and Scottish Government Biodiversity strategies by committing to deliver 10% Biodiversity Net Gain on all Transmission projects gaining consent on or after 22 May 2023, actively enhancing biodiversity and leaving a positive legacy at all of our SSEN Transmission sites as we deliver the UK and Scotland's Net Zero targets; and
- Work with their supply chain to understand enhancement opportunities to gain the maximum benefit during asset replacement and upgrades.

The planting proposals on Site deliver a net gain of 4%. SSEN Transmission will therefore enter into an agreement with other landowners/biodiversity project developers to deliver the remaining 6% required in order to achieve the 10% net gain that is required by their own corporate targets. On and off-site BNG measures will be implemented in the pre-energization stage.

3.11 Future Maintenance of the Substation

3.11.1 The Proposed Development would be unmanned, with operations largely being controlled remotely from SSEN Transmission's control centre, with routine inspection and maintenance performed at regular intervals. Most substations have a monthly inspection, whilst varying degrees of maintenance would be undertaken annually. There will be other visits as required for operational duties and occasional repairs, as necessary.

3.12 Decommissioning

3.12.1 The Proposed Development would not have a fixed operational life and in the event that the Proposed Development is decommissioned the effects associated with the construction phase can be considered to be representative of worst-case decommissioning effects, and therefore no separate assessment is necessary.

3.12.2 Should the Proposed Development be decommissioned the Site would be restored as follows:

- The substation infrastructure would be removed;
- Where removal of infrastructure such as substation foundations would result in more damage than leaving them in place, they would be left in-situ; and
- Disturbed ground would be reinstated.

3.12.3 It is likely that a decommissioning strategy would be made a condition of a grant of planning consent for the Proposed Development. Full details of any subsequent decommissioning plan would be agreed with the appropriate authorities prior to any decommissioning works commencing.

3.13 Construction Employment

3.13.1 Employment of construction staff will be the responsibility of the Principal Contractor, but the Applicant encourages the Principal Contractor to make use of suitable labour and resources from areas local to the location of the works. At its peak construction of the Proposed Development is expected to employ 278 people.

3.13.2 The Applicant is seeking opportunities to accommodate its workers in a way that provides a range of local benefits. In consultation with the local authorities, the Applicant is in the process of developing a Housing Strategy which would address the needs of construction employees for the Proposed Development. The objective of the Strategy is to meet the short-term needs of project construction while delivering a legacy of new housing to meet future housing demand.