Chapter 03: Description of Development

Environmental Impact Assessment Report for:

Westfield Substation Extension

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3. Description of Development

3.1 Introduction

3.1.1 This chapter provides a description of the main elements of the Proposed Development, and the maximum development parameters that form the basis for the environmental assessment.

3.2 The Existing Westfield Substation

3.2.1 The existing Westfield 275/132kV substation is connected to the primary transmission network by overhead lines operating at both 275kV and 132kV. It is an outdoor substation, which utilises Air Insulated Switchgear (AIS) with both 275kV and 132kV busbar systems.

3.2.2 Photographs of the existing Westfield substation are shown in **Images 3.1–3.6**.

Image 3.1: Westfield Substation Access.

Image 3.2: Westfield Substation Existing Infrastructure.

Image 3.3: Westfield Substation Existing Infrastructure.

Image 3.4: Westfield Substation Northern Boundary Adjacent to B9097.

Image 3.5: Westfield Substation Western Boundary.

Image 3.6: Westfield Substation View from the South-East.

3.2.3 Following the completion of the construction and electrification of the proposed extension to the Westfield substation, the existing 275kV component of the substation will be deconstructed and the land maintained for future high voltage infrastructure that may be required. This decommissioning work forms part of the Proposed Development assessed within this EIAR.

3.3 The Proposed Development

3.3.1 The site is located in central Fife, and comprises the existing Westfield substation site and neighbouring land near the Westfield Green Energy Park (which is located on the site of the former Westfield opencast coal mine). Located mid-way between the settlements of Ballingry to the west and Kinglassie to the east, the site is directly accessed via the B9097, which runs along its northern boundary. This road provides a link between the M90 motorway circa 8km to the west and the A92 circa 5km to the south. The surrounding landscape is characterised by nearby built and infrastructural development, particularly the existing substation, the Westfield Energy Recovery Facility and an operational wind farm.

3.3.2 The Proposed Development comprises the 400kV extension to the existing 275/132kV Westfield substation and the decommissioning of the 275kV elements of the existing Westfield Substation. The proposed Westfield 400kV Substation Extension is located immediately west of the existing 275/132kV Westfield Substation at central grid reference 319213, 697641 (referred to as the site and illustrated on **Figure 1.3**). The Proposed Development is illustrated in **Figure 3.1**, along with the Illustrative Landscape Strategy at **Figure 3.2** and Cross Section at **Figure 3.3**.

3.3.3 An example of a similar substation is illustrated on **Image 3.7**.

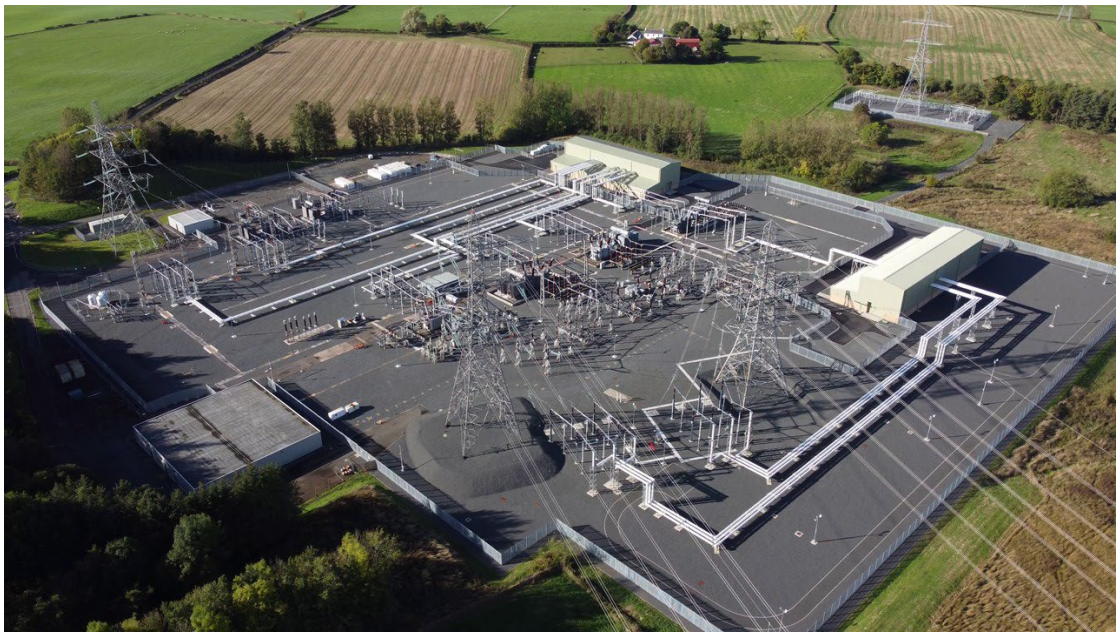

Image 3.7: Example of an Existing Substation.

Electrical Infrastructure

3.3.4 The Proposed Development will utilise Gas Insulated Switchgear (GIS) (with a non-SF_6 dielectric gas) to house different electrical devices to switch, separate, transform, measure and distribute electricity. There will be a GIS building to house the 400kV GIS Switchgear and associated protection and control equipment. The building will be a steel portal frame design with exterior cladding (Moorland Green BS12B21). Within the GIS building during normal operation there will be minimal activity, with electrical switching taking place during energisation, if faults occur and for maintenance. (The GIS building will house staff welfare facilities and an office. The site will be unmanned, other than for typical maintenance, or if emergency works are necessary.

3.3.5 The Westfield Substation Extension will include the installation of a minimum of two and maximum of six 400kV Super Grid Transformers, which enable connections from the 400kV transmission network into the wider 132kV network, with the transformers allowing a change in voltage in the system from one level to another. Of these, one will be a 400/275kV transformer. Each transformer will be sat within an impermeable concrete bunded area to contain any oil spill from the equipment. The bund will be fitted with a suitable Class 1 oil water separator system, with any clean water to drain to soakaway, designed to meet the requirements of BS EN 858-1 (separator systems for light liquids).

3.3.6 There will also be a Mechanically Switched Capacitor with Damping Network (MSCDN), which is a highly developed form of mechanically switched capacitor which assists in managing and controlling system voltage levels across the network.

3.3.7 Other necessary electrical infrastructure will include earth switches, surge arresters, current and capacitive voltage transformers, and post insulators. In addition, there will be auxiliary systems and equipment, including for example distribution boards, a standby diesel generator and fuel tank (which will be integrally bunded), fuse boxes etc. There will be Gas Insulated Busbars (GIB) (which

have the appearance of pipes) , other plant structures, line gantries, and other cabling as necessary. The GIB will be a grey colour (likely to be RAL 7038 Agate Grey).

Substation Platform and Access

3.3.8 The substation electrical infrastructure will be located on the substation platform, a flat levelled area (delivered through cut and fill earthworks), comprised primarily of permeable gravel, at a height of approximately 89m aOD. The new substation platform will be approximately 8m west of the existing Westfield substation. There will be tarmacked access roads and vehicle parking areas (including provision for EV charging), and a perimeter maintenance access.

3.3.9 Improvement works to increase the visibility at the existing access onto the B9097 is proposed to improve safe access and egress by all vehicles and to allow for the delivery of the Super Grid Transformers on larger vehicles as an Abnormal Indivisible Load (AIL). Transformer deliveries will enter and exit the site to the east. Appropriate visibility splays will also be provided, which will require the management of some roadside vegetation either side of the existing access.

Drainage and Landscape

3.3.10 There will be appropriate sustainable drainage system (SuDS) provision to accommodate surface water runoff from the substation platform. This will include both permanent and temporary drainage features. A permanent SuDS feature, comprising two interlinked basins will be provided, located to the south-east of the substation platform, with access for maintenance. The basins will have an outfall to an existing ditch at the south-eastern extent of the basin. It is also anticipated that a section of the existing perimeter ditch will need to be realigned, where this is necessary the channel section will be designed to accommodate compensatory flood storage. This is illustrated on **Figures 3.2** and **3.4**.

3.3.11 The drainage scheme will be designed in accordance with the Construction Industry Research and Information Association (CIRIA) publications; Control of water pollution from construction sites. Guidance for consultants and contractors (C532); and Control of water pollution from linear construction projects. Technical guidance (C648). The drainage scheme may include pre-earthworks construction drainage ditches around work areas to intercept and divert water runoff away from work areas. Where large flow volumes are expected ditches will be supplemented with settlement ponds or swales to attenuate flows during high rainfall events. Further features such as silt fencing, straw bales, and check dams may be utilised within the design, where required, to further assist with silt catchment and treatment. All areas of temporary drainage scheme will be reinstated upon completion of the substation platform and associated earthworks.

3.3.12 Landscape bunds, with a maximum height of 2m, will be located to the south-west and south-east of the substation platform. In addition, low height tree and shrub planting and new hedgerow will assist with filtering views of the Proposed Development from the south and south-west. Outside of the substation platform there will be an area established as a wildflower grassland. Along the northern, western and south-eastern boundaries of the site existing hedgerow and trees will be retained where possible. The landscape strategy is illustrated on **Figure 3.2**. Existing trees and vegetation within the centre of the site will be removed to facilitate the development of the substation platform. ree planting is proposed as shown on **Figure 3.2**; other landscaping includes proposed , hedgerow planting and grassland. Compensatory Planting – if necessary – will be delivered off site as is standard practice for SPT projects of this nature.

Other

3.3.13 Within the substation compound there will be some exterior lighting on columns (maximum of 6m), which will only be lit when the site is manned. For the majority of the time the site is unmanned and therefore these will not be required. There will also be approximately 20 CCTV columns along the perimeter security fence line and within the substation compound itself at a height of 6.5m above ground level.

3.3.14 The site will be treated as high risk/critical due to its strategic importance within the 400kV transmission network and as the primary onshore connection point for the EGL4 project. The operational compound will be enclosed by a 3m high security fence founded on a continuous anti-dig concrete strip to prevent burrowing and undermining. A secondary maximum 2m high agricultural post-and-wire stock fence will be set 5m outside the security fence to discourage livestock and wildlife from approaching the perimeter and to maintain a clear patrol/inspection corridor. Vehicle and pedestrian gates will match the security fence standard, and the 5m corridor will be kept free of obstructions for safe access and maintenance.

The Existing Westfield Substation 275kV Decommissioning

3.3.15 The existing 275kV elements of the AIS Westfield substation will remain energised until circa Q2-2030 until the overhead line circuits (Glenrothes/Conland and Tealing) are uprated to a 400kV voltage level and the completion of all works at the new substation extension and connection of downleads from the new 400kV tower with the new substation extension gantries. Upon energisation of the new 400kV Westfield GIS substation extension and the other elements of TKUP, the existing 275kV substation elements will be completely disconnected and decommissioned. The deconstruction of the existing 275kV substation elements will likely start in Q4-2030 and will continue until all the related equipment is dismantled and removed.

3.3.16 The existing Westfield 275kV substation will require decommissioning of existing plant equipment such as:

- Existing 275kV 240MVA Transformers;
- Existing 275kV AIS Circuit Breakers;
- Existing 275kV AIS Disconnectors;
- Existing 275kV AIS Surge Arresters;

- Existing 275kV AIS Capacitor Voltage Transformers;
- Existing 275kV AIS current transformers;
- Existing 275kV AIS Post Insulators;
- Existing 275kV Gantries Structure;
- Busbar connections, structures, interlocking, earthing, cabling, foundations etc.; and
- Other ancillary equipment.

Other Development Related to the Proposed Development and Covered by this EIAR

33kV Undergrounding

3.3.17 The EIAR also covers the impacts arising from the undergrounding of the 33kV OHL which currently passes through the site. These works involve the diversion of the existing Kelty–Cowdenbeath No.1 and No.2 33kV circuits from overhead line construction to a new underground cable route around the Westfield Grid Supply Point (GSP) development area as part of the transmission site expansion works. For the proposed 33kV undergrounding, two new terminal 'H Poles' are proposed of circa 10m in height at the point at which the OHL moves underground. Construction will be undertaken in a linear fashion, with plant moved along the route as the project progresses.

3.3.18 The red line boundary for the local planning application being progressed for this element is provided on **Image 3.8** below. The parameters of this development are provided below.

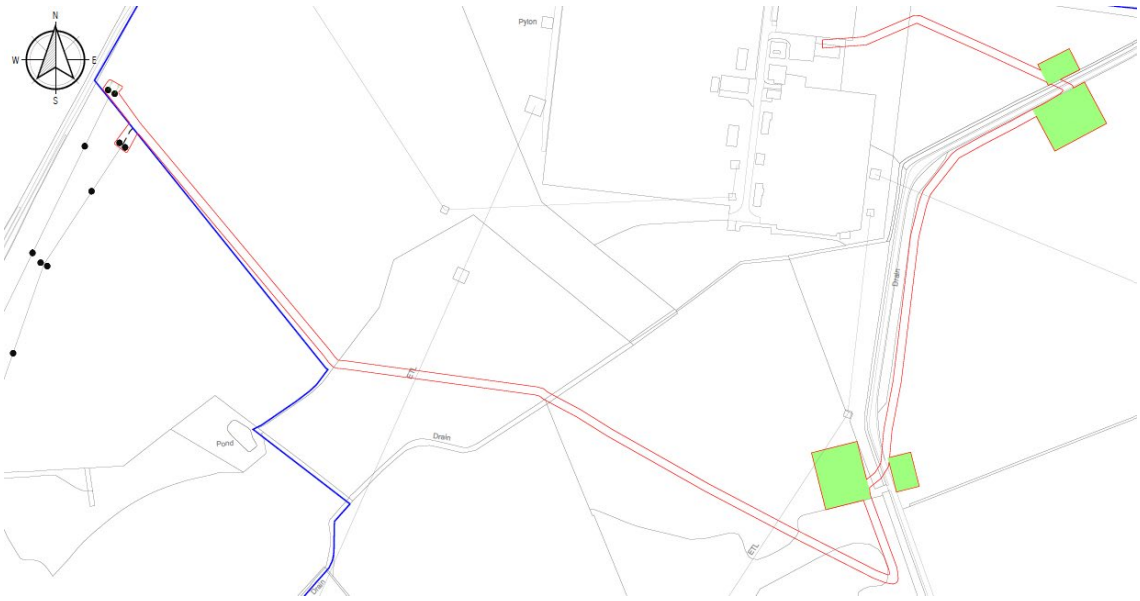

Image 3.8: Undergrounding route for 33kV OHL cables.

Temporary Drainage Scheme

3.3.1 The temporary drainage scheme will be provided to mitigate the risk of pollution caused by silt and other damaging materials arising from the construction. It will be designed, constructed and

maintained so that all silt-laden run-off is collected and treated prior to it entering the nearby watercourse. Temporary construction drainage shall comprise a series of interconnected settlement and attenuation ponds arranged in cascade to the south-west of the site. Surface water runoff from areas of disturbed ground, including the substation platform earthworks, temporary access tracks, laydown areas and soil stockpiles, shall be intercepted by temporary cut-off and collection ditches and directed towards the settlement pond system.

3.3.2 The ponds shall operate as a treatment train, with runoff passing sequentially through a series of settlement ponds connected by shallow open ditches. Check dams shall be incorporated within the collection and interconnecting ditches, where appropriate, to reduce flow velocities, promote settlement of suspended solids and minimise erosion. The upstream ponds shall principally provide coarse sediment settlement, with subsequent ponds providing further settlement and attenuation prior to controlled discharge.

3.3.3 Where practicable, the permanent SuDS infrastructure shall be constructed at an early stage to limit the use of the temporary drainage system. Temporary ponds, ditches, check dams and silt-control measures shall be inspected regularly and following significant rainfall events, with accumulated sediment removed as required to maintain treatment and storage capacity. The temporary drainage scheme is illustrated on **Figure 3.4**.

3.4 Maximum Development Parameters

3.4.1 Maximum development parameters have been established for the purpose of the environmental impact assessment. These include the following and are illustrated on **Figures 3.1–3.5**:

- Maximum building and infrastructure/component heights: GIS Building 17m, Transformers 14m, Busbars, gantry structures and other ancillary infrastructure 14m;
- Maximum extent of substation platform of 60,000 square metres;
- Maximum height (90.5m aOD) of the finished floor level of the substation platform;
- Location of access onto B9097;
- Maximum height of primary perimeter security fence will be 3m founded on a continuous anti-dig concrete strip to prevent burrowing and undermining. A secondary maximum 2m high agricultural post-and-wire stock fence will be set 5m outside the security fence.. Closed Circuit TV poles will be a maximum of 6.5m with lighting columns a maximum of 6m (4m standard height);
- Maximum extent of any earthworks or construction zones within the site boundary (16.7ha);
- Maximum noise emissions from plant and equipment. The maximum sound power level of the transformers is 87dB(A);
- A construction compound will be located within SPEN land adjacent to the substation footprint. The indicative size of this compound is 30 m × 55 m. The compound will provide hardstanding for plant and welfare facilities, designed for 100 kN/m² bearing capacity, with granular layers and geotextile separation where required. Drainage will include temporary SuDS to manage runoff;
- Access tracks: The existing junction onto the B9097 will be altered to improve access to the site, including for transformer delivery vehicles. It will connect to an internal access road

running parallel to the existing road and internal tracks around the platform. Roads will be 5 m wide, widened on bends, surfaced in asphalt externally and granular Type 1 internally. Drainage will use filter drains discharging via SuDS ponds; and

- Junction details: The junction will meet DMRB CD123 standards with 215 m visibility splays. Swept Path Analysis confirms suitability for 20-axle transformer vehicles (64.4 m long). Over-run areas and verge widening will accommodate abnormal loads. Assessments undertaken to date have been based on transformer delivery accessing and exiting the site from the east.

3.5 Construction

3.5.1 The Proposed Development will be constructed 'offline', in effect while the existing 275/132kV substation remains operational. This is in order to provide continuity of supply across the transmission network. It is anticipated that the construction will commence in 2027 for a period of approximately four years.

Programme and Phasing

3.5.2 The construction of the Proposed Development will be delivered in phases. Indicative phases are set out as follows:

- Construction of the access roads;
- Construction of the substation platform;
- Installation of the main plant and equipment;
- Electrification and commissioning of the proposed substation extension;
- Decommissioning of the 275kV elements of the existing Westfield Substation; and
- Reinstatement and landscape works.

3.5.3 Other aspects of TKUP in proximity to the substation extension which will be delivered via different consenting regimes, such as the removal and installation of OHL towers will overlap this programme.

3.5.4 Subject to securing planning permission and other required consents and approvals being granted the indicative construction programme for the Proposed Development is as follows:

- Construction Start: September – 2027;
- Installation of Main Plant and Equipment: October 2029
- Reinstatement of grassland and proposed landscaping measures October 2030;
- Electrification and Commissioning: October 2030; and
- Decommissioning of the existing 275kv electrical equipment Q4 2031.

3.5.5 Further detailed construction phasing and programme are subject to change as the design progresses and land rights are secured.

Construction Compounds, Temporary Works and Temporary Lighting

3.5.6 There will be a temporary construction compound, which will accommodate welfare facilities, office cabins, vehicle parking and equipment and material storage. A temporary construction compound of approximately 30m x 55m will be located north of the proposed substation platform with access from the internal access road. It will have a levelled stone surface with perimeter security fencing.

3.5.7 The proposals will require the complete removal of six tree groups (G2, G3, G4, G5, G6 and G8) totalling an area of approximately 4,686m³ and two hedgerows (H1 and H2) totalling approximately 338m in length. Within hedgerow H2, there are eighteen mature field boundary trees that require removal.

3.5.8 All vegetation proposed for removal to facilitate the development is illustrated on **Figure 3.7**. In addition, some minor pruning works may be required to trees either side of the existing access to the substation to facilitate access by larger vehicles, and the undergrounding of the 33kV OHL. During construction exclusion zones around retained trees by tree protection barriers will be used. The tree protection barriers will be designed and installed to exclude construction activities and will ensure adequate protection for trees, woodlands and hedgerows as appropriate.

3.5.9 Temporary works areas, including construction compounds, laydown areas, and other areas required during construction, will be reinstated following completion of the construction phase. Restoration will aim to return these areas to a condition consistent with the Landscape Strategy at **Figure 3.2**.

3.5.10 This will include the removal of temporary structures, hardstanding, and any construction materials, and the reinstatement of the surface to its previous condition or a condition suitable for its intended use. Restoration activities will follow good practice guidance to minimise environmental impacts, including maintaining drainage and promoting re-establishment of vegetation where appropriate. Post-construction monitoring will be undertaken to confirm the success of reinstatement measures and to allow remedial action if required.

3.5.11 Works shall be primarily undertaken during daylight hours backed up (when needed and only during the agreed working hours) by tower lights and plant/vehicle lighting at key locations to provide a minimum of:

- 20 lux for normal plant operations; and
- 80 lux for operatives working.

3.5.12 The potential light spillage shall be reduced by:

- Turning off plant when not in operation;
- Turning off tower lights when not needed;
- Minimising the mounting height of tower lights and reducing tilt angles to the minimum needed;
- Providing tower lights of the flat glass construction with zero direct upward light, to reduce sky glow and glare;

- Providing tower lights of as low a wattage as possible; and
- Where practicable, directing lighting into the site rather than directing light outwards.

3.5.13 The lighting will be continually managed and monitored, and further detail will be provided in an appropriate method statement or site management plan.

Undergrounding Works for the 33kV OHL (Kelty to Cowdenbeath No.1 and No.2 Circuits)

3.5.14 Prior to commencing the works, the cable route will be surveyed and set out, with all existing utilities, environmental constraints and third-party assets identified and clearly marked. Consideration will be given to the existing high-pressure gas main, water mains, telecommunications infrastructure, field drainage systems and transmission assets located within the work area. All works shall be carried out in accordance with SPEN Specification CAB-15-003, relevant SPEN Safety Rules and the approved construction drawings.

3.5.15 The route will be established through agricultural land and existing access routes, with suitable access arrangements, working areas and exclusion zones established prior to the commencement of excavation works. The cable route will be clearly marked using survey stakes and route markers. Trial holes and service investigations will be undertaken where required to verify the location and depth of existing services before excavation begins.

3.5.16 The existing OHL circuits will be modified by removing the existing intermediate poles and installing new terminal H-poles at the cable transition locations (as shown on **Image 3.9** below). Existing conductors will then be transferred to the new terminal structures, providing the interface between the overhead line network and the new underground cable system.

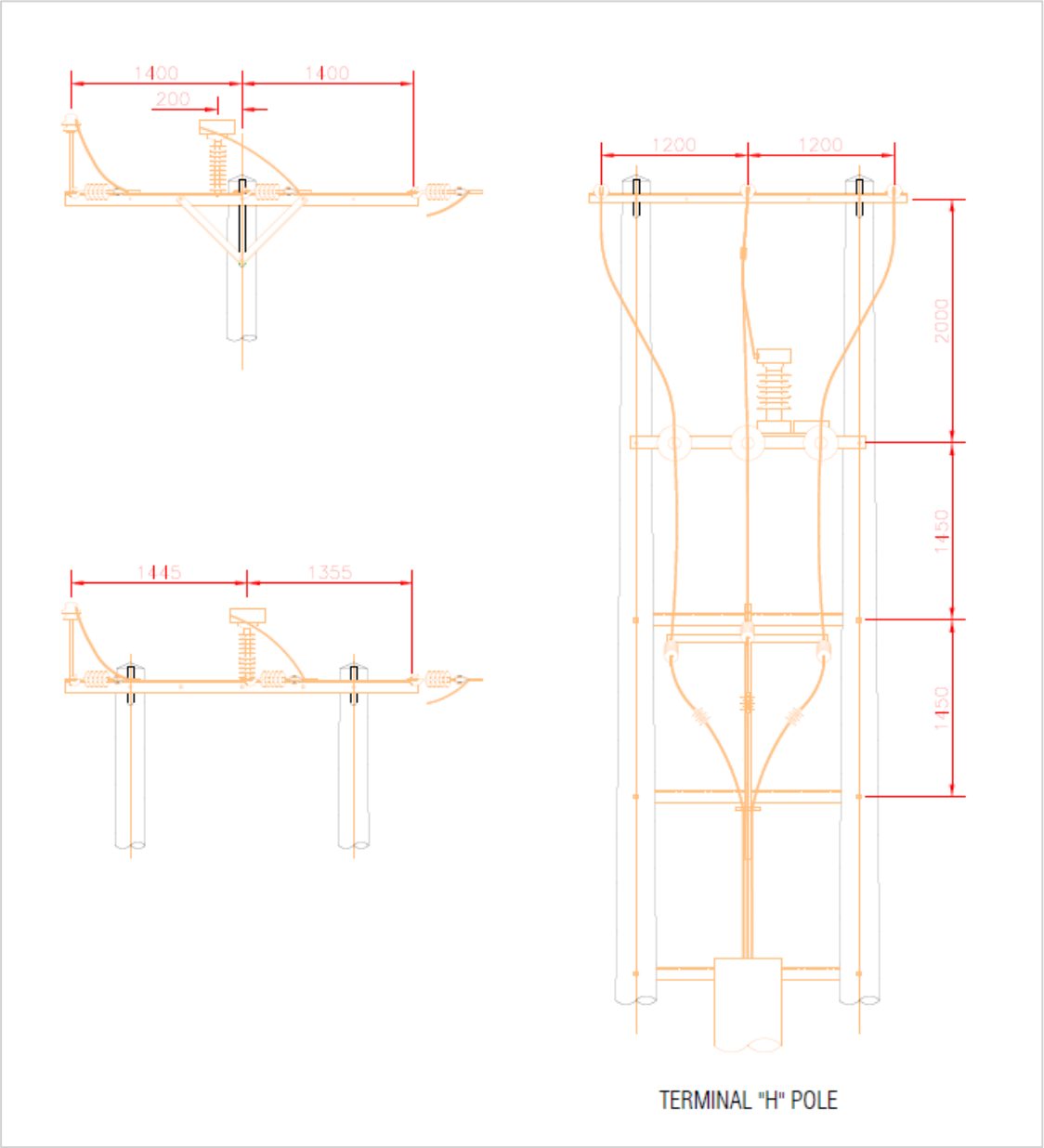

Image 3.9: 33kV Undergrounding H-Pole Section

3.5.17 Cable trenching and duct installation works will be undertaken along the approved route. Excavations will be completed in a controlled manner to maintain safe access and minimise disruption. Joint bays will be constructed at designated locations to facilitate cable pulling, jointing and termination activities. Where the route crosses existing infrastructure or other constrained areas, specialist installation techniques, including Horizontal Directional Drilling (HDD), will be utilised where required. As shown on **Image 3.10**, HDD is anticipated in two locations along the route – HDD locations are shown by shaded green areas.

Image 3.10: 33kV Undergrounding HDD Locations

3.5.18 The cable trench will pass through an area currently comprising a number of trees. This area of trees is due for felling as part of the SPD works to facilitate the EGL4 project.

3.5.19 Following completion of the civil works, the new 33kV cable circuits will be installed between the terminal pole locations and the substation connection points. Cable installation will be undertaken in sections between joint bays, followed by the completion of all straight-through joints, transition joints and terminations. Adequate cable allowances will be maintained at each termination location to facilitate the installation of the pole terminations and provide sufficient working length for cable dressing and connection activities.

3.5.20 The new cable circuits will then be terminated onto the overhead line terminal structures and the existing substation equipment in accordance with the approved design.

3.5.21 Upon completion of the installation works, the circuits will be inspected, tested and commissioned in accordance with SPEN requirements. Following the successful completion of testing and the agreed network outage, the existing circuits will be transferred onto the new underground cable route and returned to service.

3.5.22 Following successful energisation, the redundant overhead line sections will be isolated, disconnected, cut, capped and earthed under SAP instruction. Any redundant equipment will be removed where required.

Hours of Work

3.5.23 Construction work is likely to be during daytime periods only. Working hours are currently proposed to be between approximately 08:00 to 18:00 Monday to Friday, 08:00 to 13:00 on a Saturday and no scheduled works on a Sunday or Bank Holiday. Any out of hours working will be agreed in advance with Fife Council.

Traffic

3.5.24 The construction phase will give rise to regular numbers of staff transport movements, with work crews travelling to the site on a daily basis. In addition, daily HGV vehicle movements will be required to construct the new access roads, deliver the construction materials, and deliver the plant and equipment. The Super Grid Transformers will be delivered on larger vehicles as an AIL. Transformer deliveries will enter and exit the site to the east.

Construction Management Plans

3.5.25 The Applicant is committed to minimising the environmental impact of construction activities on the environment. Environmental Management Systems (EMS) have been developed by the Applicant and cover a large range of activities. All construction works will be undertaken in accordance with these and the Applicants Contractor Environmental Performance Requirements (CEPR) for major projects.

3.5.26 A site-specific Construction Environmental Management Plan (CEMP) and Project Environmental Management Plan (PEMP) will be developed for the Proposed Development by the Contractor and will provide information on the proposed infrastructure and to aid in avoiding, minimising and controlling adverse environmental impacts associated with the Proposed Development. In addition, the Contractor will also provide an Environmental Risk Assessment, Pollution Prevention Plan, Surface Water Management Plan, Species Protection Plans, Habitat Management Plan, Peat Management Plan, and Site Restoration Plan.

3.5.27 An Outline CEMP is provided as **Technical Appendix 3.1**.

3.6 Operation and Management

3.6.1 Operation and Maintenance: The Proposed Development will operate 24 hours per day, 365 days per year and will predominantly be unmanned. There will be maintenance visits to the site approximately 90 days per year and any planned maintenance work will be undertaken between the hours of 08:00 and 17:00. Other maintenance repairs and works will be required sporadically.

3.6.2 Welfare facilities: Welfare facilities will be provided within the GIS Building. These facilities will use rainwater harvesting to provide potable water and a septic tank for discharge.

3.6.3 Life of the Proposed Development: The Applicant is seeking planning permission for the Proposed Development on an enduring basis. It is anticipated that the substation plant and equipment have a design life of approximately 40 years, after which it will be replaced with new equipment designed and installed to the relevant engineering specification and environmental standards.

3.7 Residues, Waste, Materials and Emissions

3.7.1 Excavation materials will be generated, and will require management, at a number of construction stages including excavation of materials for construction of substation foundations, construction of ancillary infrastructure and occupation of temporary construction premises.

3.7.2 The Principal Contractor will be required to prepare a Site Waste Management Plan to ensure best practice principles are applied to reduce, re-use or recycle all materials as part of the CEMP. Measures to reduce possible environmental effects associated with the storage and transportation of wastes will include:

- The careful location of stockpiles and other storage areas;
- The use of good practice in the design of waste storage areas and the use of suitable waste containers;
- The use of sheeting, screening, and damping where appropriate and practicable;
- The control and treatment of runoff from soil and waste soil stockpiles;
- Minimising storage periods;
- Minimising haulage distances; and
- The sheeting of vehicles.

3.7.3 All materials will be identified, classified, quantified and, where practicable, appropriately segregated. Any materials that cannot be reused will be disposed of according to relevant waste management legislation which will serve to address a number of possible environmental effects. This includes:

- The Duty of Care imposed by Section 34 of the Environmental Protection Act 1990; and
- The Waste Management Licensing (Scotland) Regulations 2011 (as amended), particularly provisions relating to registered exemptions from waste management licensing.

3.7.4 If materials are required to be removed from site, these will be handled in accordance with relevant waste and environmental regulations. Waste will be transferred using a registered waste carrier to a licensed waste disposal site or recycling centre.

3.7.5 The anticipated residues and emissions from the Proposed Development, required by Schedule 4, para. 1(d) of the EIA Regulations are summarised in **Table 3.1**.

Table 3.1: Residues and Emissions

Topic	Potential Residue/Emissions
Water	Construction: Surface water run off to temporary SuDS. Operation: Limited to rainwater run-off.
Air	Construction: No Significant Emissions from construction vehicles, plant and equipment. Construction vehicles including diesel, petrol and electric cars, vans and 4x4; and HGV vehicles including Hiab boom lift, Low loaders, Tipper Flat-bed, Tipper 8-wheeler etc. Plant and equipment including D9 Dozers, 24 tonne excavators, Bell Dump Trucks, Bomag Compaction Plant, Tractor and Trailer, Bowser, 6 tonne site dumpers and miscellaneous small plant. Operation: Routine emissions to air are not anticipated. There will be an emergency diesel back-up generator but emissions will not be significant. The Proposed Development would contribute to connecting renewable electricity generation capacity to the transmission network, in turn displacing emissions associated with fossil fuel-based electricity generation elsewhere.
Soil and Subsoil	Construction: Soil and subsoil excavation, handling, and storage would be required during construction. All soil and subsoil would be stored temporarily for use in reinstatement and creation of landscape bunds. Where there is surplus soil, this would be taken for disposal off-site. During excavation, handling, and storage, appropriate measures would be implemented to minimise the risk of pollution, including avoiding cross-contamination, controlling runoff, and preventing the release of contaminants into surrounding soils or watercourses. All temporary stockpiles would be appropriately contained and managed to prevent erosion, sedimentation, or accidental spills of construction materials, fuels, or chemicals. Any areas subject to potential contamination would be monitored and remediated as required to ensure that soils and subsoils are suitable for reinstatement. Operation: No requirement for soil or subsoil excavation or handling during the operation phase has been identified. Routine emissions to land are not anticipated. Oil filled plant such as the Super Grid Transformers will be located within suitable bunds, which will undergo inspection and maintenance required.
Noise and Vibration	Construction: Noise from onsite construction plant and equipment includes: • Mobile Welfare Unit Generator; • 40KVA Generator (Main Welfare); • Tower Lights; • Mechanical excavators; • Dump Trucks; and • Construction Traffic.

Topic	Potential Residue/Emissions
	Assessment of construction activity noise has been scoped out of the EIAR, and therefore anticipated noise levels at receptors are not presented. Assessment of construction traffic noise is presented in Chapter 10 - Noise. Operation: Limited noise emissions are anticipated to be producing during operation. GIS equipment will be housed in a building to minimise noise emissions. Operational noise would originate primarily from the transformers in the form of low-frequency tonal noise in the range of 63 Hz to 2kHz. The emergency diesel generator would generate noise when operational. Assessment of operational noise is presented in Chapter 10 - Noise.
Light	Construction: Temporary lighting installations for use during low light conditions. 20 lux for normal plant operations. 80 lux for operatives working Operation: The site will be unmanned, no light sources during normal operation. There will be some exterior lighting on columns, which will only be lit when the site is manned for maintenance. 80lux for operation, maintenance and repairs including any portable lighting.
Heat, Radiation and Electromagnetic Fields (EMF)	Construction: No heat or radiation sources have been identified during the construction phase. There will be no significant EMFs generated during construction. EMFs are only usually generated once operational and then they will be incompliance with industry standards. Operation: No significant sources of heat or radiation will be generated during operation. No significant EMF emissions are expected, and the operation of the substation will adhere to the relevant regulations and guidance for EMF limits.
Waste	Construction: The construction will require the felling of trees and removal of vegetation and removal of inert materials. All waste will be recycled or red-used where possible and where waste will need to be disposed of it will be done at the time it arises and in line with current legislation and best practice. The Outline CEMP will detail waste management relevant to the construction phase for the Proposed Development. Operation: During operation very small volumes of waste would be produced. Limited waste may arise from maintenance due to the replacement of faulty/damaged equipment. Wastewater from maintenance activities and welfare facilities for visiting staff and contractors will be managed and disposed of via a proprietary septic tank system. All waste will be disposed of at the time it arises and in line with current legislation and best practice.

3.8 Decommissioning

3.8.1 The Applicant is seeking planning permission for the Proposed Development on an enduring basis. Therefore, no separate assessment of decommissioning of the Proposed Development (the substation extension) will be included in the EIAR, as it is considered a permanent facility. However,

any impacts arising from the decommissioning of the 275kV elements of the existing substation, and removal of temporary undergrounding works, are included within this EIAR.