Chapter 3: Description of Development - Contents

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3. Description of Development

3.1 Introduction

3.1.1 This Chapter describes the principal components of the Proposed Development. It also provides an overview of the likely scheme construction, the approximate timescales over which construction would take place, and an overview of the operational and decommissioning phases of the Proposed Development. This Chapter is supported by a series of figures and appendices.

3.1.2 The proposal is to build and operate a new pumped storage hydro scheme with an installed capacity of up to 600 MW, and a generation energy storage capacity of up to almost 9 Gigawatt Hours (GWh), utilising the existing Loch Kemp as the upper storage reservoir and Loch Ness as the lower reservoir. To allow drawdown for storage, Loch Kemp would be raised by approximately 28 m. Four new saddle dams and four minor cut off dams would be constructed around Loch Kemp to form the upper reservoir.

3.1.3 The Proposed Development is situated on Dell Estate, approximately 13 kilometres (km) to the northeast of Fort Augustus. The Proposed Development comprises two main areas of work: the upper reservoir works comprising the upper reservoir (Loch Kemp), eight dams and an inlet/outlet structure; and the lower reservoir works comprising the lower reservoir (Loch Ness), a powerhouse building, a quayside above the inlet/outlet structure with a small pier into Loch Ness, and an access tunnel adit on the shore of Loch Ness. The upper and lower reservoir works would be linked by a series of underground tunnels with the potential inclusion of two surge shafts (with associated access) on the hilltop between Loch Kemp and Loch Ness (see **Volume 2, Figure 3.1: Proposed Development**).

3.1.4 Access during the construction and operation of the Proposed Development would utilise the existing B862 public road and Dell Estate forestry tracks (to be upgraded and extended) and would involve a new access junction onto the B862, and the creation of other new access tracks around the site, including a new access track to the lower reservoir works on the shore of Loch Ness.

3.1.5 The principal components of the Proposed Development, all of which would be subject to detailed design, are summarised below and described in further detail in this Chapter (see also **Volume 2, Figure 3.1: Proposed Development**):

- **Dams and Upper Reservoir** – Four new saddle dams between 16 – 34 m high and four minor cut-off dams, would be constructed around Loch Kemp to enable the storage of water by increasing the size of the existing Loch Kemp to form the upper reservoir. The loch would be raised by approximately 28 m from its existing 177 m AOD elevation to approximately 205 m AOD;
- **Underground Waterway System** – Screened intakes would supply an underground tunnel system carrying water between the upper reservoir, through to the powerhouse and the lower reservoir. The underground waterway system may require two surge shafts located on a local high point between Loch Kemp and Loch Ness, dependent on results of hydraulic analyses during detailed design;
- **Powerhouse Platform Area and Access Tunnels** - The onshore elements of the tailrace area and the powerhouse building would be located on a large area of hardstanding over

two levels, referred to as the powerhouse platform area. The upper and lower level would be connected by an access track to the rear (east) of the powerhouse building.

- **Access tunnels** would be constructed from the powerhouse platform (via a tunnel adit) to facilitate access to the underground waterway system. These tunnels would be accessed from the upper powerhouse platform works;
- **Powerhouse Building** – A series of shafts with a surface building located on the shore of Loch Ness would contain reversible pump turbines and motor generators together with associated equipment such as transformers. The powerhouse building would also house administration and visitor facilities. Also located within the powerhouse building would be a 275 kV gas insulated switchgear (GIS) substation, firefighting equipment and an emergency diesel generator;
- **Tailrace Area** - A tailrace structure would be located on the shore of Loch Ness integral with the powerhouse building;
- **Quayside and Pier** - A quayside would also be constructed adjacent to the powerhouse building and outlet area. This would allow the delivery of larger items by boat during construction, such as the electrical and mechanical (E&M) equipment, as well as access to the powerhouse from the loch during the operating phase (including access by members of the public to the visitor centre);
- **Cable Tunnel and Vertical Cable Shaf**t – A short cable tunnel would extend from the access tunnel connecting to a vertical cable shaft to facilitate the grid connection from the powerhouse building. The electricity cables (the subject of a separate consenting process), would be housed within this section of tunnel and would resurface outwith the Ness Woods SAC, to connect by buried underground cable to a new switching station near Loch Kemp (which is also the subject of a separate consenting process); and
- **Access Tracks** – A series of temporary and permanent access tracks would be provided for the construction of the Proposed Development and for operational and emergency access. Existing estate access and forestry tracks would be upgraded where feasible but new access tracks would also be required. Tracks used for construction would generally be 8 m in width but would be reinstated to 4 m where feasible post construction for operation and emergency access.

3.1.6 Most of the rock from the excavated tunnels and shafts would be removed via the shafts and tunnel portals near the powerhouse building on the shore at Loch Ness. The excavated rock from the underground works would be reused in the dams, powerhouse platform area, powerhouse building, and localised area of construction works wherever feasible.

3.1.7 There would be a need for temporary site establishment and laydown areas in the vicinity of the upper reservoir and lower reservoir works. Borrow pits are required to provide aggregate to construct suitable access tracks and site establishment areas, in advance of tunnel spoil being available for use and a concrete batching plant would also be required on site. An indicative main welfare compound and indicative locations for site compounds, temporary laydown areas and borrow pits are identified on **Volume 2, Figure 3.1: Proposed Development**.

3.1.8 The existing fishing lodge on the shore of Loch Kemp would be inundated by the increased water level proposed, and would be relocated[1] above the maximum inundation level of the new upper reservoir.

3.1.9 A new water supply would be provided to Dell Lodge to ensure continuity of supply during the construction and operation of the scheme.

3.1.10 Visualisations have been produced to illustrate the Proposed Development both during construction and operation of the scheme. NatureScot and The Highland Council (THC) were consulted on the locations of visualisations, and the final locations were agreed with THC, as indicated on **Volume 2, Figure 3.2: Visualisation Locations**. **Volume 3a** provides visualisations to NatureScot Standards[2] and **Volume 3b** provides visualisations to The Highland Council standards[3].

3.2 Dams and Upper Reservoir

3.2.1 The upper reservoir works at Loch Kemp would comprise the construction of dams, the inlet / outlet structures and potential surge shafts. The site of the upper reservoir, as illustrated in **Plate 3.1**, is located within the River Ness Catchment. A smaller loch called Loch Cluanie, located to the east of Loch Kemp, would also be inundated once the Proposed Development is operational. At present Loch Kemp and Loch Cluanie are connected through the outflow from Loch Paiteag, which runs from Loch Paitag into Loch Cluanie. The outflow from Loch Cluanie then releases into Loch Kemp.

Plate 3.1: Upper Reservoir Area and Surrounding Waterbodies

[1] The location of the fishing lodge would be relocated outside of the maximum inundation area as illustrated on **Volume 4, Figure 3.1: Proposed Development** but it is anticipated that a new fishing lodge building would be constructed rather than relocating the existing lodge.

[2] Scottish Natural Heritage (2017) Visual Representations of Wind Farms. Version 2.2. Available at: https://www.nature.scot/doc/visual-representation-wind-farm-guidance

[3] The Highland Council (2016) Visualisation Standards for Wind Energy Developments. Available at: https://www.highland.gov.uk/downloads/file/12880/visualisation_standards_for_wind_energy_developments

Dams

3.2.2 Four new saddle dams between 16 – 34 m high and four minor cut-off dams, would be constructed around Loch Kemp to enable the storage of water by increasing the size of the existing Loch Kemp to form the upper reservoir. The loch would be raised by 28 m from its existing 177 m AOD elevation to approximately 205 m AOD. The location of the proposed dams and the maximum inundation area are shown on**Volume2, Figure 3.1: Proposed Development**.

3.2.3 It is envisaged that dam construction would likely comprise a combination of both roller compacted concrete (RCC) and concrete faced rockfill dam (CFRD). The former typically has a smaller footprint due to the inherent in-situ structural strength offered by concrete. The latter has a larger footprint due to the larger requirement of material to meet the dam's structural requirements. However, this is advantageous in places where rock quality allows reuse of excavated spoil material. Example photos of both types of dam structure are presented below, firstly the CFRD at Glendoe Dam (**Plate 3.2**) and the RCC dam at Pitlochry Dam **(Plate 3.3**).

Plate 3.2: Example of a CFRD - Photo of 'dryside' of Glendoe Dam (taken 2023).

Plate 3.3: Example of a RCC Dam - Photo of Pitlochry Dam with Spillway (taken 2022)

3.2.4 Further preliminary details, subject to detail design, on each of the proposed dams are provided in **Table 3.1: Preliminary Dam Descriptions** and **Volume 2, Figure 3.3: Typical Dam Plans and Sections**.

Table 3.1: Preliminary Dam Descriptions

Dam Number	Likely Dam Type (Material)	Approximate Dam Height (m)**	Approximate Dam Crest Length (m)**	Reason for Dam Type
1	RCC – Roller Compacted Concrete Dam	34	337	Strength required for fast and frequently changing reservoir water levels due to operation; Requirement of a spillway for the catchment area behind Dam 1 (c. 4 km^2) discussed further in **Chapter 7: Water Management**; Diversion of the Allt an t-Sluichd watercourse would be required during construction which is much more feasible due to the smaller footprint of an RCC dam; Provision of drawdown capacity and environmental release which can be integrated into the structure of the RCC dam but must be diverted around the main body of CFRD; and Topography and opportunity to reduce land-take within Ness Woods SAC.
2	CFRD - Rockfill dam	8	109	Provides the opportunity to reuse tunnel excavation materials on site.
3	CFRD - Rockfill dam	28	392	Provides the opportunity to reuse significant tunnel excavation material on site; Landscaping of the dry side of the rockfill dam, with new landform, soiling, seeding and planting, is possible on a CFRD to help to mitigate the visual impact of the largest dam structure.
4	RCC – Roller Compacted Concrete Dam	17	282	Dam 4 is required to avoid inundation of the neighbouring land at the maximum inundation. Additional structural stability of RCC is required due to the potential impounding on both sides of the dam from the upstream burn entering Loch Kemp.
5	Hybrid RCC/ CFRD	17	323	Hybrid right-angle design utilises stability of RCC to minimise footprint.
6	CFRD - Rockfill dam	9	47	Provides the opportunity to reuse tunnel excavation materials on site.

7	CFRD - Rockfill dam	5	103	Provides the opportunity to reuse tunnel excavation materials on site.
8	CFRD - Rockfill dam	4	46	Provides the opportunity to reuse tunnel excavation materials on site.

* Refer to Figure 3.1: Proposed Development and Figure 3.3: Typical Dam Plan and Sections.

** Subject to Detailed Design

3.2.5 Once the dams are constructed, the volume of water used for power generation would be up to 21,000,000 m³. The surface area of the upper reservoir behind the dams when at maximum capacity, would be approximately 1.3 km². For the purposes of assessment within this EIA Report, the assumed maximum water level within the upper reservoir would be 205 m AOD and the assumed minimum water level would be 177 m AOD, resulting in a maximum drawdown during operation of 28 m. These levels and figures would be subject to detailed design.

3.2.6 For reasons of reservoir safety, the proposed design of the dams includes a spillway sized for the calculated natural flood events at site. It is anticipated that natural floods would be relatively small in magnitude given the ratio of the reservoir surface area (approximately 1.3 km²) to the catchment as a whole (4 km²).

3.2.7 Given that Dam 1 would affect the outflow from Loch Kemp to the Allt an t-Sluichd, a compensation flow discharge to mimic the natural outflow from the above catchment would be released to this watercourse (see **Chapter 7: Water Management**). This outflow would also be maintained during construction.

3.2.8 Dam 4 is required to avoid inundation of the neighbouring land at the maximum inundation level. Dam 4 was initially proposed to be a CFRD but was changed to a RCC dam due to the additional structural stability required due to the potential impounding on both sides of the dam from the upstream burn entering Loch Kemp. This would result in a small area of catchment uphill (i.e., on the 'dry side' of Dam 4) and it is anticipated that a small pond area would accumulate on the uphill face of the dam. For this reason an RCC dam is required with the structural stability to withstand water pressure on both sides. The accumulated water would be syphoned or pumped into Loch Kemp at intervals before being turbined down to Loch Ness.

3.2.9 The design freeboard within the enlarged Loch Kemp mitigates the potential for wave action on the embankment crests and potential overtopping by waves, by ensuring water levels are below the crest level.

Dam Construction

3.2.10 It is envisaged that where a CFRD is proposed, the rock fill required to construct the dam would, in the first instance, be sourced onsite from the excavated tunnels and shafts, then borrow pits as required. It is also envisaged that where a concrete dam is proposed the aggregate material would be sourced from the tunnels, shafts and onsite borrow pits.

3.2.11 As far as practicable, temporary works at the dam sites would be established within the inundation area of the upper reservoir to minimise disruption to adjacent areas during construction.

Upper Reservoir Inlet/Outlet Structure

3.2.12 The underground waterways would be connected to Loch Kemp via a sub-surface inlet structure which would be constructed below the western edge of the upper reservoir. This would feature diffusers to discharge or abstract water from Loch Kemp, and a trash rack screen to prevent debris that may damage the pump/turbine units being admitted. A gate structure, with two sets of gates would be housed to allow the waterways to be isolated from the loch when maintenance is required.

3.2.13 A temporary cofferdam would be constructed between the inlet/outlet structure and Loch Kemp to allow excavation of the structure without risk of water from the loch entering the excavation.

Control Kiosks

3.2.14 Dams 1 and 4, and the upper reservoir inlet/outlet structure would require small control kiosks housing control system equipment and emergency power supplies in the form of diesel generators. The location of these kiosks is indicated in **Volume 2, Figure 3.1: Proposed Development**. It is anticipated that each kiosk would be constructed from profiled steel cladding supported by a steel frame and would have a footprint of approximately 6 m x 5 m and would be approximately 3 m in height but would be subject to detailed design**.** It is anticipated that the hardstanding area around each kiosk would be approximately 9 m x 10 m. The external appearance and associated landscaping of the kiosks would be finished to a high standard and the location of the kiosks would be determined to minimise adverse visual impacts.

Security Compound

3.2.15 A security compound would be located near the main access junction to the site with the B862, as indicated in **Volume 2, Figure 3.1: Proposed Development**. It is anticipated that the security compound would have a footprint of approximately 25 m x 15 m and would be approximately 3 m in height but would be subject to detailed design. The external appearance and associated landscaping of the security compound would be finished to a high standard. It is anticipated that the security compound would be manned during the day during the construction period, but it may be manned up to 24 hours a day during certain construction activities. The compound would be retained for the operational phase of the Proposed Development and occupied as required by site activities.

Surge Shafts

3.2.16 Two surge shafts may be required and would be located to the north and south of Dam 8 and to the west of the inlet/outlet structure, as shown on **Volume 2, Figure 3.1: Proposed Development**. Water would flow into or out of the surge chamber and minimise any sudden positive or negative pressure waves or surges in the tunnel system. It is likely that the surge shafts would be constructed using the raised bore tunnelling technique. Excavated rock would drop down into the lower tunnel, as the bore is brought upwards, with rock removed from the underground works through the main access tunnel. It is anticipated that each surge shaft would have a diameter of approximately 55 m.

3.2.17 The visible surface structures would be carefully designed to ensure that they are assimilated within the surrounding landscape as far as possible, whilst ensuring public safety and operational security, as has been successfully established at existing hydroelectric schemes in the Scottish Highlands (see **Plate 3.4: Example of a Surge Shaft**). See also **Volume 4, Appendix 3.1: Design and Sustainability Statement.**

Plate 3.4: Example of a Surge Shaft

3.3 Underground Waterway System and Tunnels

3.3.1 The underground waterway system would consist of two headrace tunnels carrying water between the upper reservoir and lower reservoir. These tunnels would be approximately 1.2 km in length. Furthermore, each turbine would have a short tailrace tunnel section, approximately 50 m in length, to connect the turbine to the outlet area and lower control works at Loch Ness. All underground works are likely to be constructed using drill, blast, muck and haul techniques.

Cable Tunnel and Vertical Cable Shaft

3.3.2 To avoid additional land take within the Ness Woods SAC associated with the grid connection (subject to a separate application), a short tunnel (approximately 250 m in length) would extend from the access tunnel connecting to a vertical cable shaft, located to the south of the Lochan a' Choin Uire, as shown on **Volume 2, Figure 3.1: Proposed Development**. The vertical cable shaft would be constructed on a hardstanding area of approximately 16 m x 16 m. A 275 kV cable would be routed from the 275 kV GIS substation located within the powerhouse building through the access tunnel adit. The cable would initially be routed through the access tunnel and then through a purpose-built cable tunnel before resurfacing outwith the Ness Woods SAC through the vertical cable shaft. It is then anticipated that the cable would continue as a buried cable to connect to a 275 kV switching station (which would be subject to a separate consenting process). The visible surface structures of the vertical cable shaft would be carefully designed to ensure that they are assimilated within the surrounding landscape as far as possible, whilst ensuring public safety and operational security.

3.4 Lower Reservoir Works

3.4.1 The lower reservoir works at Loch Ness comprise all works associated with the lower reservoir, including the surface powerhouse building, quayside and pier, access tunnel portals, and the lower control works (as shown in **Volume 2, Figure 3.1: Proposed Development**). An aerial satellite image of the general area of Loch Ness where the lower reservoir works are proposed is included in **Plate 3.5.**

Plate 3.5: Lower Reservoir Area (Loch Ness)

3.4.2 It is anticipated that excavation of the majority of underground works (with the exception of the vertical section of the headrace tunnel and surge shaft) would commence either at the lower reservoir area or the intersection of the access tunnel with the waterway alignment.

3.4.3 Rock cuts would be required on the Loch Ness shoreline in order to facilitate excavation of the underground works and the creation of the powerhouse platform area and tunnel portals. A temporary cofferdam would also be constructed to facilitate excavation below the surface level of Loch Ness.

Powerhouse Platform Area

3.4.4 The above ground, onshore elements of the lower reservoir works would be located on an area of hardstanding, referred to as the powerhouse platform area. Due to the steep topography in this area, this hardstanding area would comprise an upper platform (levelled at approximately 29 m AOD) to the south of the powerhouse building and a lower platform (levelled at approximately 19 m AOD) to the north and west of the powerhouse building, subject to detailed design. The upper and lower level would be connected by an access track to the rear (eastern) side of the powerhouse building which would have a maximum gradient of 1:10. The powerhouse platform area (excluding the quayside and jetty) would be approximately 16,000 m^2, subject to detailed design.

3.4.5 The upper platform (29 m AOD) would be level with the upper ground floor of the powerhouse building and would provide access to the 275 kV GIS substation located within the building as well as the access tunnel adit. The lower platform would be level with the lower ground level of the powerhouse building (19 m AOD) and would provide access to the turbine hall within the building, as well as the electrical room, tailrace, pier and quayside. Visitor access to the powerhouse building would also be granted from the lower platform (via the quayside and pier), whereupon visitors arriving by boat would use lift access to the visitor centre which would be located on the first floor of the building. Refer to **Volume 2, Figure 3.4: Indicative Layout of Lower Reservoir Works - During Construction** and **Figure 3.5: Indicative Layout of Lower Reservoir Works - During Operation,** and **Volume 4, Appendix 3.1: Design and Sustainability Statement**.

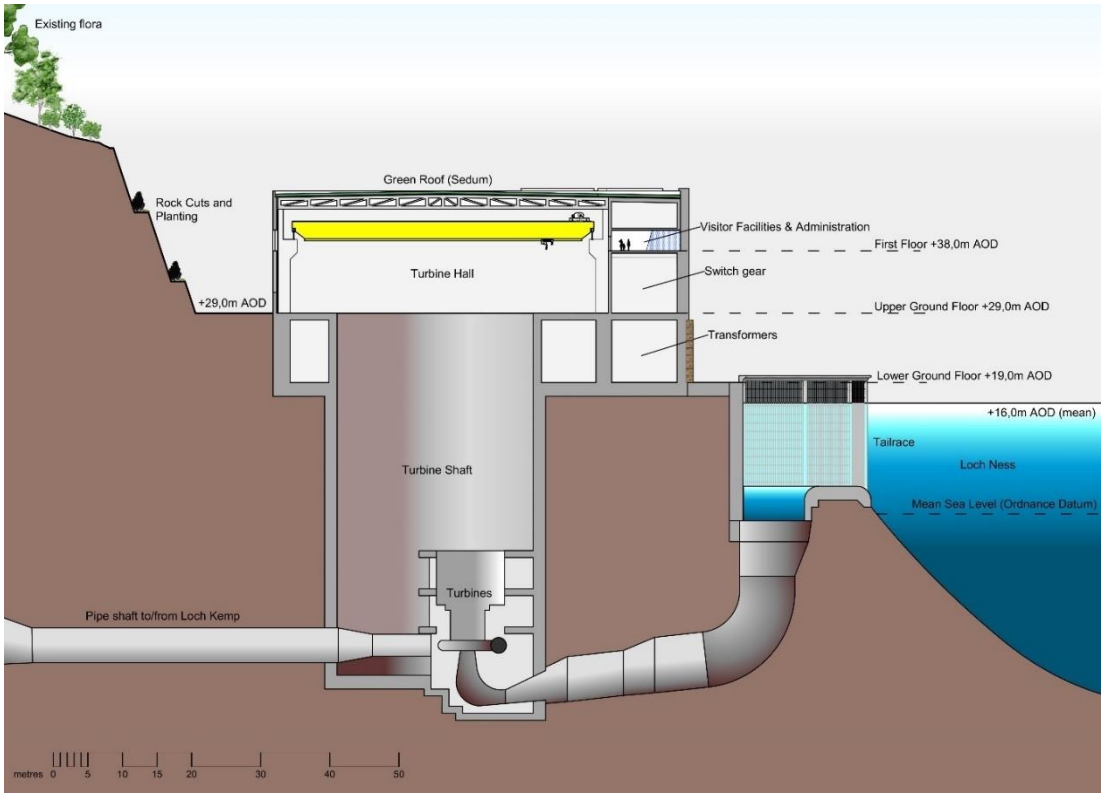
Powerhouse and Turbine Shafts

3.4.6 The powerhouse building, excluding the underground turbine shafts, would have a footprint of approximately 130 m x 60 m and would be approximately 30 m in height, subject to detailed design It is anticipated that it would be constructed from glass or polycarbonate, stone and concrete, with a green roof and that the stone used to construct the powerhouse building would be largely sourced on-site from the excavated tunnels, shafts and borrow pits. The conceptual design of the powerhouse building is presented in **Volume 4, Appendix 3.1: Design and Sustainability Statement.** The final size, design and layout of the powerhouse building would be subject to detailed design.

3.4.7 The turbine hall would take up most of the footprint of the powerhouse building, as shown in **Plate 3.6: Indicative Cross Section through Surface Powerhouse Building, Turbine Hall and Turbine Shafts.** It is anticipated that two underground turbine shafts would sit beneath a turbine hall within the powerhouse building. Each turbine shaft would extend approximately 60 m below the ground level of the turbine hall and would each contain up to two reversible pump turbines and motor generators, together with associated equipment, such as transformers and switchgear.

3.4.8 Outside of the turbine hall, the powerhouse building would also contain staff and visitor facilities across a 3-storey (lower-ground, upper-ground floor and top floor) administration control and maintenance area, which would include the visitor centre. Measures would be put in place to separate the publicly accessible areas of the building from restricted areas, such as the turbine hall, substation, control building and staff facilities. Measures may include having separate staff and visitor entrances, a manned reception, signage, and staff passes to access certain areas.

Plate 3.6: Indicative cross section through Surface Powerhouse Building, Turbine Hall and Turbine Shafts



Outlet Area and Lower Control Works

3.4.9 A tailrace structure would be located on the shore of Loch Ness integral with the powerhouse building. A platform, quayside and pier would also be located adjacent to the powerhouse building.

3.4.10 The lower control works would comprise up to two concrete inlet / outlet structures positioned at the end of the tailrace tunnels. These structures would house the necessary screen arrangements and be shaped to distribute the water in and out of Loch Ness at low velocities.

3.4.11 The tailrace tunnels and lower control works would be positioned below the Loch Ness minimum water level (15.3 m AOD). The structures would be mostly underwater apart from approximately 1.5 m of the total height which would extend above the existing maximum Loch Ness surface level (17.5 m AOD). The sub-surface screen area (approximately 11 m height) would be set into the outer circumference of the tailraces. As such, the finished structures frontage would be a total of approximately 15 m in height and 20 m in diameter.

3.4.12 The majority of construction at the lower control works would take place in dry conditions using drill, blast, muck and haul techniques. The tailrace tunnel portals and construction of the tailraces would be protected from Loch Ness using temporary cofferdams formed of sheet piles filled with either tunnel spoil or concrete. Excavation of the tailrace tunnels is likely to commence from the lower reservoir works end of the Proposed Development (see **Volume 2, Figure 3.4: Indicative Layout of Lower Reservoir Works - During Construction** and **Figure 3.5: Indicative Layout of Lower Reservoir Works - During Operation**, and **Volume 4, Appendix 3.1: Design and Sustainability Statement**).

3.4.13 The tailrace structures would require smolt screens, likely to be vertical bar screens with a clear opening of 12.5 mm and a maximum approach velocity limit of 0.3 m/sec in front of the screens, which smolts can swim away from. A platform above the tailraces, as part of the quayside discussed in **paragraphs 3.4.14**, is required to allow for cleaning of the smolt screens and maintenance of the lower control works.

Quayside and Pier

3.4.14 To facilitate use of the Caledonian Canal system for the transport of heavy equipment and materials during construction, a quayside and pier would be constructed as part of the powerhouse platform area on the shore of Loch Ness. The proposed pier would be approximately 50 m long by 8 m wide and would have a gentle gradient ramping down from the basement level of the powerhouse building to the Loch Ness waterline. The pier is anticipated to extend approximately 40 m into Loch Ness (from low water level). The quayside would be constructed parallel to the shoreline of Loch Ness for approximately 100 m. The final detail of the quayside and pier would be subject to detailed design.

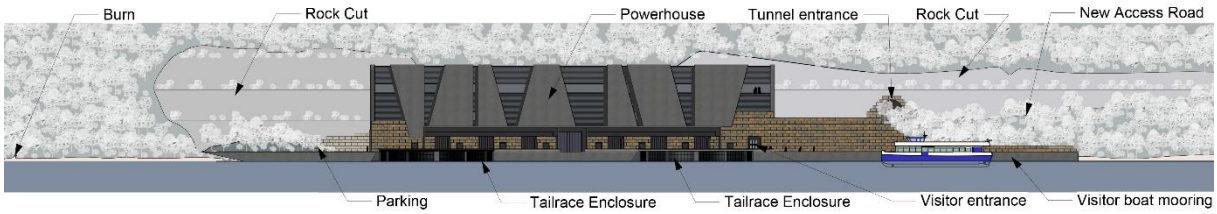
3.4.15 It is anticipated that the E&M kit and other major equipment would be moved using roll-on, roll-off technology or by specially planned lifting operations. A mobile truck mounted crane would be used to offload plant and materials as required. A permanent crane would be installed inside the turbine hall within the structure of the powerhouse building.

3.4.16 During construction, measures would be undertaken to ensure the public safety of Loch Ness users such as, but not limited to, suitable barriers to prevent unauthorised access to the construction site, from Loch Ness.

3.4.17 Following construction, the quayside and pier would be left in place to enable boats to dock, so that boat users in Loch Ness would be able to access the visitor centre and viewing platform proposed within the powerhouse building, as well as for delivery and maintenance purposes.

3.4.18 The area around the permanent quayside and pier would be landscaped and planted to help assimilate the new structures into the landscape (see **Volume 2, Figure 3.5: Indicative Layout of Lower Reservoir Works - During Operation, Volume 4, Appendix 3.1: Design and Sustainability Statement** and **Volume 4, Appendix 3.2: Schedule of Mitigation**).

Plate 3.7: Indicative elevation of Powerhouse from Loch Ness showing rock cutting behind.



North West Elevation

3.5 Access

Access Tracks

3.5.1 Access during the construction and operation of the Proposed Development would utilise existing public roads and estate / forestry tracks where possible. However, the construction of new tracks would also be required, partly due to many of the existing tracks around Loch Kemp being lost within the inundation area once the Proposed Development is operational. The indicative track alignments shown on **Volume 2, Figure 3.1: Proposed Development** may be subject to further micro-siting following more detailed design and site investigations.

3.5.2 Details of access requirements for the upper reservoir works are described below:

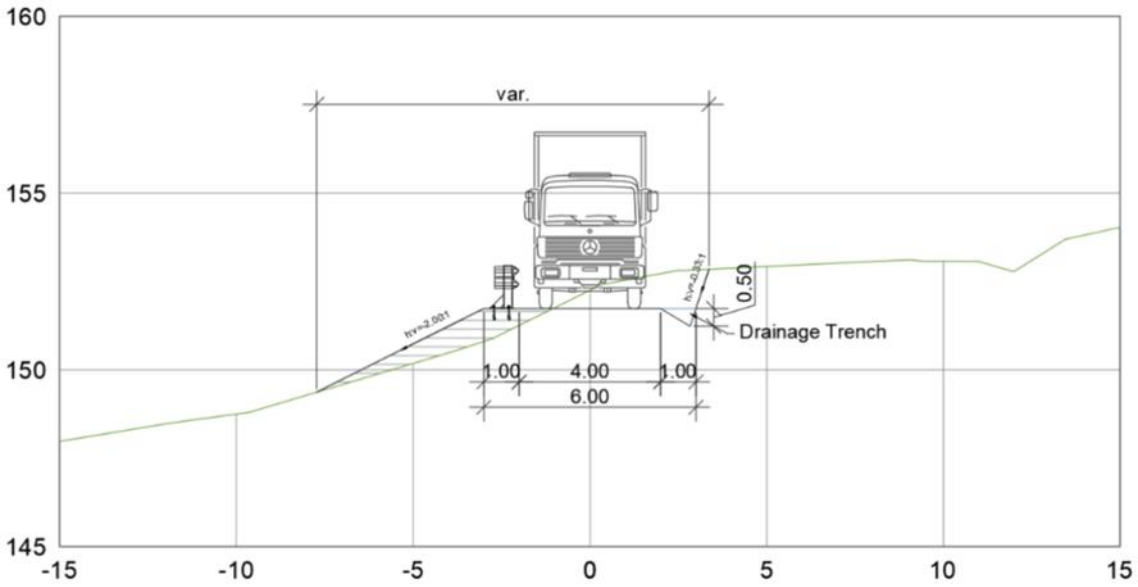
- A new junction with the B862 public road to the south of Whitebridge. It is anticipated that the track would comprise a sealed surface for approximately 100 m from the junction, with a wheel wash located at the transition between the sealed surface and the compacted aggregate track surface.
- Use of existing forestry tracks within the Whitebridge Plantation to access the main welfare compound and the upper reservoir area. Tracks would require widening to approximately 8 m during construction, which would require the removal of some coniferous forestry. Following construction, tracks would be reinstated to a width of approximately 4 m (with passing places) where feasible, to facilitate operational and maintenance activities.
- Use of existing estate access tracks surrounding Loch Kemp to access the upper reservoir area. Tracks would require widening to approximately 8 m during construction. Tracks that would be lost within the inundation area of the upper reservoir once the Proposed Development is operational would not be reinstated. Any upgraded tracks that are outside of the inundation area following construction would be reinstated to a width of approximately 4 m (with passing places), where feasible to facilitate operational and maintenance activities.

- As some of the existing estate access tracks would be lost to the inundation area of the upper reservoir once the Proposed Development is operational, new sections of access tracks would need to be constructed around Loch Kemp. These new tracks would be approximately 4 m wide (with passing places).
- New access tracks would also be required to be constructed around Loch Kemp to access certain sections of the upper reservoir area, including the dams, the inlet / outlet structure, the vertical cable shaft, borrow pits, the cable shaft and the surge shafts. These new tracks would be constructed at approximately 8 m wide and reduced to approximately 4 m wide (with passing places) where feasible, for operational and maintenance activities.
- A new permanent access track would be required to access the new location of the estate fishing lodge. For the purposes of the EIA Report, the width of this new track is assumed to be 4 m.

3.5.3 A new access track would also be required to access the lower reservoir area (within the Ness Woods SAC). It is envisaged that the new track would be constructed to have a running width of approximately 6 m on straight sections and 7 m on bends rather than 8 m, in order to minimise land take within the Ness Woods SAC. The track would feature a 4 m running surface with a 1 m drainage trench and 1 m safety barrier on opposing sides of the running surface. At tight cornering radii within the access track, the running surface width would be widened to 5 m to the allow safe operation of both fixed axle and articulated HGVs for construction and tunnel spoil transportation (see **Plate 3.8** below).

3.5.4 It is anticipated that tracks and surfaces in key areas requiring the most frequent access and footfall (such as the powerhouse building) may comprise a sealed surface. This would enable locally steeper gradients which may limit cut and fill in some areas and reduce the potential for erosion and the need for maintenance.

Plate 3.8: Schematic of a Typical Section of Access Track within the Ness Woods SAC



3.5.5 Due to the extremely steep topography of the slopes leading down to the lower reservoir works, substantial cut and fill works would also be required to construct sections of the access track down to the lower reservoir works, as illustrated in **Volume 2, Figure 3.6: Typical Access Track Construction Details inside Ness Woods SAC**.

3.5.6 The track leading to the lower reservoir works has been routed through areas outside of SAC qualifying habitat features as far as feasible, to minimise impacts on the Ness Woods SAC. The existing estate access track leading to the eastern shore of Loch Ness has also been utilised as much as possible within the design of the access track, although the existing track is only a 2-3 m wide 4x4 track so would require substantial upgrading to accommodate HGV traffic. However, to maintain safe gradients for vehicular access and haulage (<1:10[4]), the track routing would be required to deviate from existing track routes, particularly at the steeply sloped areas immediately above the proposed powerhouse location.

3.5.7 Following construction, this new access track through the Ness Woods SAC would be used for operational access to the powerhouse building and lower reservoir works, as well as an emergency access / escape route. The track would be reinstated to 4 m (with passing places) where feasible, but opportunities do to this would be limited, as the track has already been reduced as far as possible to minimise impacts of the Ness Woods SAC and the extensive cut that would be required to construct the track would make reinstatement challenging.

Access Tunnel

3.5.8 A new permanent access tunnel would provide a route from the platform area around the lower reservoir works to the headrace tunnels and the cable tunnel. The access tunnel would be approximately 560 m long. It is anticipated that the access tunnel would have a maximum gradient of 1:10 so that vehicles can safely travel from the access portal to the headrace tunnels. During construction, the access tunnel would provide the means to construct and remove excavated rock from the headrace tunnels without having to use the turbine shafts for access. Once the Proposed Development is constructed, it is not anticipated that the access tunnel would be used for day-to-day operations, but it would be retained for maintenance access to the underground waterway and cable systems.

Access Track Construction

3.5.9 Site access tracks would typically be constructed with locally (on-site) won graded rock. Where necessary, geotextiles would be used with the surface course comprising of a durable unbound graded rock surfacing material.

3.5.10 Depending on local ground conditions, access tracks would be constructed using a combination of 'floating track' or 'cut track' designs (see **Volume 2, Figure 3.7: Typical Access Track Construction Details outside Ness Woods SAC**):

3.5.11 Generally, a 'floating track' design does not involve excavation and would likely be utilised on the site in areas where peat depth is greater than 1 m, although this would be dependent on the specific circumstances at a particular location. Geotextile material would be laid onto the unbroken existing surface at a width to suit the track. Layers of crushed stone would then be laid on the geotextile to

[4] There is a short section of SAC track at 12% gradient, permissible only by having 6% relief either side. All other lengths of the proposed track do no exceed 10% gradient.

form a track capable of supporting construction plant. The benefits of the floating track design are that it allows access track construction on soft terrain and does not require excavation of deep peat as the surface layer is not broken, resulting in reduced peat volumes for re-use across the site. There is minimal disruption of the sub-surface flow of water within the peat body, and no new channels are formed by which water can drain from the peat mass.

3.5.12 In areas of shallow or no peat (0-1 m), a 'cut track' design would likely be utilised for which the topsoil and peat would be stripped to expose a suitable bearing strata on which to build the track. The track would then be constructed by placing and compacting suitable crushed rock to the required level. Given the variable and undulating topography across the site, earthwork cuttings and embankments would be required to achieve the required gradients for tracks and hard standings. The upper soil/peat horizon, together with any vegetation, would be placed to one side for later reinstatement, if appropriate.

3.5.13 Peat depth across the site, confirmed through peat probing, is generally shallow (<1 m) (see **Chapter 14: Geology, Soils and Water,** and relevant appendices) so it is anticipated that most, if not all tracks, would be a 'cut track' design.

3.5.14 Where appropriate, peat and soil from excavations on site would be utilised for reinstatement along both sides of the track verges and allowed to regenerate naturally. Further details are provided in **Volume 4, Appendix 14.1: Peat Management Plan**.

Access Track Drainage

3.5.15 Construction of site access tracks requires robust and sensitively designed drainage (see **Volume 2, Figure 3.5: Typical Access Track Construction Details inside Ness Woods SAC** and **Figure 3.7: Typical Access Track Construction Details outside Ness Woods SAC**). Generally drains shall follow access tracks on the uphill side to collect run off and protect the access track from washout. Run off would be channelled parallel to the access tracks until a suitable location for settlement lagoons/ponds allowing attenuation and sediment to settle prior to discharge of the water.

3.5.16 A drainage impact assessment (DIA) would be included as part of the Construction Environmental Management Plan (CEMP) following the grant of consent, as this is normally developed as part of the detailed design stage by the appointed Principal Contractor. Principles for drainage management are presented in **Chapter 14: Geology, Soils and Water** and it is expected these would be adopted in the DIA when the CEMP is finalised. (See **paragraph 3.12.3** for more information on the CEMP)

3.6 Advanced Works

3.6.1 Three fenced native woodland natural regeneration areas surrounding Loch Kemp are illustrated on **Volume 2, Figure 3.1: Proposed Development** and described in **Chapter 19: Forestry**. The purpose of these areas is to replace the native woodland that would be lost to the inundation area once the Proposed Development is operational and to provide screening for the estate during construction. These areas will be fenced off pre-construction to prevent deer access. With an existing semi natural woodland seed source nearby, regeneration of birch is anticipated along with rowan and willow. These works are considered 'Advanced Works' of the Proposed Development.

3.6.2 These works are further discussed in **Chapter 19: Forestry.**

3.7 Associated Works

3.7.1 A grid connection, in the form of a 275 kV cable to connect the Proposed Development to the national grid, is required. This would be subject to a separate consenting process.

3.7.2 The cable would be routed from the powerhouse building through the access and cable tunnels, surfacing through the vertical cable shaft to the west of Lochan a Choin Uire. The cable would then be undergrounded following the access tracks that would be constructed as part of the Proposed Development to connect to a 275 kV switching station located to the northeast of Loch Kemp, near Dell Farm (as shown on **Volume 2, Figure 3.1: Proposed Development**).

3.7.3 The switching station and the cable between the powerhouse building and the switching station are considered 'Associated Works' to the Proposed Development and where relevant are considered as part of the cumulative assessments within **Chapters 7 - 20** of this EIA Report. However, separate consent would be required for these Associated Works.

3.7.4 Further works to complete the grid connection between the switching station and the point of connection to the National Grid, anticipated to be at the existing Foyers Substation, would also form part of a separate consenting process to be completed by Scottish Hydro Electric Transmission plc, operating and known as Scottish and Southern Electricity Networks Transmission ("SSEN Transmission"). The Applicant has accepted a Grid Connection Offer from National Grid and a 275 kV buried connection has been requested, but the route is yet to be confirmed by SSEN Transmission. As such, consideration of the environmental effects associated with the grid connection between the switching station and Foyers Substation cannot be considered as part of this EIA Report for the Proposed Development.

3.7.5 It is anticipated that the switching station platform (and associated access track) and the cable between the powerhouse building and the switching station would be consented and constructed by Applicant, however the 275 kV switching station would be constructed and consented by SSEN Transmission, alongside the grid connection between the switching station and the point of connection to the National Grid at the existing Foyers Substation. Further information on the site selection process for the switching station and why these works have been considered as 'Associated Works' is included in **Section 2.7** of **Chapter 2: Design Evolution and Alternatives.**

3.8 Spoil Management

3.8.1 The majority of spoil excavated from the tunnels and surge shafts would be removed via the tunnel portals near the shore at Loch Ness. Excavated spoil from the underground works, anticipated to be approximately 1,100,000 cubic metres, would be re-used, where possible, in the construction of the powerhouse platform area, powerhouse building, dams, access tracks and other construction works wherever feasible. Further information is provided in **Volume 4, Appendix 3.4: Outline Spoil Management Plan**.

3.9 Site Establishment

Site Establishment

3.9.1 During construction there would be a need for site establishment and lay down areas in the vicinity of the Whitebridge Plantation, the upper reservoir, the lower reservoir works, as well as smaller site establishments at the surge shafts, as shown indicatively on **Volume 2, Figure 3.1: Proposed Development**. The final arrangement for these areas would be determined as part of the detailed design to allow flexibility to conduct the works efficiently.

Main Welfare Compound

3.9.2 It is anticipated that typically c.430 workers on average would be working on site, but this would vary throughout the construction period dependent on works to be conducted. It is anticipated that construction workers would be accommodated in a temporary welfare compound on site, within the Whitebridge Plantation. The proposed location of this welfare compound is illustrated on **Volume 2, Figure 3.1: Proposed Development**. The vast majority of this compound would be reinstated on completion, however, a small area would be required to be retained for maintenance activities and operational storage requirements. The final arrangement for the welfare compound would be developed during detailed design and would be discussed with the planning authority.

Borrow Pits

3.9.3 To facilitate early access to the upper and lower reservoir works, site access tracks would be constructed using locally won graded rock extracted from borrow pits located within the Site A Draft Borrow Pit Screening Assessment (**Volume 4, Appendix 3.5)** has been undertaken to identify potential borrow pit areas. These areas are shown indicatively on **Volume 2, Figure 3.1: Proposed Development** and **Volume 2, Figure 3.8: Proposed Development with Working Corridor and Indicative Borrow Pit Excavations**. However, detailed ground-investigation works would be required to determine the exact locations and dimensions of borrow pits.

Forestry and Woodland

3.9.4 To facilitate construction of the Proposed Development, there would be a requirement to fell areas of commercial forestry within the Whitebridge Plantation and at Torr Cluanie. Felling to facilitate access, site establishment, borrow pits and staff welfare requirements is anticipated in the vicinity of the access track between the junction with the B862 and the upper reservoir. Additional felling of commercial forestry would also be required within the southeastern section of the inundation area of the upper reservoir. Further detail is provided in **Chapter 19: Forestry.**

3.9.5 Felling of non-commercial woodland would also be required within the inundation area of the upper reservoir and within the Ness Woods SAC, to accommodate the access track and the powerhouse platform area. Further detail is provided in **Chapter 10: Terrestrial Ecology.**

3.9.6 A Shadow Habitats Regulation Appraisal (HRA) has been undertaken for the Ness Woods SAC and is submitted as a standalone document alongside this EIA Report for the Proposed Development. A Compensatory Measures Package has also been developed for this designated site in consultation with NatureScot and also forms a standalone document submitted alongside this EIA Report.

3.10 Site Traffic

3.10.1 Construction traffic to the Proposed Development would take access from the B862 at Whitebridge, before utilising existing forestry tracks (to be upgraded) and new tracks to the dam sites and the lower reservoir works. All operational or maintenance traffic would also utilise these access routes (reduced in width post construction). No site access is proposed via the existing estate access track leading to Dell Lodge and other estate properties.

3.10.2 The Caledonian Canal would be used for the delivery of abnormal load components of Electrical and Mechanical (E&M) equipment associated with the lower reservoir works of the Proposed Development, removing a large number of potential Abnormal Indivisible Load (AIL) movements from the road network. The use of the canal for the delivery of further equipment and materials associated with the construction of the lower reservoir works would also be explored by the appointed Principal Contractor (in consultation with THC and other relevant stakeholders). This method was used for some equipment and materials delivery during the construction of Foyers Pumped Storage scheme, which is also located on the banks of Loch Ness.

3.10.3 An estimate of total construction traffic generation, and an assessment of potential effects of this on the local road network and canal system, is included in **Chapter 16: Traffic, Access and Transport.**

3.11 Land Take

3.11.1 It is estimated that the permanent development footprint of the Proposed Development would be approximately 120.36 ha. During the construction period it is estimated that a further 81.35 ha would be temporarily required which would be reinstated following completion of the construction works. For the purposes of calculating the land take of the Proposed Development, an indicative Working Corridor has been developed by Fichtner Consulting Engineers Ltd (Fichtner), as illustrated in **Volume 4, Figure 3.8: Proposed Development with Working Corridor and Indicative Borrow Pit Excavations**. This figure also includes the indicative borrow pit excavations detailed in **Appendix 3.5: Draft Borrow Pit Screening Assessment.** The anticipated above ground land-take requirements are set out in **Table 3.2** but would be subject to detailed design.

Table 3.2: Estimated Above Ground Land Take

Development Component	Permanent Land Use (ha)	Additional Land Use during Construction (ha)
Upper Reservoir Works, including dams, inlet / outlet structure, and the maximum Inundation area[1].	108.1 ha	0 ha
Powerhouse Platform Area at Lower Reservoir Works, including the Powerhouse Building, Quayside & Pier, Outlet Area and Access Tunnel Adit)[2]	2.12 ha	0 ha
Surge Shafts (above ground)[3]	0.48 ha	0 ha
Vertical Cable Shaft (above ground only)[4]	0.03 ha	0 ha
Control Kiosks[5]	0.03 ha	0 ha

New Track outwith SAC[6&7]	5.01 ha	5.29 ha[8]
New Track within SAC[2]	0.84 ha	0 ha
Upgraded Track outwith SAC [6&7]	0.7 ha	1.1 ha[8]
Borrow Pits[6&9]	0 ha	1.5 ha
Fishing Lodge[10]	0.005 ha	0 ha
Main Welfare Compound	0.77 ha[11]	4.22 ha
Other Hardstanding / Construction Areas (including construction compounds, welfare facilities, security compound, site offices, vehicle parking, concrete batching plants)[12]	2.29 ha[13]	69.24 ha
Total	120.36 ha	81.35 ha

Land Take Calculation Notes

1 - Excludes the area of the existing Loch Kemp and includes 0.44 ha land take within Ness Woods SAC at Dam 1 (and the surrounding inundation area) as described in **Table 10.6: Summary of Habitat Loss within Ness Woods SAC** in **Chapter 10: Terrestrial Ecology**.

2- Area taken from Table 10.6: Summary of Habitat Loss within Ness Woods SAC in Chapter 10: Terrestrial Ecology.

3 - Assumes both circular surge shafts would be 0.24 ha each (based on a diameter of 55m = 2376 m^2).

4 - Assumes the vertical cable shaft hardstanding area would be 16 m x 16 m.

5 - Assumes the hardstanding area around each control kiosk would be 9 m x 10 m. There are three control kiosk proposed in total.

6 - Excludes access tracks, borrow pits and other hardstanding/ construction areas located inside the inundation area and tracks routed over dams as these are accounted for in the 'Upper Reservoir Works' land take calculation.

7- Track areas calculated by track length x track width. Land take from cut and fill, passing places etc associated with the access tracks are accounted for in the land take calculation for the 'Other Hardstanding / Construction Areas', which accounts all remaining areas within the 'Working Corridor' (see note 12).

8 - Assumes all tracks constructed at / upgraded to 8 m would be reinstated to 4 m post construction.

9 – Includes area of BP 1 (100 m x 50 m), BP2 (100 m x 50 m) and BP4 (200 m x 25 m) as illustrated on **Figure 3.8** as these borrow pits would be located outside of the inundation area**.** Borrow pit dimensions are taken from **Appendix 3.5: Draft Borrow Pit Screening Assessment.** All Borrow pit excavations are indicative (subject to further ground investigation works).

10 - Assumes 7 m x 7 m fishing lodge would be constructed (similar to size of existing fishing lodge).

11 - It is anticipated that a 0.77 ha area of the Main Welfare Compound would be retained as a maintenance area post construction. The remaining area of the compound would be reinstated.

12 - Accounts for all remaining areas within the 'Working Corridor', as illustrated on **Figure 3.8**.

13 - Accounts for the onshore Working Corridor Area within the Ness Woods SAC, as described in **Table 10.6: Summary of Habitat Loss within Ness Woods SAC** in **Chapter 10: Terrestrial Ecology**. It is anticipated that this would be permanent land take, as the track and lower reservoir works within the Working Corridor in the Ness Woods SAC have already been reduced as far as possible to minimise impacts on the designated site (see **Chapter 2: Design Evolution and Alternatives** for further details) and the extensive cut that would be required to construct the track and powerhouse platform & building would make reinstatement challenging.

3.12 Environmental Management during Construction

Sensitive Locations

3.12.1 Prior to construction works, sensitive ecological areas, and other specific sensitive locations (e.g. cultural heritage assets, watercourses) would be marked out as appropriate on site by specialist advisers (e.g. the Ecological Clerk of Works (ECoW)) in order to avoid unnecessary encroachment and protect sensitive areas during construction. A Landscape Clerk of Works and an Architect would also be involved during the detailed design and construction phases of the Proposed Development where required, to ensure the key principles of the design mitigation are realised. The Principal Contractor would ensure that no vehicle movements or other activities take place outwith the approved working area.

Micro-siting

3.12.2 There may be a requirement to microsite elements of the Proposed Development from the positions shown on **Volume 2, Figure 3.1: Proposed Development**, during the detailed design of the scheme. Any micrositing would require agreement of the specialist advisors (e.g. the ECoW), as appropriate.

Construction Environmental Management Plan

3.12.3 It is proposed that construction method statements for the construction of the Proposed Development would include the requirements of the Construction Environmental Management Plan (CEMP) which would apply to all construction activities required as part of the proposals. In particular, the CEMP would specify conditions relating to protection of habitats and species, pollution prevention and the means by which site monitoring would occur. The final site-specific CEMP would be secured by a condition of consent, and would be prepared by the Applicant and Principal Contractor, in consultation and agreement with THC, Scottish Environment Protection Agency (SEPA), and NatureScot. An Outline CEMP is included in **Volume 4, Appendix 3.3.**

Peat Management Plan

3.12.4 A Peat Management Plan would be prepared at pre-construction stage, following further site and ground investigation works, which would provide further detail on how peat would be managed and re-used on site. This would be secured by a condition of consent and prepared in consultation with THC and SEPA. A Draft Peat Management Plan (PMP) is included in **Volume 4, Appendix 14.1.**

Site Environmental Management

3.12.5 The Principal Contractor would have overall responsibility for environmental management on the Site. The services of specialist advisors, such as the project ECoW, would be retained as appropriate and would be called on as required to advise on specific issues. The Principal Contractor and the Applicant would ensure construction activities are carried out in accordance with best practice, relevant environmental legislation, the mitigation measures outlined in this EIA Report and those detailed in the approved CEMP. A summary of mitigation measures outlined in this EIA Report are included in **Volume 4, Appendix 3.2: Schedule of Mitigation**.

Waste Management

3.12.6 It is anticipated that any excavated material generated during the works, would be re-used on site, as described within **Volume 4, Appendix 3.4: Outline Spoil Management Plan** and **Volume 4, Appendix 14.1: Peat Management Plan**. Any materials to be removed from site (packaging etc.) would be segregated on site and removed to suitable recycling facilities or disposed of to a suitably licensed waste management facility, in accordance with current waste management regulations.

3.12.7 A Waste Management Plan would be provided by the Principal Contractor as part of the CEMP.

Site Reinstatement

3.12.8 Reinstatement works would generally be undertaken during construction (and during the immediate post-construction phase) and would aim to restore areas of ground disturbance and changes to the landscape as part of the construction works. Reinstatement would be undertaken as soon as practical following the construction works in each area, such as the re-dressing of road and track verges (and other areas that may be disturbed as a result of the construction process). A Site Reinstatement Plan would be provided by the Principal Contractor as part of the CEMP.

3.12.9 Site tracks and some hardstanding areas would be retained for use during maintenance operations, although 8 m and 6 m construction tracks would be reinstated to 4 m where feasible. The track edges would as far as possible be blended to the adjacent contours, with natural vegetation being allowed to re-establish.

3.12.10 Any other temporary hardstanding areas would be re-graded with peat or soil to a natural profile and reinstated as appropriate. Where feasible, any trees felled during construction would be compensated by being replanted onsite, as described in **Chapter 19: Forestry.**

3.12.11 All construction equipment and other temporary infrastructure would be removed from site and the temporary storage areas would be reinstated.

3.12.12 A Habitat Management Plan (HMP) will be implemented as part of the Proposed Development to compensate for the direct and indirect loss of sensitive natural/semi-natural habitats (excluding Ness Woods SAC compensatory measures (see **paragraph 3.12.13**), notably blanket bog and heath, as a result of construction of the Proposed Development, and to provide significant biodiversity enhancements, in accordance with planning policy requirements, including National Planning Framework 4 (NPF4). An Outline HMP is included in **Volume 4, Appendix 10.7: Outline Habitat Management Plan (non-SAC).**

3.12.13 As stated in **paragraph 3.9.6**, a Compensatory Measures Package for the Ness Woods SAC has also been developed in consultation with NatureScot and forms a standalone document alongside this EIA Report.

3.13 Construction Programme / Hours of Work

3.13.1 It is anticipated that surface works would generally be undertaken between 07.00 and 19.00 hours Monday to Saturday, and 07.00 to 15.00 hours on Sunday. Any underground operations, supporting vehicle movements and continuous pouring of concrete would need to continue 24 hours a day, seven days a week inclusive of bank holidays. In the event of surface work being required outwith these hours, e.g., abnormal load deliveries, commissioning works or emergency mitigation works, the Planning Authority would be notified prior to these works taking place, wherever possible.

3.13.2 Any surface blasting on site would only take place between the hours of 09.00 to 17.00 on Monday to Friday inclusive and 10.00 to 12.00 on Saturdays, Sundays and on National Public Holidays, unless otherwise approved in advance in writing by the Planning Authority.

3.13.3 Underground operations and other agreed works that would continue to take place outwith normal surface working hours would have strict measures in place to ensure that any noise is mitigated for receptors above ground.

3.13.4 The final CEMP, would include a Noise Management Plan for construction activities, including blasting activities. The Noise Management Plan would also include measures that would be implemented during construction to ensure local receptors are not adversely affected by noise and measures for community liaison to advise on the timing and duration of blasting activities. The final Noise and Vibration Management Plan would be submitted to the Planning Authority for approval prior to the commencement of the Proposed Development. An Outline Construction Noise and Vibration Plan is provided in **Volume 4, Appendix 17.3**. and further information on Noise is provided in **Chapter 17: Noise and Vibration** of this EIA Report.

3.13.5 It is anticipated that the main civil engineering construction period would last approximately 5 years (see **Plate 3.9: Indicative Construction Timeline** below), subject to the successful contractor's approach.

Plate 3.9: Indicative Construction Timeline

Task	Year 1	Year 2	Year 3	Year 4	Year 5
Site Establishment, including Felling of Trees and Construction of Access Tracks					
Form Platform at Lower Reservoir Works					
Tunnel Excavation and Underground Works					
Construction of Dams and Upper Reservoir Works					
Construction of Powerhouse Building, Substation and Above ground Lower Reservoir Works					
Site Reinstatement / Restoration					
Testing and Commissioning					

Consultations with the Local Community during Construction

3.13.6 Ongoing engagement with the local community during the construction of the Proposed Development would be an important consideration for the Applicant and the Principal Contractor. A community liaison group would be set up to provide the local community with information about

the timing of key construction activities and a mechanism by which concerns from within the local community could be shared and discussed.

3.14 Construction Lighting

3.14.1 During the winter, work areas across the site would have temporary construction lighting at the start and end of the working day for surface works, with the exception of the tunnel portals, which would require temporary lighting when vehicle access is required to the underground operations. Vehicle access into / out of the tunnel portal outside of surface working hours would be minimised to limit the use of lighting during these hours and appropriate mitigation would be implemented to minimise illumination, glare or light spillage from these lights to nearby receptors.

3.14.2 In the event of surface work being required outside of the proposed surface working hours (see **paragraphs 3.13.1** and **3.13.2**)3.13.1, temporary lighting would also be required in these areas and would be agreed with the Planning Authority in advance.

3.15 Operational Activities

3.15.1 The Proposed Development would be manned 24 hours a day[5], with the majority of operations being controlled from the administration area of the powerhouse building. It is anticipated that the Proposed Development would require approximatley25 operational staff members to operate, maintain and manage the site. Regular maintenance visits would be made to inspect and maintain structures and components of the Proposed Development. Operational maintenance would also be controlled by the Reservoirs (Scotland) Act 2011[6] and the requirements of the supervising engineer.

Operational Lighting

3.15.2 Once operational, with the exception of the powerhouse building, external lighting, including at the dams and upper reservoir inlet/outlet structure, would only be used during essential operational and maintenance activities. This would be subject to detailed design and in agreement with the Planning Authority.

3.15.3 Internal lighting would be required in the powerhouse building, predominantly during working hours, unless essential operational and maintenance activities were required outwith these hours. Any external lighting required at the powerhouse building would be designed to be discrete and minimise light pollution.

3.16 Decommissioning

3.16.1 With proper maintenance it is anticipated that the Proposed Development would remain functional indefinitely. However, if the Proposed Development ceases operation, decommissioning would take place and it is anticipated that the site would be restored as follows:

[5] Some night-time work may be workers on call rather than based onsite.

6 Available at: https://www.legislation.gov.uk/asp/2011/9/contents [Last Accessed 06/06/2023]

- Underground tunnels would be sealed;
- Generation plant would be removed;
- Where removal of infrastructure would result in more damage than leaving in place, they would be left in-situ; and
- Disturbed ground would be reinstated.

3.16.2 Full details of the decommissioning plan would be agreed with the appropriate authorities and landowners prior to any decommissioning works commencing.