

Balliemeanoch Pumped Storage Hydro

Environmental Impact Assessment Report

Volume 5: Appendices

Appendix 5.4: Outline Landscape and Ecology
Management Plan

ILI (Borders PSH) Ltd.

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Appendix 5.4 Outline Landscape and Ecology Management Plan

Introduction

This document describes the Outline Landscape and Ecology Management Plan (oLEMP) and embedded mitigation measures that would be implemented prior to and during the construction phase of the Development, as well as the outline management and monitoring measures to be implemented once the Development is operational. This appendix should be read in conjunction with *Volume 2, Chapter 6: Terrestrial Ecology and Volume 2, Chapter 5: Landscape and Visual Assessment*. This appendix also refers to the outline Construction Environmental Management Plan (CEMP) (Appendix 3.1).

This appendix is supported by the following figures, which are available at the end of the document:

- *Figure 5.4.1: Landscape and Habitat Restoration Plan – Construction*
- *Figure 5.4.2: Landscape and Habitat Restoration Plan - Operation Year 1*
- *Figure 5.4.3: Landscape and Habitat Restoration Plan - Operation Year 15*
- *Figure 5.4.4: Felling Plan*
- *Landscape Drawings: S03-Z1-09-DR-LA-319101, S03-Z1-09-DR-LA-319102, S03-Z1-09-DR-LA-319103, S03-Z1-09-DR-LA-319104, and S03-Z1-09-DR-LA-319105*

These proposals have been designed to be delivered entirely within the Development Site boundary. New habitat creation and landscaping have been accommodated, alongside the protection and enhancement of existing habitats where feasible.

The Purpose and Structure of this oLEMP

The purpose of this oLEMP is to set out the proposed strategy to mitigate potentially adverse effects of the Development on habitat features within the Development Site boundary and on the landscape and visual resource, and to provide enhancement where appropriate and feasible. It provides a clear landscape and ecological rationale, for landscape and ecological management within the Development Site based on the assessments prepared in *Volume 2, Chapter 5: Landscape and Visual Assessment*, *Volume 2, Chapter 6: Terrestrial Ecology and Volume 2, Chapter 9, Ornithology*. The oLEMP also forms the basis for a process of ongoing dialogues with the Local Planning Authority leading up to and during construction to ensure that they are kept informed and satisfied of the implementation of the oLEMP and the landscape and habitat restoration plans of which it forms the basis.

The Development has been designed, as far as is practicable, to avoid or reduce effects on the landscape and habitat features through design development and impact avoidance.

The document has been structured as follows:

- The Development Site and Existing Features;
- Management Aims and Objectives
- Landscape and Ecological Mitigation Proposals; and
- Roles and Responsibilities and Next Steps.

Objectives

The oLEMP has the following objectives, which are intended to jointly fulfil both biodiversity and landscape aims, are:

- Reinstatement of temporarily lost habitats, including grassland and heathland seeding;
- Restoration and rehabilitation measures including peat bog / upland rehabilitation, natural regeneration and steep mountainside enhancement;

- Replacement of felled forestry plantation, where lost to widen existing tracks for access, with woodland, heathland and grassland planting to enhance the structure and diversity of species;
- Native woodland planting, sympathetic to the composition of existing natural woodland and in suitably-natural locations, to enhance and expand existing woodland features within the landscape, including alongside rising glens and adjacent to existing forestry, as well as to integrate and reduce the scale of the Tailpond part of the Development;
- Creation of areas of advanced native woodland planting to provide earlier establishment of woodland;
- Secure the management of newly created replacement habitats; and
- Form the basis of potential planning conditions related to the implementation and restoration of the Development Site.

The proposed landscape and ecological measures are illustrated in *Figures 5.4.1, 5.4.2 and 5.4.3* and show the primary mitigation measures embedded in the Development as well as the opportunities for new habitat creation. Such measures are shown for Construction, Operation Year 1 and Operation Year 15. Together with the landscape drawings illustrated in Appendix A.1 they outline the proposed mitigation measures for the Development in relation to landscape and ecology using a holistic and integrated approach.

This oLEMP also outlines the long-term management principles that would run for a 30 year period. The final plan and execution of these works would be subject to planning conditions and would be the responsibility of the appointed Construction Contractor.

The Development Site and Existing Features

The Development Site boundary is split into three separate parts. The two smaller, predominantly linear, parts are located immediately adjacent to the town of Inveraray off the A819. The larger and main part of the Development Site is located to the east of Balliemanoch within undulating moorland with localised crags. The Development Site occupies an area of 31173 hectares and is comprised of varied landform, including low-level wooded loch shore. The higher ground within the Development Site includes crags, with nearby high points including Cruach Mhor at +589m above ordnance datum (AOD), located approximately 750m to the east of the Development Site boundary.

The existing landscape and biodiversity features within the Development Site have informed the mitigation commitments and are summarised below. Full details of the baseline landscape, ecology and ornithology can be found in *Volume 2; Volume 2, Chapter 5: Landscape and Visual Assessment*, *Volume 2, Chapter 8: Ecology and Volume 2, Chapter 9: Ornithology*.

Summary of Existing Landscape Features

Landcover

The main part of the Development Site includes natural woodland, pasture and a minor public road beside Loch Awe, before rising to open moorland of wet heath and acid grassland (with nearby commercial conifer plantation) and increasingly abundant peat bog. The proposed Headpond area is dominated by peat bog, with a single moderately-sized natural lochan, Lochan Airigh. To the immediate west of the proposed Headpond there are steep mountain slopes, with local crags, rising to variable upland terrain of further bog and heath with scattered lochans. To the east lies further undulating peat bog rising to crags at Cruach Mhor, and to the north a substantial conifer plantation dropping towards Cladich.

The Inveraray sections of the development form narrow corridors and largely follow existing tracks through or beside extensive plantation woodland, with adjacent pastures and localised wet marsh on the lower ground towards Inveraray and Loch Fyne. The western end crosses a large pasture field adjacent to the A83 and the loch shore where the proposed jetty at Loch Fyne is proposed.

Pattern and Landform

The plateau moor and forest rise from the wooded shores of Loch Awe and the rocky maritime edge of Loch Fyne. These are generally large scale landscapes with extensive blocks of coniferous forestry plantation, which reduces this pattern in places. The landform within the Development Site is variable and includes undulations with localised high points. The loch shore parts of the Development Site are generally relatively shallower.

Recreation and Connectivity

There are several A roads near the Development Site including the A819 and A83 as well as the B840, and a network of smaller B and C roads. The West Highland Line railway line also crosses near the Development Site. Two core paths cross the Development Site, including one (C203 – Bealach an Fhuarain, Inveraray) to the north of the Tailpond, partially along Upper Avenue, and another one (C201 – Dun Na Cuaiche, Inveraray) crossing an access track upgrade between the A83 and A819 to the north of Inveraray. Two recreational routes pass within the vicinity, including the Cowel Way recreational route and the Three Lochs Way.

There are various local paths within the vicinity of the Development Site, including through plantation areas, along the loch edges and in and around Inveraray, as shown on the Scottish Record of Walking Routes. The Caledonia Way, a promoted cycle route, also lies in the vicinity. The various upland lochs and lochans in the area are also used for recreational purposes, including private boats.

Summary of Existing Biodiversity Features

Habitats

Full details of habitats are provided in *Appendix 6.3*. The main part of the Development Site, containing the proposed Headpond, is dominated by blanket bog. This is often not in the best condition, with signs of overgrazing and in places burning (which, over a prolonged period, has probably been carried out on much of the bog). These have resulted in an often poor cover of heather, and are probably responsible for an apparent shortage of species such as cloudberry *Rubus chamaemorus* and bog bilberry *Vaccinium uliginosum* that are otherwise rather inexplicably rare. There is localised peat erosion causing peat haggling and peat exposure, and locally there are narrow drainage grips (drains). Some parts of the flatter peat bog are very wet with abundant sphagnum. Two particularly notable sphagnum species (*Sphagnum austinii* and *Sphagnum fuscum*) were each found in small quantity at only one location each (perhaps in part also owing to adverse management), both outside the works area.

Slopes in this area that are too steep for significant peat development tend to support grassland and/or heath. These are particularly abundant on the steep mountainside at and beyond the west side of the proposed Headpond, which includes basic as well as acid grassland, wet heath (some flushed) and dry heath (including forms with bell heather *Erica cinerea* as well as heather *Calluna vulgaris*). More rarely but fairly widespread there are also very small base-rich flushes, one of which (just north of the proposed northern embankment for the Headpond) supports bog orchid *Hammarbya paludosa*. Far more common are acid flushes and similar stream-side vegetation dominated by taller rushes *Juncus* spp., that are easily visible amongst the bog and heath.

The lochans throughout the high ground, including Lochan Airigh, are of the typical nutrient-poor and acidic sort, but tend to support the common type of vegetation of such waterbodies that includes shoreweed *Littorella uniflora* and water lobelia *Lobelia dortmanna*. Lochan Romach is different, including sparse stands of common reed *Phragmites australis* and white water-lily *Nymphaea alba*.

The moorland dropping from the Headpond vicinity to towards Loch Awe includes on the highest part some further blanket bog, but mainly comprises wet heath and acid grassland. The wet heath is often degraded particularly closer to Loch Awe, through overgrazing. The moorland stops sharply where grassy pastures dominate. Closer to and beside Loch Awe, there are considerable extents of semi-natural woodland, some ancient, in both wet and dry forms, and extending in places along tributary watercourses. There are also several open marshy areas near Loch Awe amongst the pasture, tending to be rush-dominated.

The Inveraray sections are dominated by plantation woodland, almost entirely coniferous in the west but more variable with broadleaved and mixed areas in the east. The Development almost entirely runs along existing access tracks through or beside these plantations. Other adjacent habitats along the Inveraray sections include intensive pastures and localised rush-dominated rush. One field of pasture is crossed by the western end of the Development to reach the proposed jetty. The proposed temporary jetty is beside the A83, and the maritime edge of Loch Fyne here supports very thin strips of coastal grassland and intermittent saltmarsh.

Protected and Notable Species

Details of non-aquatic protected and notable species are given in *Chapter 6: Terrestrial Ecology (and accompanying Appendix 6.4: Mammals and Appendix 6.5: Bats) and Chapter 9: Ornithology (and accompanying Appendix 9.1: Ornithology and Appendix 9.2 Golden Eagle Topographical Modelling)*. Terrestrial aquatic issues are covered in *Chapter 7: Aquatic ecology*.

The main ornithological interest is the presence in the wider general region of breeding golden eagle *Aquila chrysaetos* and white-tailed eagle *Haliaeetus albicilla*. Additionally, small numbers of breeding golden plover *Pluvialis apricaria* and curlew *Numenius arquatus* were recorded in the Headpond vicinity, and black grouse *Tetrao tetrix* is also known to breed in the wider vicinity.

The only known non-avian protected species certainly known to occur in the Headpond vicinity are (predictably) otter *Lutra lutra* and (locally and in relatively small quantity) water vole *Arvicola amphibia*.

On lower ground near Loch Awe pine marten *Martes martes* and red squirrel *Sciurus vulgaris* are known to occur. These species are also considered present at Upper Sonachan and around Inveraray. Badger *Meles meles* is known to occur near the Inveraray sections, although no actual badger setts were found during the surveys.

Lochan Airigh, and by extension associated watercourses, in the Headpond area are known to support non-migratory brown trout *Salmo trutta*. Migratory fish cannot reach the Headpond area owing to existing barriers to fish passage.

Development Components

The key above ground components of the Development and how they are constructed have the potential to affect these existing features. A detailed description of the Development and the component parts is provided in *Volume 2, Chapter 2: Project, and Site Description*. The above ground component parts can be summarised as:

- Headpond
- Tailpond
- Construction Compounds
- Access Tracks
- Temporary B840 Realignment
- Walking Routes
- Switching station
- Marine Facility

Mitigation commitments consider how the existing ecology and landscape features can be protected, reinstated and, where possible, enhanced, as well as how the Development can be best integrated into the landscape as a whole.

Management Aims and Objectives

This section sets out the management and maintenance objectives for the protection and enhancement of the landscape and biodiversity fabric of the Development. A detailed LEMP would be developed alongside the detailed landscape and ecological design. The maintenance and management plan would cover the first 30 year period of operation of the Development. Within the first five years after planting, all plants found to be dead or dying would be replaced within the first planting season.

In general terms, the landscape and ecological management aims for the Development Site are to:

- Secure the long-term future of the landscape;
- Enhance local landscape character, particularly in the context of the Local Landscape Areas;
- Integrate the Development Site into the surrounding landscape and local views;
- Retain and manage existing native woodland areas in combination with new areas of native woodland planting to maintain their screening function, contribution to local landscape character at the loch shore, provide ecological habitat and an amenity resource which can be used by local people and visitors;
- Create, maintain and enhance habitats of value to wildlife to provide benefits for the local environment and biodiversity; and
- Establish a flexible management and maintenance regime with associated monitoring mechanisms, able to respond to changing needs or objectives.

Construction Mitigation

The overall construction working methods to be implemented during the construction phase are outlined in the outline CEMP (*Appendix 3.1*). Therefore, these are not repeated here.

Landscape and Ecological Mitigation

Overview

The primary aims of the oLEMP are to best assimilate the Development into the host landscape and habitats, and to implement ecological improvements to retained habitats to fulfil habitat compensation and enhancement requirements (arising primarily from losses to the Headpond). All the proposals are within the Development Site boundary.

The key measures are blanket bog / upland habitat rehabilitation, provision of increased native woodland cover, and translocation of woodland ground flora (and associated planting) from the limited ancient woodland loss at the Tailpond to nearby more-disturbed woodland and adjacent ground. There will also be required reinstatement of various habitats at temporary infrastructure once this is removed. This is addressed separately below under 'Reinstatement of Habitats at Temporary Infrastructure'.

Additionally, protection measures during construction will be implemented for retained woodland, including the ancient woodland beside Loch Awe, and other retained habitats. Such protection measures are set out in the outline CEMP (See Appendix 3.1 (Volume 5 Appendices))

The following lists the landscape and ecology mitigation components.

- Blanket bog / upland rehabilitation zone
- Native woodland planting
- Wet woodland planting
- Heathland seeding (Embankments)
- Meadow Grassland and Loch Fyne Coastal Grassland Seeding
- Ancient woodland management
- Woodland management
- Notable habitat management
- Protected species mitigation
- Invasive Non-native Species Management (INNS)

The approach to restoration is also phased over three key periods to optimise the establishment period for landscape and visual assimilation. The LEMP proposals are illustrated on Figures:

- *Figure 5.4.1: Landscape and Habitat Restoration Plan – Construction*
- *Figure 5.4.2: Landscape and Habitat Restoration Plan - Operation Year 1*
- *Figure 5.4.3: Landscape and Habitat Restoration Plan - Operation Year 15*

Blanket bog / upland rehabilitation zone

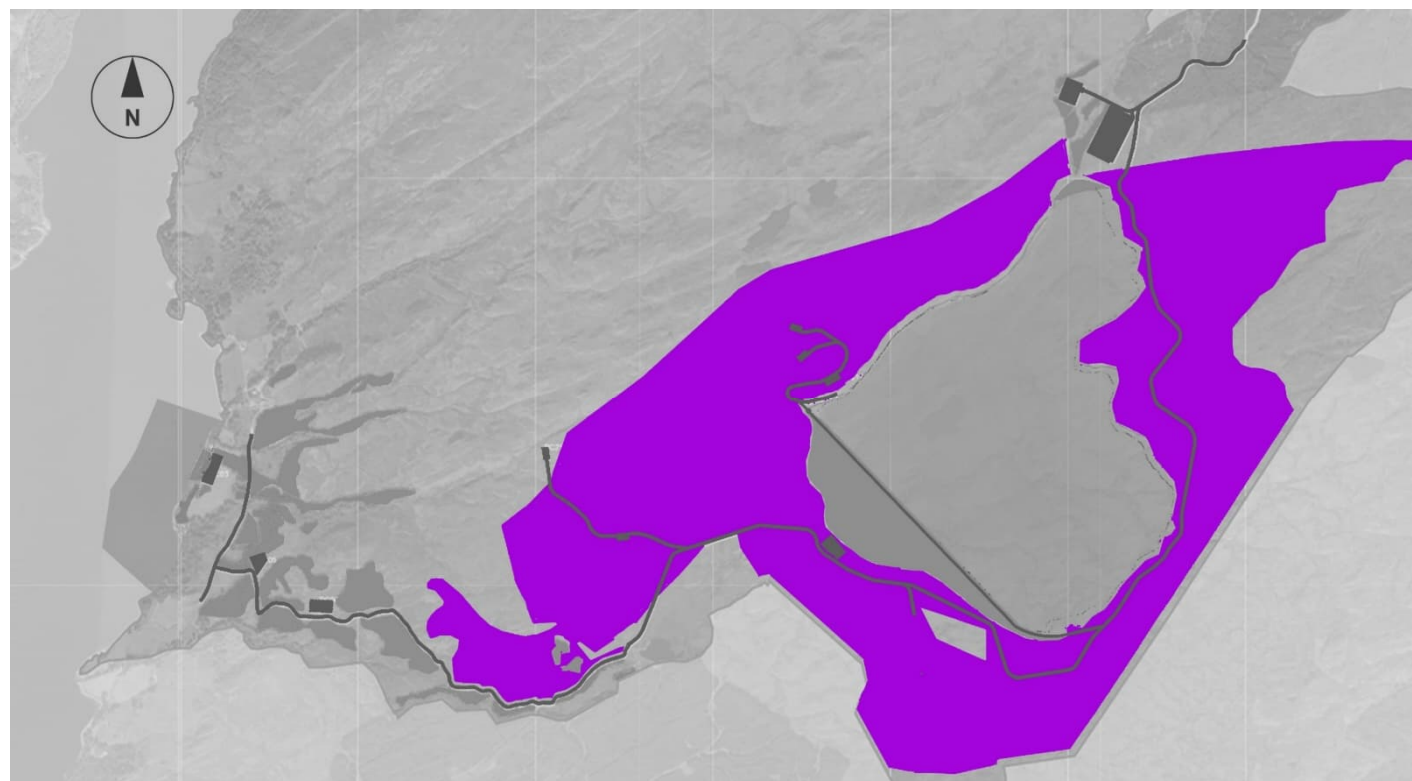
As noted above, the area around the Headpond is dominated by blanket bog. Consequently, there will be a significant loss of blanket bog, albeit often in degraded or suboptimal condition, as a result of the construction of the Headpond, and comparably very minor losses elsewhere to other permanent infrastructure. As also noted above, amongst the blanket bog in the Headpond vicinity there are smaller extents of other habitats including heath and grassland on steeper slopes and localised wet flushes, and wet heath, often degraded, is also common on the lower moorland towards Loch Awe. Accordingly, a large zone around all sides of the proposed Headpond (and to a lesser extent beside the western (Balliemanoch) access track) has been proposed for rehabilitation, amounting to approximately 3 km².

Although blanket bog would be the main beneficiary of this rehabilitation zone, natural regeneration of native woodland, and potentially montane scrub (now a scarce habitat) on the slopes of Sron Bhreac-liath, may well occur locally on steeper, less exposed slopes within the rehabilitation zone. The rehabilitation zone incorporates a small existing deer-fenced bog-dominated area beside Lochan Romach. This includes a subsidiary rehabilitation area extending the existing deer-fenced area westwards.

Locations

The bog / upland rehabilitation zone is located around all sides of the Headpond. To the east, the upper altitudinal limit has been set as 500m AOD, to avoid deer fencing on the localised high point within the landscape at Cruach na Gearr-choise to the east. To the south/south-west, it extends to the red line boundary and across to the existing deer-fenced area by Lochan Romach. To the north-west, it follows the uppermost part of the Allt na Cuile Riabhaiche to a watershed area of blanket bog, and then follows the uppermost part of the Allt a'Chrosaid downslope before meeting the existing deer-fenced area by Lochan Romach.

There is also a smaller zone between the upper part of the western (Balliemanoch) access track and the existing deer-fenced area by Lochan Romach. Part of this zone is bog and the remainder closely associated upland habitats such as wet heath and flush.



Intervention details

Within the rehabilitation zone, the following will apply:

- wild deer will be excluded;
- livestock grazing at low conservation-level intensity only;
- cessation of all burning.

This will permit natural development of better quality blanket bog vegetation, improving the condition of retained blanket bog across a large area.

The rehabilitation zone will also include:

- restoration of localised areas of bare peat;
- blocking of localised drainage grips (drains).

The above peat restoration measures will adhere to guidance set out by Peatland ACTION (<https://www.nature.scot/doc/peatland-action-technical-compendium>), and will use peat from the Headpond area. *Volume 5, Appendix 10.2, Outline Preliminary Peat Management Plan* will be adhered to wherever peat manipulation is required. Some drainage grips and eroded peat areas would disappear under the Headpond, however several are visible on aerial photography between the main headpond embankment and the red line boundary.

In order to exclude wild deer and prevent overgrazing, the entire perimeter of the rehabilitation zone will be deer fenced. A wide gap between the rehabilitation zone and the Upper Sonachan plantation has been intentionally left to permit wild deer to commute between areas west and east of the Headpond area and rehabilitation zone. Livestock grazing will be initially established with reference to guidance on livestock stocking levels (measured in livestock units) as employed on nature conservation sites with similar habitats. The effectiveness of the rehabilitation zone will be subject to ongoing monitoring for 30 years. This will be critical in the earlier years to judge whether the initial level of livestock grazing is satisfactory or needs to be adjusted. Monitoring will also ensure maintenance of the deer fencing. Monitoring will also check for any establishment of Sitka spruce within the rehabilitation zone (although this is not considered very likely to occur), which will be removed if found.

The rehabilitation zone includes known locations of *Sphagnum austinii* and *Sphagnum fuscum*, localised peat bog species not found anywhere else in the ecology survey area, which may spread under the more favourable conditions in the rehabilitation area.

Timing

The bog / upland rehabilitation zone would be established post construction.

Outcomes

- Increased growth and cover of heather and other ericoids in blanket bog, and in the smaller extents of wet and dry heath within the rehabilitation zone;
- Protection of the two current locations of the notable peat bog sphagna *Sphagnum austinii* and *Sphagnum fuscum*;
- Spread of blanket bog plant species that are currently very rare despite apparent habitat suitability (most likely owing to overgrazing and, probably, past burning), in particular cloudberry and bog bilberry. In the longer term, there may also be spread of the notable peat bog sphagna *Sphagnum austinii* and *Sphagnum fuscum*;
- Direct restoration of localised bare peat erosion;
- Improved bog hydrology where localised drainage grips are blocked;
- Overall improvement in the floristics, condition and ecosystem function of blanket bog and associated habitats in the rehabilitation zone;
- Increased suitability of habitat for certain fauna, including red grouse *Lagopus lagopus*, which is adversely affected by overgrazing. Red grouse was rather infrequently recorded during surveys, and constitutes an important live prey resource for breeding golden eagles *Aquila chrysaetos* (known to depend more on live prey for breeding success), potentially improving the current infrequent breeding success of golden eagles in the local area;
- Increased carbon capture capability, through increased growth of ericoids and hare's-tail cottongrass, and probably also of sphagna, in blanket bog within the rehabilitation zone;

- Visual benefit through improved natural regeneration of local landscape vegetation and patterns.

Native Woodland Planting

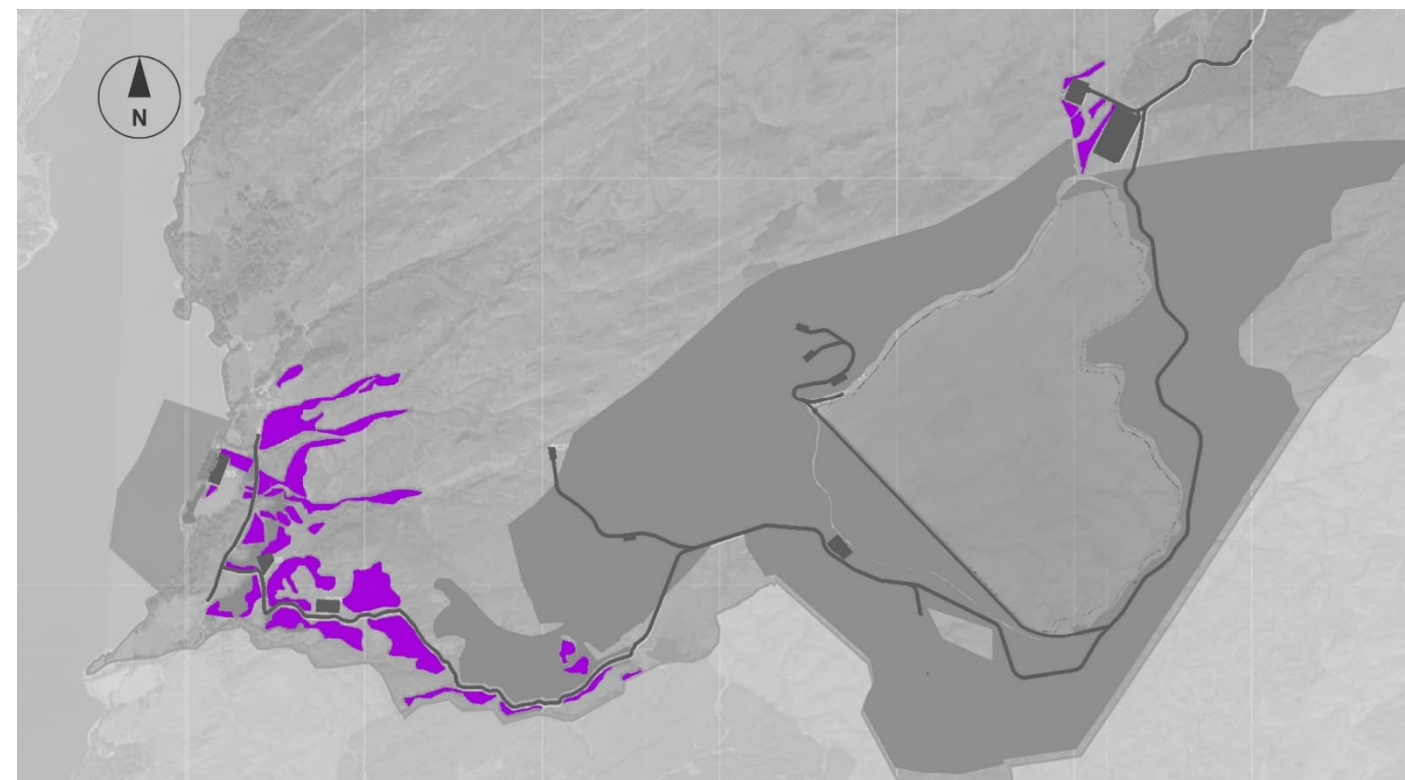
Native woodland planting will be carried out near Loch Awe and other locations, where existing habitats are of lower ecological value and provide suitable conditions for the establishment of native woodland, which would represent more ecologically valuable habitat. Native woodland planting has also been designed to integrate permanent infrastructure within the landscape and strengthen landscape characteristics.

Locations

Native woodland planting is proposed mainly on lower ground near and beside Loch Awe, along gulleys and around permanent infrastructure:

- Adjacent to and immediately east of the Tailpond, to ensure a vegetated backdrop to the new infrastructure, given that the Tailpond will require removal of a limited amount of woodland;
- South of the Tailpond between Loch Awe and the B840, where ancient woodland ground flora translocation is also proposed (refer to section on Ancient Woodland Management);
- Extending narrowly along glens rising up the hillside to the east of the Tailpond, up to approximately 200m AOD and approximately 900m inland from Loch Awe;
- Beside the western (Balliemanoch) access track towards Loch Awe, currently mainly comprising degraded wet heath, lower quality or semi-improved acid grassland, and in places agriculturally-improved or poor-semi-improved grassland. The planting of native woodland on these habitats will result in far more ecologically-valuable habitat;
- In a narrow strip between the Allt Beochlich and the Sitka spruce plantation downstream of the existing reservoir;
- On two small dry knolls within the western-most part of the bog / upland rehabilitation zone;
- In limited quantity around permanent compound PC13, in part for screening purposes;

The precise planting areas have been drawn with the aid of National Vegetation Classification (NVC) survey data, to avoid potentially groundwater dependent terrestrial ecosystems (GWDTE), and all other patches of habitats that should not be planted (including patches of blanket bog, existing native woodland, and (locally) more species-rich grassland).



Intervention details

All native woodland planting areas will be deer-fenced. This will not be practical in the zone between Loch Awe and the B840, since wild deer would be able to bypass any deer fence along the shoreline, therefore in this area individual tree protection will be implemented.

Planted trees will largely comprise the following, to match existing native (and often ancient) woodland, and to simulate as closely as possible appropriate natural NVC woodland types:

- Downy birch *Betula pubescens*, where damp and acidic;
- Silver birch *Betula pendula*, where drier and acidic;
- Occasional rowan *Sorbus aucuparia*, where dry and acidic;
- Sessile oak *Quercus petraea* in lower altitude planting areas, including beside Loch Awe and lower down the glens;
- Very locally where appropriate, alder *Alnus glutinosa* on lower ground where ground conditions indicate sufficient dampness and alder exists on adjacent ground (but avoiding, as mentioned above, planting of obvious wetlands constituting potential GWDTE).

The precise placement of trees in each planting area will be guided on the ground by an ecologist with NVC experience, who will inspect each planting area and advise the best placement of tree species, to match ground conditions and blend as best as possible with existing adjacent woodland. Where proposed planting extends beyond the NVC survey extent carried out for the Development, the Ecological Clerk of Works (ECoW) will identify any patches of potential GWDTE and any other more species-rich patches, which will be left unplanted.

All planting will be subject to monitoring, to ensure correct establishment of planted trees, to rectify any planting failures, and to ensure maintenance of deer fencing.

Timing

Native tree planting would take place as soon as practicable post construction other than for areas where there is an opportunity to undertake advanced planting. This would assist in the early establishment of woodland to enhance long-term screening opportunities of the operational Development. These are shown on *Figure 5.4.1: Landscape and Habitat Restoration Plan – Construction*.

Any native tree planting at locations of temporary infrastructure (such as temporary compounds) would take place shortly after the relevant temporary infrastructure has been removed (when no longer required for construction).

Outcomes

- Expansion of native woodland, in appropriately natural locations, and complementing existing patterns of ancient semi-natural and other broadleaved woodland;
- Additional native woodland will absorb atmospheric carbon;
- Landscape/visual benefits including:
 - pockets of woodland planting, typical of the surrounding landscape, including enhancement to more vegetated glens from lower to higher ground near Loch Awe;
 - vegetated backdrop for views towards Tailpond infrastructure;
 - integration of permanent infrastructure within the landscape and views including tunnel portal areas; and
 - replacement of scarred landscape associated with access tracks with (post-construction) planting of woodland.

Wet Woodland Planting

Native wet woodland planting will be carried out near Loch Awe and other localised areas, where existing habitats are of lower ecological value and it is appropriate to plant wet woodland, which would represent more ecologically valuable habitat.

Locations

- Wet woodland planting is proposed mainly on lower ground as a transition between native woodland and areas of bog that should not be disturbed;
- Extending narrowly along glens rising up the hillside to the east of the Tailpond, up to approximately 200m AOD and approximately 900m inland from Loch Awe;
- Adjacent to Balliemanoch access track towards Loch Awe, currently mainly comprising degraded wet heath, lower quality or semi-improved acid grassland, and in places agriculturally improved or poor-semi-improved grassland.

The precise planting areas have been drawn with the aid of National Vegetation Classification (NVC) survey data, to avoid potentially groundwater dependent terrestrial ecosystems (GWDTE), and all other patches of habitats that should not be planted (including patches of blanket bog, existing native woodland, and (locally) more species-rich grassland).

Intervention details

All wet woodland native woodland planting areas will be deer-fenced within the wider context of native woodland proposals. Planted trees will largely comprise the following, to match existing native (and often ancient) woodland, and to simulate as closely as possible appropriate natural NVC woodland types and within damp and acidic soils:

- Downy birch *Betula pubescens*;
- Rowan *Sorbus aucuparia*;
- Alder *Alnus glutinosa*;
- White willow *Salix alba*;
- Bay willow *Salix pentandra*; and
- Guelder rose *Viburnum opulus*

The precise placement of trees in each planting area will be guided on the ground by an ecologist with NVC experience, who will inspect each planting area and advise the best placement of tree species, to match ground conditions and blend as best as possible with existing adjacent woodland. Where proposed planting extends beyond the NVC survey carried out for the Development, the ecologist will identify any patches of potential GWDTE and any other more species-rich patches, which will be left unplanted. All planting will be subject to monitoring, to ensure correct establishment of planted trees, to rectify any planting failures, and to ensure maintenance of deer fencing.

Timing

Wet woodland planting would be undertaken as soon as practicable following the construction phase. Areas of advanced planting, which would assist in the screening and softening of construction works as well as the operational Development are shown on *Figure 5.4.1: Landscape and Habitat Restoration Plan – Construction*.

Outcomes

- The planting of wet woodland would complement and form a transition to native woodland creating habitats with more ecological value;
- Additional native woodland will absorb atmospheric carbon; Pockets of wet woodland planting, typical of the surrounding landscape, including enhancement to more vegetated glens from lower to higher ground near Loch Awe; and
- Compliment the wider vegetated backdrop from views towards Tailpond infrastructure.



Heathland Seeding

The completed exposed surfaces of the proposed Headpond retaining structures will be seeded with a heathland seed mix. The precise mix will be advised by an ecologist prior to the sowing taking place but will adhere to the details below.

Locations

Primarily the south-facing surface of the southern Headpond embankment, also the much smaller north-facing surface of the northern Headpond embankment.

Intervention details

The slopes of the embankments are too steep to be clothed in peat and developed into blanket bog vegetation or even wet heath. Therefore, the intention is to render them as closely as possible as dry heath, similar to the composition of NVC types H10 and H12 which both occur locally. The abundance of ericoids in dry heath would be in keeping with the presence of ericoids in surrounding retained blanket bog and heaths, in which currently often overgrazed ericoids are expected to increase in growth and cover in the proposed Bog / Upland Rehabilitation Zone.

The heathland mix to be sown will include:

- Bell heather *Erica cinerea*, which favours south-facing dry rocky slopes and is therefore eminently suited to the south-facing surface of the southern Headpond embankment;
- Ling heather *Calluna vulgaris*;
- Bilberry *Vaccinium myrtillus*;
- Acid grasses typical of nearby heath, including common bent *Agrostis capillaris*, sweet vernal-grass *Anthoxanthum odoratum*, wavy hair-grass *Avenella flexuosa* (formerly *Deschampsia flexuosa*) and mat-grass *Nardus stricta*;
- Herbs typical of nearby heath, including tormentil *Potentilla erecta* and heath bedstraw *Galium saxatile*, and also small amounts of thyme *Thymus drucei* (formerly *Thymus praecox*). The latter occurs very locally in existing richer H10 heath and other habitats, and the expected dry substrate of the constructed embankments may in places afford sufficient base ions for its growth.

Although the smaller north-facing slope of the northern Headpond embankment may not prove sufficiently warm for survival of bell heather or thyme, the above species mix will still be used. Where these species do not survive, the others can be expected to replace them.

The seed mix will be obtained from a reputable Scottish supplier of wildflower seed, which uses sources of as local provenance as possible. The seed mix will be customised as per the above listed species, using appropriate proportions and excluding any species that are not locally native, as advised by an ecologist.

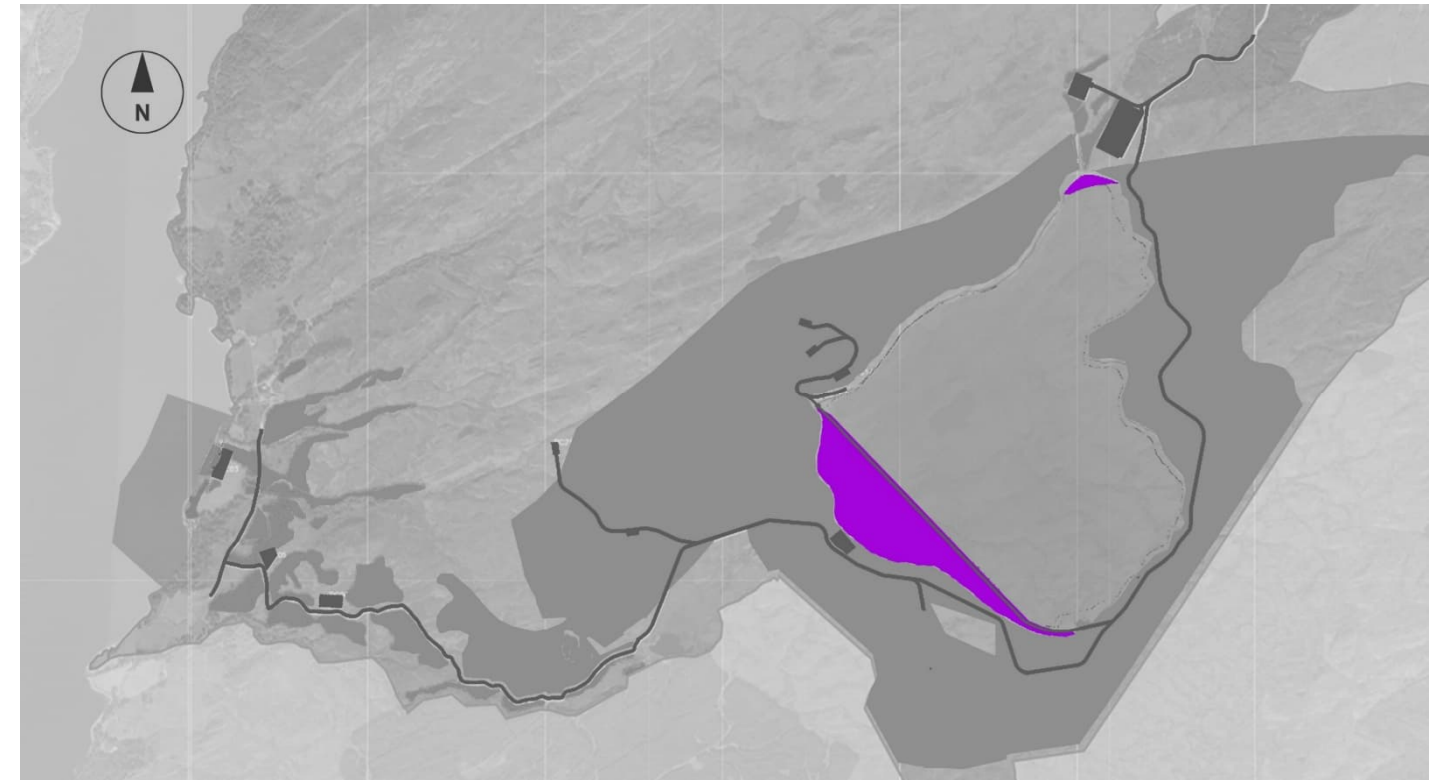
The application method for seeding the Headpond embankments may include hydro-seeding.

Timing

Sowing of the Headpond embankments will take place immediately after their completion, to remediate their stark appearance as soon as possible.

Outcomes

- Grassy heathland, with floristic composition approaching that of natural heathlands of NVC types H10 and H12, replacing the exposed surface of the Headpond retaining structures;
- Probable benefit to pollinating invertebrates, such as moorland bumblebees, through increased abundance of bell heather and flowering herbs, which are less frequent in the pre-construction landscape;
- Landscape/visual benefit by replacement of scarred landscape associated with the Headpond embankments with grassy heathland of more natural appearance.



Meadow Grassland and Loch Fyne Coastal Grassland Seeding

Small areas at the shore of Loch Awe and Loch Fyne will be seeded with a meadow grassland or coastal grassland seed mix. The precise mix will be advised by an ecologist prior to the sowing taking place but will adhere to the details below.

Locations

An area of meadow grassland will be seeded above the inlet/outlet structure on Loch Awe. Whilst a small area near the shore of Loch Fyne affected by temporary tracks and laydown areas will be reinstated with Loch Fyne coastal grassland mix. The limited depth between the surface soil above the inlet/outlet structure at the edge of Loch Awe cannot be planted with trees but will be able to support native grassland.

Intervention details

- **Meadow Grassland:** Construction of the Tailpond infrastructure at the edge of Loch Awe will include provision of an appropriate superstructure capable of supporting a green roof of sown grassland. The substrate layer to be laid for the sown grassland will be informed by best practice for provision of green roofs, which are now a well-established and well-used biodiversity measure. The seed mix sown on the green roof will be a lowland meadow seed mix, obtained from a reputable Scottish supplier of native seed mixes, using seeds from plants of as local provenance as possible. The exact composition of the seed mix will be customised under the advice of an ecologist, to ensure that only locally native species are incorporated, that are also suitable for a green roof. Periodic inspections will take place during operation to locate and rectify any structural issues or issues of establishment or continued plant survival.
- **Loch Fyne Coastal Grassland:** Once the temporary compounds and sections of track near the marine facility have been removed and reinstated, the ground should be re-profiled to tie in the natural landform, an appropriate coastal seed mix will be developed and advised by ecologists to be sown on areas of disturbed ground. Seeding operations should be undertaken once a fine tilth has been prepared. Occasional establishment maintenance inspection is required.

Timing

Provision of the substrate and sowing of the seed mix would take place as soon as possible after construction of the Tailpond infrastructure has been completed and the temporary compounds near Loch Fyne demobilised. Re-seeding may need to be undertaken subject to the planting season and the completion of construction.

Outcomes

- Permanent area of lowland meadow and coastal grassland, comprising locally native species;
- Benefit to pollinating invertebrates, through increased local provision of flowering herbs;
- Reinstatement of disturbed ground where tree planting is constrained by below ground infrastructure (Tailpond).



Ancient Woodland Management

The Tailpond will incur minor loss of ancient semi-natural woodland. To partially mitigate for this, sections of ancient woodland ground flora from the zone to be lost will be translocated to existing lower quality woodland and/or adjacent ground just to the south of the Tailpond, where there are currently caravans due to be removed. Sympathetic planting of native trees (including standards) will also take place here.

Locations

The donor site for the woodland ground flora to be translocated will be the woodland in the Tailpond area beside Loch Awe.

The receptor site for translocation of woodland ground flora, supplemented by native tree planting, will be the thin existing woodland strip and other habitat in a narrow zone between Loch Awe and the B8140, from the Tailpond as far south as the Allt a' Chrosaid.



Intervention details

These details have been produced with cognisance of recent guidance on ancient woodland soil translocation published in 2022 as part of the 'HS2 Learning Legacy' (<https://learninglegacy.hs2.org.uk/document/ancient-woodland-soils-translocation/>).

Prior to any translocation, and in a season appropriate for inspection of woodland flora (ideally, for this part of the UK, in May), an ecologist with woodland NVC and general botanical competence will inspect both the translocation site and receptor site, to:

- Map out in sufficient detail the locations and areas of different donor site ground floras (including whether the patches of donor ground flora are damp or drier, the former corresponding to NVC type W7, and the latter to drier W10 or locally W9, with patches of native bluebell *Hyacinthoides non-scripta*). Patches of low quality donor site ground flora (generally found close to the B840), for example where dominated by bramble *Rubus fruticosus* agg., will be noted and excluded from translocation;
- Identify the best locations and equivalent areas at the receptor site for translocation of the different donor site ground flora types;
- Identify native saplings and shrubs at the donor site that could be lifted and translocated along with the ground flora in which they sit;
- Identify any trees that may need to be felled and removed from the donor site beforehand, to permit plant access for translocation of turves;
- Produce a grid-like map identifying the different donor site ground flora patches, and receptor locations for each patch.

Translocation works shall not proceed until any required bat surveys or other required pre-works protected species surveys have taken place, and (if found to be necessary) not until any derogation licensing and associated mitigation is in place (which may include for removal of trees with bat roost suitability).

Following production of the above donor and receptor site mapping, the receptor site will be prepared as follows:

- Ideally, the receptor location for particular turves will be prepared (as per the below points) immediately prior to translocation of the relevant turves, to avoid exposure and drying or waterlogging of the exposed receptor subsoil. If this is not possible, the receptor location(s) will be covered until the relevant turves are ready to translocate;
- Non-native shrubs / herbaceous plants will be removed from the receptor site, including topsoil beneath these species to ensure they are less likely to regrow from the seedbank;
- Stands of ruderal species (such as rosebay willowherb), and stands of bracken, will be removed from the receptor site adjacent to the existing woodland strip, including topsoil beneath these stands;
- Artificial materials (such as paving) will be removed from the receptor site;
- Beyond removal of the above, grassland adjacent to or within the existing retained strip of woodland at the receptor site, including topsoil, will be removed to the extent necessary to accommodate translocated ground flora, if not already accommodated by the above;
- The depth of topsoil removal for any of the above will be approximately the same as the depth of the donor site ground flora and topsoil to be translocated – this is to approximately 30cm in order to include woodland topsoil layers (unless ground conditions, such as bedrock, necessitate shallower depth);

Translocation of ancient woodland ground flora from the Tailpond area will then be carried out as follows:

- Translocation will take place under direct supervision of an ecologist, ideally the ecologist who has inspected and mapped the donor site ground flora and identified the best locations in the receptor site for each respective patch of donor site ground flora;
- Translocation will not take place in conditions that would risk survival of ground flora, including a) very hot/dry conditions, b) wet conditions where soil handling characteristics would change and/or puddles form on the surface, or when moderate/heavy rainfall is predicted to be imminent, or c) conditions of frozen ground or snow;
- The translocation will take place so as to avoid or minimise compaction of both the donor translocation material and the receptor location, by a) planning and restricting access routes for both pedestrians and plant vehicles, b) using low ground pressure plant machinery with long excavator bucket reach, and c) if necessary, using geotextiles and/or similar to protect ground surfaces;
- Translocation of particular turves will ideally take place immediately after preparation of the relevant part of the receptor site. If this is not possible, translocation will take place as soon as possible after preparation of the relevant part of the receptor site;

- Since the receptor site is very close to the donor site, and the extent of lost woodland is relatively small, translocation will use the method of direct removal by excavator of entire turves of woodland ground flora. This will include any native saplings/shrubs previously identified as suitable for translocation within ground flora turves, and will include all woodland topsoil beneath the immediate surface to a depth of 30cm (unless ground conditions, such as bedrock, necessitate shallower depth);
- The turves of ground flora and associated topsoil to be translocated will be moved in their entirety. Several turves may be placed on a flat transporting vehicle for the short-distance transport to the receptor site, however donor turves will not be stored but rather moved promptly to the assigned receptor site location, to avoid drying out or waterlogging of the removed turves;
- Once placed at the receptor site, translocated turves will be managed as necessary to maximise survival of the ground flora. This may include watering if weather conditions have caused drying and damping is needed. For this purpose, a possible water source would be the adjacent Loch Awe;
- Surface water management will be considered and implemented if moderate or heavy rainfall during the translocation process causes surface water to be an issue, which could include excavation of drainage channels to prevent water pooling at the receptor site (whilst adhering to the outline CEMP, including use of appropriate silt controls as per SEPA Guidance on Pollution Prevention);
- Additionally, any substantial existing dead wood at the donor site will be transferred to retained woodland adjacent to the translocated turves at the receptor site (but not placed on the actual translocated turves, to avoid covering ground flora and reducing ground flora survival rate).

Planting of native trees, as a combination of standards (of larger size but slower growth) and whips (of smaller size but faster growth), will take place over any translocated turves positioned adjacent to rather than beneath existing mature trees, as soon as possible after the translocation. Further planting of native trees will fill any remaining gaps in the receptor site between Loch Awe and the B840. The tree species to be planted will be as listed above under 'Native Woodland Planting' and the exact placement of different planted tree species will be directly advised on-site by the ecologist.

The translocated ground flora turves and tree planting will be monitored, and if survival or establishment issues are noticed then remedial action will be attempted.

Timing

There are **CRITICAL SEASONAL RESTRICTIONS** for woodland ground flora translocation. The translocation work will be carried out in **SEPTEMBER or OCTOBER**, with some potential to also carry out the work in the period November to January (inclusive) as long as the ground is not frozen, there is no snow, and the current and imminent conditions of weather and soil are not wet enough to change soil handling characteristics or cause pooling of water at the donor site or receptor site.

There are several important reasons for this seasonal restriction: a) to avoid nesting bird issues, b) to avoid excessively hot/dry weather or very wet weather which would put at risk the survival of translocated flora, c) to increase survivability of vernal (spring) woodland species (such as native bluebell) by ensuring they are in a more dormant state, and d) to ensure the season is reasonable for associated tree planting (which needs to take place as soon as possible after ground flora translocation).

Outcomes

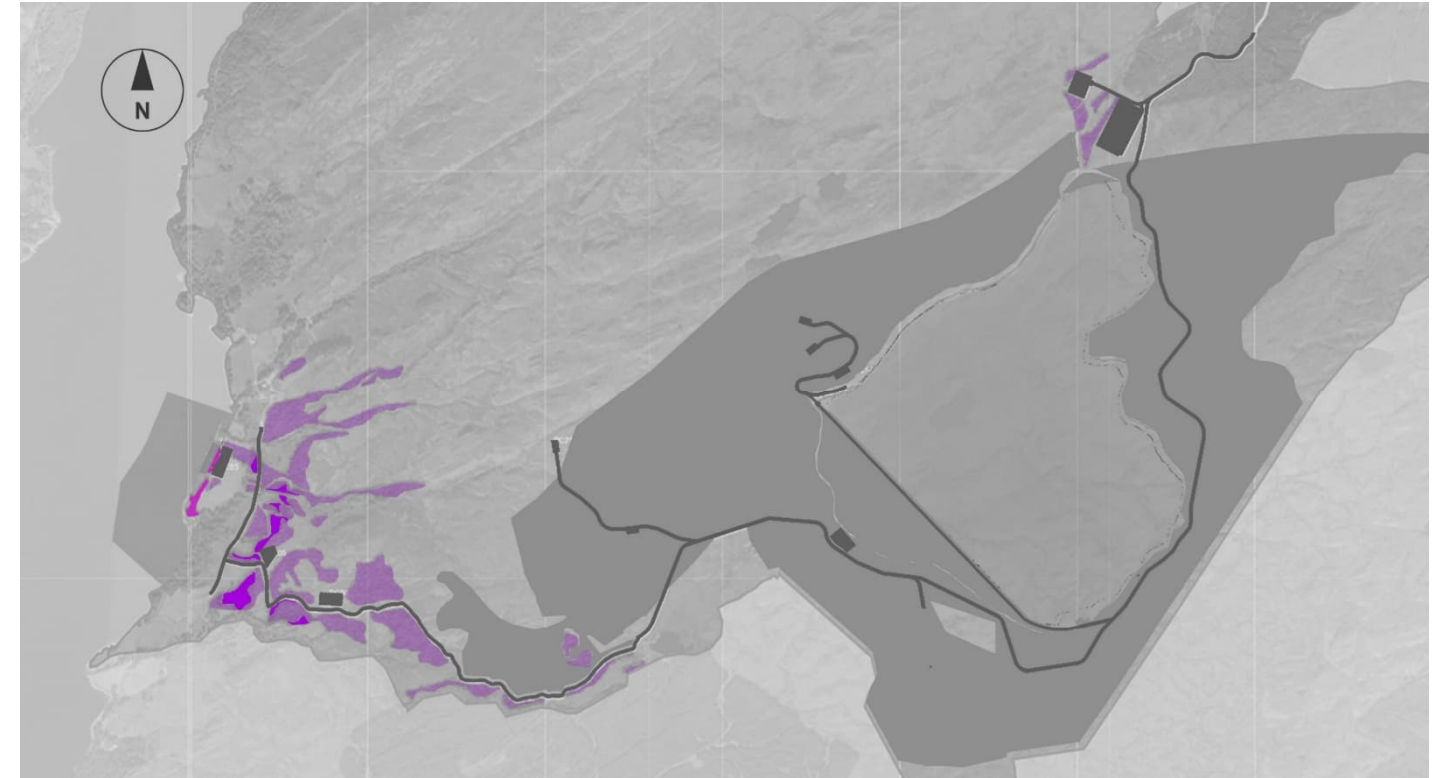
- Translocation of good quality ground flora and associated woodland soil ecosystem from the small amount of ancient semi-natural woodland due to be lost to the Tailpond, rather than complete loss of all such ground flora and woodland soil;
- Inherent preservation of ancient woodland plants, and associated invertebrates, fungi and microorganisms within the woodland soil;
- Expansion of the existing retained but very narrow ancient woodland strip at the receptor site, helping to recreate the wider strip of ancient woodland that historically likely existed here, between Loch Awe and the B840 (by reference to the Ancient Woodland Inventory);
- Partial mitigation of the minor loss of ancient semi-natural woodland to the Tailpond (the mitigation cannot be full, because trees other than saplings cannot be translocated, and some translocated material may not survive);
- Further carbon capture by the planted trees;
- Visual integration of infrastructure at the loch shore and forms part of the transitional and backcloth of vegetation rising up the slopes. Overtime established trees will reduce the visual prominence of the inlet outlet structure.

Woodland Management

Protection of retained woodland, including ancient semi-natural woodland and long-established plantation, is critical. This includes existing woodland by the Tailpond at Loch Awe and the Marine Facility at Loch Fyne. Specific techniques and guidance for protection of existing woodland are covered in the outline CEMP (*Appendix 3.1*).

However, attention is drawn here to particular measures required for protection of the retained ancient semi-natural woodland at Loch Awe beside the Tailpond, which would be at possible risk of damage by incursion by works activity (including simply by footfall of personnel):

- The ECoW will supervise appropriate demarcation and signposting to exclude plant, vehicles, materials and personnel from retained ancient woodland adjacent to the Tailpond (except where required for ground flora translocation as described above);
- The ECoW will monitor the exclusion zones to ensure compliance and to take action in the event of non-compliance.



Notable Habitat Management

For all potential GWDTE (including flushes) and other wetland the following measures will be implemented:

- Infrastructure such as access tracks and compounds will be micro-sited as far as possible, under ECoW guidance, to avoid potential GWDTE and other wetlands, aiming where possible for a buffer of 20m;
- Where such avoidance is not possible, and under ECoW guidance, infrastructure will be located as far as possible to minimise the impact (e.g. by siting it lower down the hydraulic gradient or peripherally);
- Access tracks or compounds affecting potential GWDTE or other wetlands will be made permeable, through use of coarse aggregate bases and/or installation of culverts/cross drains at regular intervals to ensure that water flows and hydrological connectivity are maintained;
- Retained potential GWDTE or other wetland features near proposed infrastructure will be demarcated and/or signposted as appropriate under ECoW guidance, and no plant, vehicles, materials and personnel will be permitted to enter these areas; the ECoW will monitor to ensure compliance and to take action in the event of non-compliance.

This is additional to the embedded mitigation measures of use of floating tracks through deep peat areas and standard pollution controls (set out in the outline CEMP) that would protect such features and terrestrial ecology in general.

With regard to other notable habitat features, the following will be implemented:

- all retained species-rich ravines and other notable habitat features (including all retained CG10 and U5c grassland) will be demarcated and/or signposted as appropriate under ECoW guidance, and no plant, vehicles, materials and personnel will be permitted to enter these areas; the ECoW will monitor to ensure compliance and to take action in the event of non-compliance.

Protection of *Sphagnum austinii* and *Sphagnum fuscum*

The two known locations of *S. austinii* and *S. fuscum* are outside the footprint of the Development and as stated above are not considered to be at risk of hydrological or other indirect impacts. However, to ensure that these species (which are rare in NHZ 14) and the supporting habitats around them remain intact, the following will be implemented:

- The ECoW will supervise installation of an exclusion zone covering the habitats around the *Sphagnum austinii* and *Sphagnum fuscum*, extending out to the limits of the nearest infrastructure or as otherwise appropriate;
- The exclusion zones will be appropriately marked out (e.g. with rope tied to stakes) and signposted, and no plant, vehicles, materials or personnel will be permitted to enter them;
- The ECoW will monitor the exclusion zones to ensure compliance and to take action in the event of non-compliance.

Protected Species Mitigation

Otter

- The appointed ECoW will carry out pre-construction survey for otter (no more than three months before construction commences);
- The ECoW or other suitably qualified and experienced ecologist will carry out monitoring, including use of camera traps, of the holt at Loch Airigh (if still present) and any others found within the Headpond area that offer potential for use by breeding otter, for a period of approximately one year prior to construction;
- If evidence of breeding activity is found, the ECoW will liaise with NatureScot and consideration shall be given to additional otter mitigation;
- A species protection plan will be produced by the ECoW (and will be required for licensing purposes);
- Watercourse crossings will be constructed as clear-span structures and the natural bed and channel of watercourses retained, as per SEPA Engineering in the water environment: Good practice guide for river crossings (SEPA, 2010), so as to remain passable to otter (and fish) under most conditions. Where possible, riparian habitat will be retained but where this cannot be achieved or the extent of habitat is too small and may be routinely impassable (e.g., during periods of higher water), a mammal ledge will be incorporated into the structure, or an alternative tunnel near to the bridge will be provided. The final design details of watercourse crossings will be included in the CEMP and species protection plan;
- If construction lighting is required, at the Tailpond especially, but also elsewhere, it will be directional, directed only at the works and not at Loch Awe, watercourses or riparian vegetation, and will be turned off when not required.

Bats

There were limitations to the bat surveys for the EIA, and the following measures will be implemented for bats:

- In the bat activity season prior to removal of the woodland for construction of the Tailpond, the ECoW or other suitably qualified and experienced ecologist will carry out surveys of the relevant trees to a) check for any changes to potential roost features (as may be caused by e.g. tree windblow or bough breakage), and b) carry out additional survey as necessary to determine presence and character of any roosts, in line with Bat Conservation Trust guidance in use at that time;
- For trees containing roosts that will be removed (if any) at the Tailpond (or elsewhere), and also in the unlikely event that piling for the coffer dam is considered close enough to roost(s) to also require it, licensing will be obtained and any required mitigation for the licensing implemented;
- If bat roosts will be affected, a species protection plan will be produced prior to construction (and will be required for licensing purposes);
- If and where construction lighting is required at the Tailpond especially, but also elsewhere, it will be directional, directed only at the works and not at Loch Awe, watercourses or riparian vegetation, or woodland edges, and will be turned off when not required.

Water Vole

- The appointed ECoW will carry out pre-construction survey for water vole (no more than three months before construction commences);
- Watercourse crossing design will be as stipulated for otter above, which will also normally maintain waterborne passage for water vole;
- Following the pre-construction surveys (which should take place in spring and autumn, and the timing of which will be dependent on construction timing), a species protection plan will be prepared (and will be required for licensing purposes), unless water voles are found to be absent from the Headpond area prior to construction;
- The Species Protection Plan will set out required mitigation and the approach to any water voles present in the Headpond (or other infrastructure) area at the time of construction; it may be appropriate to displace water voles by habitat removal (as per Dean *et al.* (2016)), however the best approach will be determined following the pre-construction surveys.

Badger and pine marten

- The appointed ECoW will carry out pre-construction survey for badger and pine marten (no more than three months before construction commences);
- In the unlikely event that badger setts or pine marten dens are found within disturbance distance of works, the ECoW will obtain licensing and any required mitigation will be implemented.

Red squirrel

- The appointed ECoW will carry out pre-construction survey for red squirrel dreys in the limited woodland to be felled or within 50 m of works (no more than three months before construction commences);
- Tree felling works will ideally take place in the period October to January (inclusive), to avoid the red squirrel breeding season (when disturbance of dreys is only considered possible up to 5 m from most works, and licensing is straightforward). If felling takes place in the breeding season, note that dreys suspected to be active breeding dreys are subject to a potential disturbance distance of up to 50m from works, and that breeding dreys are not normally permitted to be destroyed whilst active;
- If red squirrel dreys are found and will be disturbed, the ECoW will obtain licensing and any required mitigation will be implemented (noting however, as stated above, that destruction of active breeding dreys in the breeding season is not likely to be permitted, thus tree felling should be carried out in the non-breeding season).

Common amphibians and reptiles

- Any features identified by the ECoW during pre-construction checks as possible terrestrial refugia or hibernacula for amphibians/reptiles will be carefully dismantled by hand or under a watching brief by the ECoW, in the summer months (when amphibians and reptiles are active) closest to the construction period of the infrastructure in question;
- Any amphibians or reptiles found will be captured and relocated to suitable retained habitat elsewhere;

- The dismantled refugia/hibernacula will be rebuilt in similar suitable retained habitat that will not be affected by the construction works, under ECoW supervision.

Notable breeding birds

- In the breeding season prior to commencement of construction and in the breeding seasons throughout the construction phase, the ECoW or another suitably experienced ornithologist will be responsible for carrying out a full programme of survey for sensitive bird species, namely lekking black grouse, breeding waders, breeding raptors and breeding divers. These surveys will follow good practice guidelines as adopted by and referenced in the EIA. The purpose will be to determine if and where sensitive bird species establish nest sites, and to therefore allow for appropriate avoidance and/or mitigation measures to be implemented to avoid or minimise impacts upon them. This is particularly relevant for bird species listed on Schedule 1 of the WCA, which may not be disturbed when actively breeding. Full details of the pre- and during-construction ornithological monitoring programme will be set out in a Species Protection Plan, to be submitted to Argyll and Bute Council and NatureScot in advance of the commencement of construction. The results of all during-construction ornithological survey will be provided to NatureScot and (for relevant species) the Argyll RSG;
- Mitigation for golden eagle is detailed in Confidential Appendix 9.1 of the EIA. In summary, golden eagle surveys will be carried out as part of a suite of pre-construction and during-construction ornithology monitoring surveys, to ensure that mitigation is functioning appropriately and to take action in the unlikely event that it is not, and there are restrictions concerning blasting;
- With regard to black grouse, if a black grouse lek is identified by pre- or during-construction ornithological surveys within 500m of any construction area, no works will be permitted to take place within this area during the period of one hour before sunrise until one hour after sunrise, in the months of April and May. This will ensure there is no disturbance to displaying black grouse;
- Where breeding by curlew or golden plover is suspected, the ECoW will, as necessary, implement a suitable works exclusion zone of at least 300m around known or suspected nest location(s) to ensure accidental destruction of their nests is avoided and to minimise disturbance. No works will be permitted to take place within this exclusion zone until otherwise approved by the ECoW. Should the ECoW determine through monitoring that breeding has failed, successfully completed or that birds have moved chicks to other areas, then the exclusion zone may be lifted or moved, accordingly.

Common breeding birds

- As far as possible, works that will directly impact upon areas of vegetation that could be used by nesting birds will be undertaken outside of the breeding season, this being taken to be between March and August, inclusive. Should vegetation clearance works be required during the breeding season, a pre-works check for active nests will be carried out by the ECoW or another suitably experienced ornithologist. Such checks will be completed no more than 72 hours in advance of clearance works taking place as nests can be quickly established. Where any active nests are identified, suitable species-specific exclusion zones will be implemented and maintained until the breeding attempt has concluded.

Invasive Non-Native Species (INNS) Management

There is risk of construction of the Development causing the spread of invasive non-native species (INNS) 'in the wild' (which includes road verges where not in built-up areas, and almost all habitats other than private gardens and built-up areas) if appropriate best practice precautionary measures are not taken, which would constitute offence(s) under Scottish legislation. The risk of spreading INNS is highest for Japanese knotweed, since it occurs in the works area for the proposed jetty at Loch Fyne. There is less risk of spreading the recorded rhododendron or salmonberry in the woodlands around Inveraray, because the Development here primarily uses existing forestry / estate tracks, however precautions will be taken for these species wherever infested woodland requires felling for any local widening of existing access tracks or short sections of new access track.

Best practice measures to be implemented during construction will be set out in a Biosecurity Management Plan (BMP), to be produced prior to commencement of construction. The BMP will be adhered to during all relevant construction, and will be used to inform Method Statements for works in the vicinity of recorded INNS.

Reinstatement of Temporary Infrastructure

Planned reinstatement of temporary infrastructure at the Development Site would be informed by further consultation with stakeholders, pre-construction surveys and site conditions. These details would be included and confirmed in the finalised LEMP but are likely to include the measures outlined below.

Intervention details

Temporary infrastructure will be reinstated as per the table below.

Table 1. Reinstatement of habitats at temporary infrastructure

Temporary infrastructure	Operational reinstatement
TC01	This field will be reinstated to the baseline habitat of high-productivity agricultural pasture, following removal of artificial substrate and any ground preparation.
TC02	Apart from the smaller part of this field close to the Tailpond in which there will be native woodland planting, this field will be reinstated to the baseline habitat of high-productivity agricultural pasture, following removal of artificial substrate and any ground preparation.
TC04	Native woodland planting, to integrate with adjacent and nearby planted and existing native woodland.
TC07, TC08 and TC11	These three compounds are all in the Bog / Upland Rehabilitation Zone, where the baseline habitat lacks blanket bog vegetation or significant peat. It is most appropriate in these locations to reinstate using a wet heath seed mix, following removal of artificial substrate and any preparation of the ground surface.
TC10	This compound is also in the Bog / Upland Rehabilitation Zone, but in an area of baseline blanket bog vegetation. Therefore, reinstatement will seek to return blanket bog vegetation. To this end, following removal of artificial substrate, acrotelmic peat will be spread across the area (for example, from acrotelmic peat used along the edges of temporary access tracks), and the area will be seeded with blanket bog species as necessary.
TC12	Return to productive commercial forestry regime, i.e. Sitka spruce plantation.
TC15	No reinstatement required. It will be lost within the Headpond once flooded.
TC22	No reinstatement required. It is in an existing artificial quarry already used at baseline for storage of machinery and materials, and will therefore remain as such post-construction.
TC23	This compound will be reinstated to pasture akin to the baseline habitat. The baseline habitat was more diverse than standard agricultural pasture, the floristics indicating that it was likely sown with a mix of lowland meadow species as well as agricultural species, creating at baseline an essentially agricultural pasture but with a limited number of sparse non-agricultural species such as black knapweed <i>Centaurea nigra</i> . The reinstated grassland will therefore use a mixed agricultural/lowland meadow seed mix, which will result in a similar grassland to baseline.
Temporary access track around north side of Headpond	This temporary access track passes through more than one habitat type, mainly wet heath, blanket bog and small amounts of dry heath. Reinstatement will be to wet heath, blanket bog or dry heath to match adjacent retained habitat. For the blanket bog sections with floating tracks, the floating tracks will be removed and retained peat prepared and sown with blanket bog species. For blanket bog sections without floating tracks, the non-floating track will be removed and, if sufficient is available, peat will be placed and sown with blanket bog species; if insufficient peat is available, wet heath will be sown. For the wet and dry heath sections, wet and dry heath seed mixes will be sown respectively following track removal and ground preparation, using only species that are locally native and that match as closely as possible adjacent retained habitat, as advised by an ecologist.
Temporary access track to marine facility / jetty	This temporary access track passes through a short section of mature commercial plantation (mainly of Sitka spruce, with a minority of mature beech) and then through the pasture field described for TC23 above. Reinstatement will be to these respective habitats, with planted Sitka spruce and beech in the plantation section, and the mixed agricultural/lowland meadow seed mix described above for TC23.
Marine facility / jetty	It is expected that the jetty platform will be removed post-construction (the jetty piles are expected to remain for potential reinstatement of the jetty if needed to deliver replacement parts for the Development). In the event that removal of the marine facility / jetty results in exposed unvegetated areas in the thin strip of ruderal coastal grassland between the A83 and the intertidal zone, these unvegetated areas will be sown with a <u>coastal grassland</u> seed mix. This seed mix will be made by customising a lowland meadow seed mix obtained from a reputable Scottish supplier of native seed mix. The customisation of the seed mix will be to a) ensure only locally-native species are incorporated, and b) to add appropriate locally-native coastal species (such as thrift <i>Armeria maritima</i>), as advised by an ecologist.

Where applicable, reinstatement of habitats directly impacted by construction works will follow the [Good practice during Wind Farm construction guidelines](#) (NatureScot, 2019).

General reinstatement methods for temporary access tracks are summarised below:

- Where vegetation and substrate holding the seedbank have been removed and placed (vegetation side up) along the edges of temporary access tracks or other temporary infrastructure, this vegetation and substrate will be used for reinstatement, unless found to be deficient. If deficient, the below procedure will be followed;
- Where previously removed and stored vegetation and substrate is not available or deficient, the reinstatement areas will be covered with a layer of previously excavated soil or peat, of a type and depth matching the surroundings. The areas will then be landscaped to grade into the natural landscape, seeded with appropriate species as stipulated above, and where necessary fenced off to prevent grazing by animals until established.

Sowing of the various seed mixes indicated above will adhere to the supplier's sowing and establishment instructions, as well as any advice by the supervising ecologist.

The sown areas (as listed and described in Table 1) will be monitored for the duration of the management period, and any failures of establishment will be investigated and rectified.

Timing

Reinstatement of temporary compounds and temporary access tracks including all areas of hard standing and disturbed ground will be undertaken as soon as reasonably practical once construction no longer requires each particular temporary compound or section of temporary access track. Prompt reinstatement aims to minimise the effects of:

- Compaction of subsoil, which can lead to inhibited drainage and root growth;
- Exposed ground, which can cause loss of topsoil, dust and water pollution through wind blow and erosion; and
- Visual intrusion.

Outcomes

- Return of temporary infrastructure locations to vegetation, closely matching baseline habitats;
- Removal of temporary visual intrusions.

Roles and Responsibilities

Roles and responsibilities for implementation of the landscape and ecological mitigation measures during the construction phase are identified in the outline CEMP (**Appendix 3.1** (Volume 5 Appendices)).

Responsibility for the long-term management of the Development Site would be agreed at a later stage between the landowner and site operator.

Future Steps

In order for this oLEMP to be developed into a full LEMP and implementable document that would deliver the identified aims and objectives, the following activities would be required to be delivered prior to construction commencing:

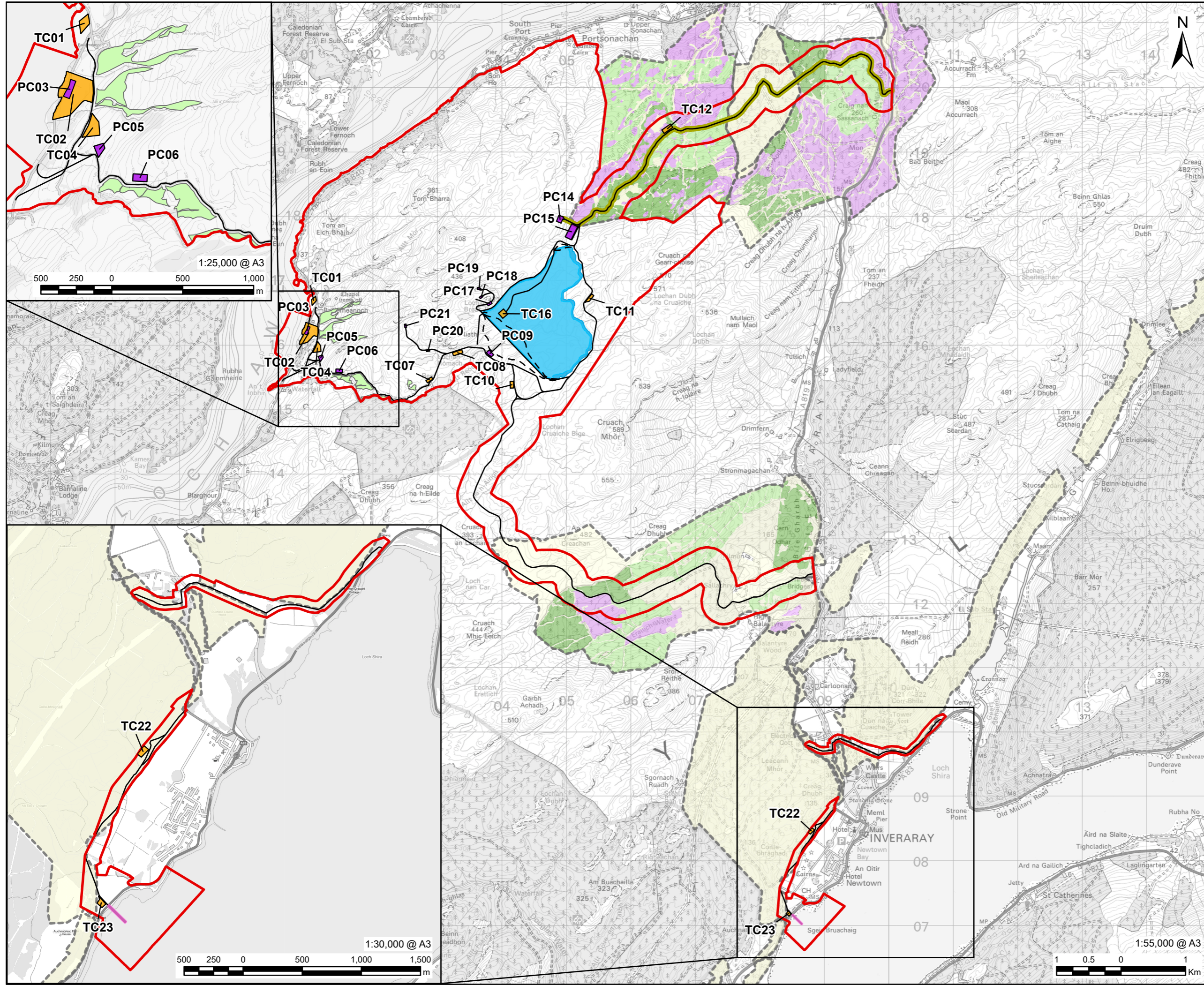
- Finalised contractual roles and responsibilities for long-term management;
- Develop a detailed landscape and ecology design for the Development Site, inclusive of specifications, schedules and the precise locations of ecological measures;
- Develop a detailed management, maintenance and monitoring plan based on the objectives set out in this oLEMP accompanied by prescriptions and performance standards for operations; and
- Consider future proofing of the management plan to allow flexibility to adapt to future climate changes and trends regarding planting, species selection and maintenance operations.

References

NatureScot (2019). Good practice during Wind Farm construction. Available at: <https://www.nature.scot/doc/guidance-good-practice-during-wind-farm-construction>.

A.1 Figures and Landscape Design Drawings

- Figure 5.4.1: Landscape and Habitat Restoration Plan – Construction
- Figure 5.4.2: Landscape and Habitat Restoration Plan - Operation Year 1
- Figure 5.4.3: Landscape and Habitat Restoration Plan - Operation Year 15
- Figure 5.4.4: Felling Plan
- S03-Z1-09-DR-LA-319101
- S03-Z1-09-DR-LA-319102
- S03-Z1-09-DR-LA-319103
- S03-Z1-09-DR-LA-319104
- S03-Z1-09-DR-LA-319105



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PROJECT
BALLIEMEANOCH
PUMPED STORAGE
HYDRO

CLIENT
 ILI (Borders PSH) Ltd.

CONSULTANT
 AECOM Limited
 177 Bothwell Street
 Glasgow G2 7ER
 www.aecom.com

- LEGEND**
- Development Boundary
 - Headpond 5m Freeboard
 - Headpond Top Water Level
 - Headpond Embankment
 - Above Ground Infrastructure**
 - Tracks
 - Temporary Compound
 - Permanent Compound
 - Marine Facility
 - Intervention**
 - Advanced Planting
 - Required buffer (5m) from tracks for construction vehicles
 - Felling Phases**
 - Felled Pre Construction
 - Felled Construction Period
 - Felled post-construction
 - No felling data available
 - Felling estate boundary

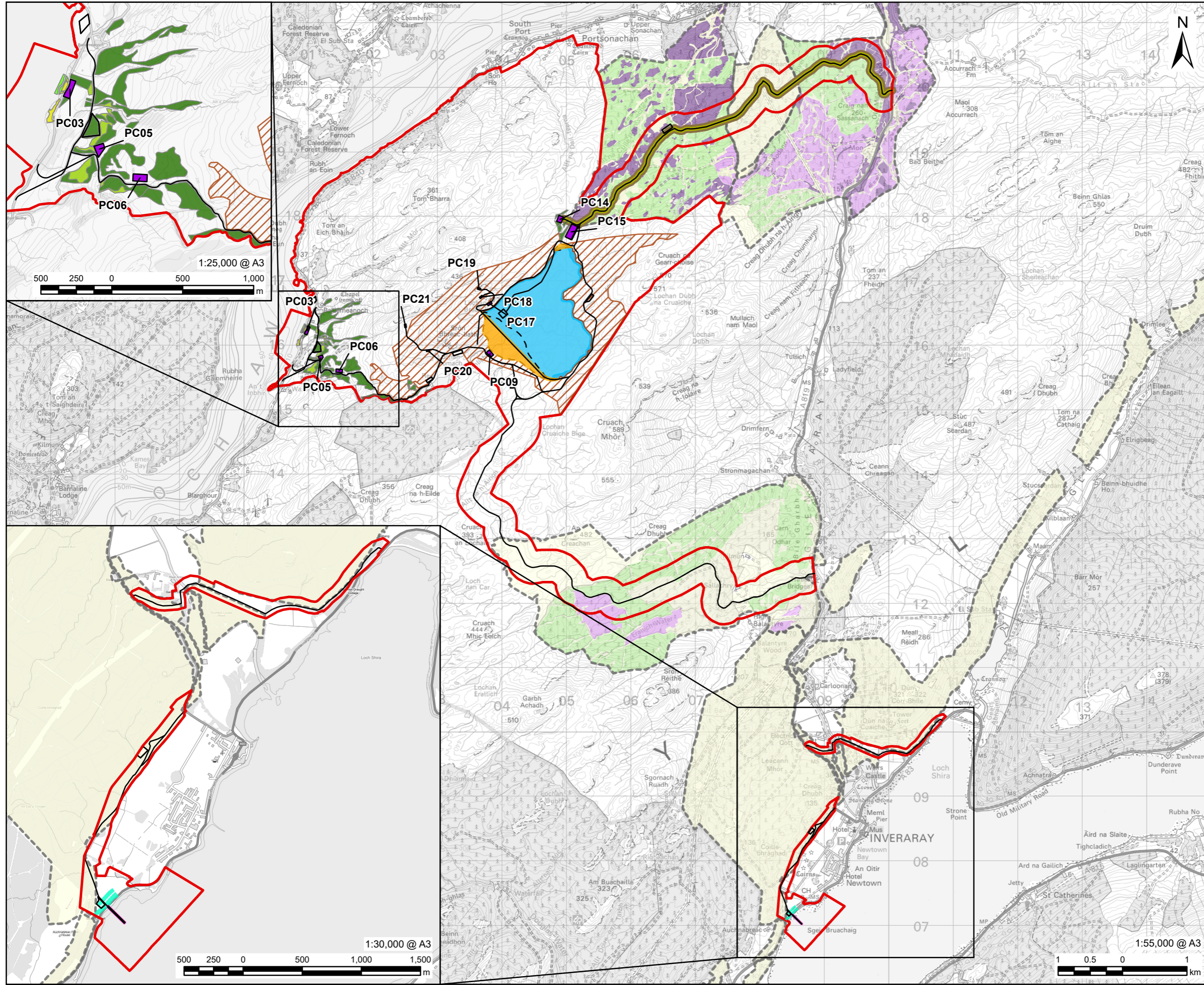
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PROJECT NUMBER
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FIGURE TITLE
 Landscape and Habitat Restoration Plan – Construction

FIGURE NUMBER
 Figure 5.4.1



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 Glasgow G2 7ER
 www.aecom.com

- LEGEND**
- Development Boundary
 - Headpond 5m Freeboard
 - Headpond Top Water Level
 - Headpond Embankment
 - Above Ground Infrastructure**
 - Tracks
 - Permanent Compound
 - Temporary Compound
 - Reinstatement (see drawing for land use)
 - Marine Facility
 - Intervention**
 - Bog/upland rehabilitation; Bog/upland rehabilitation
 - Heatherland sowing
 - Loch Fyne coastal grassland reinstatement
 - Tree planting with ground flora translocation
 - Native woodland planting
 - Meadow grassland
 - Wet woodland planting
 - Opportunity for native woodland planting dependent on forestry compensation
 - Required buffer (2.5m) from tracks for maintenance vehicles
 - Felling Phases**
 - Felled before Operational Year 1
 - Felled between Operational Year 1 and 15
 - Felled from Operational Year 15 onwards
 - No felling data available
 - Felling estate boundary

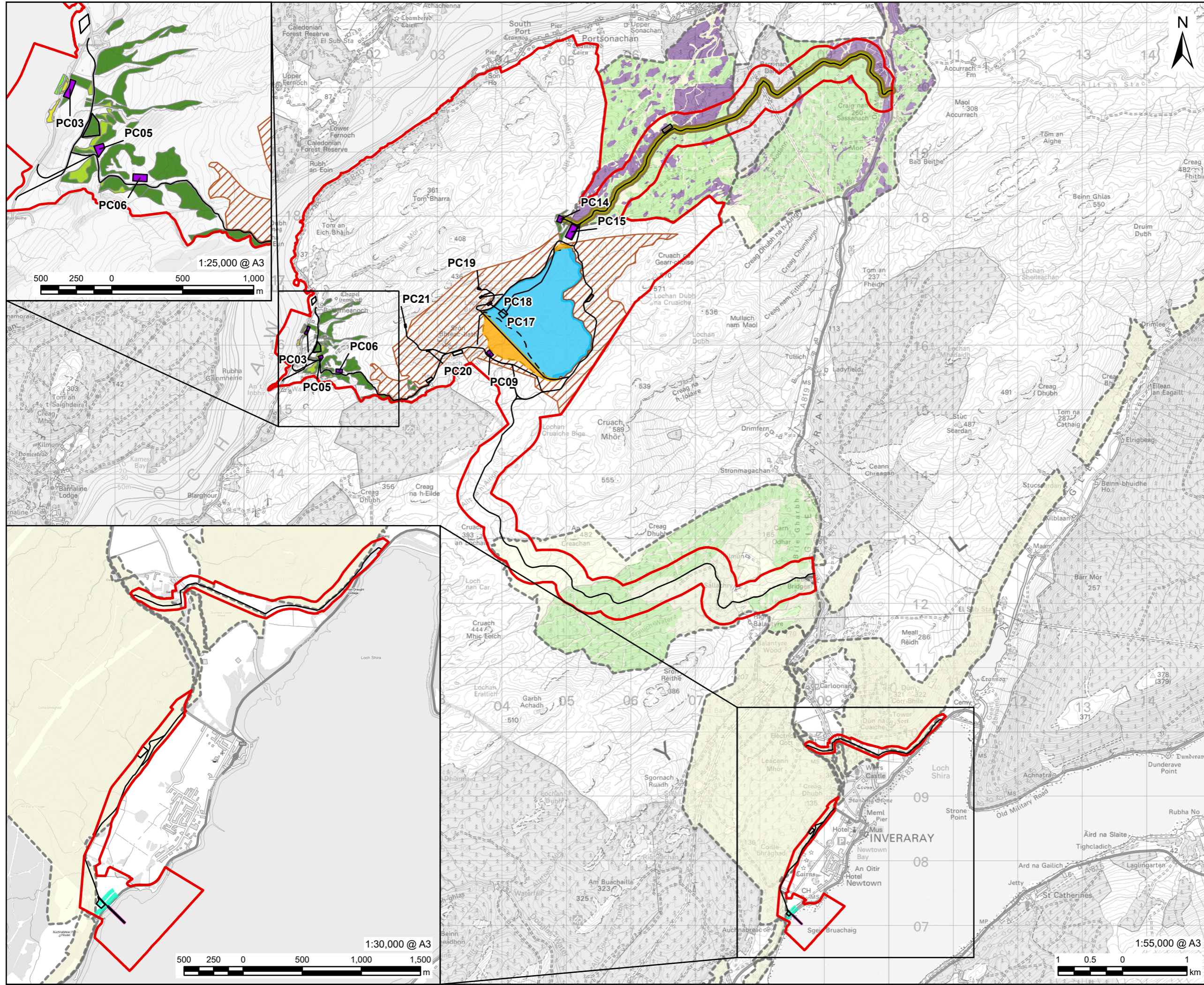
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ISSUE PURPOSE
 DRAFT

PROJECT NUMBER
 60570241

FIGURE TITLE
 Landscape and Habitat Restoration Plan – Operational Year 1

FIGURE NUMBER
 Figure 5.4.2



- LEGEND**
- Development Boundary
 - Headpond 5m Freeboard
 - Headpond Top Water Level
 - Headpond Embankment
 - Above Ground Infrastructure**
 - Tracks
 - Permanent Compound
 - Temporary Compound
 - Reinstatement (see drawing for land use)
 - Marine Facility
 - Intervention**
 - Bog/upland rehabilitation; Bog/upland rehabilitation
 - Heatherland sowing
 - Loch Fyne coastal grassland reinstatement
 - Tree planting with ground flora translocation
 - Native woodland planting
 - Meadow grassland
 - Wet woodland planting
 - Opportunity for native woodland planting dependent on forestry compensation
 - Required buffer (2.5m) from tracks for maintenance vehicles
 - Felling Phases**
 - Felled before Operational Year 15
 - Felled from Operational Year 15 onwards
 - No felling data available
 - Felling estate boundary

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ISSUE PURPOSE

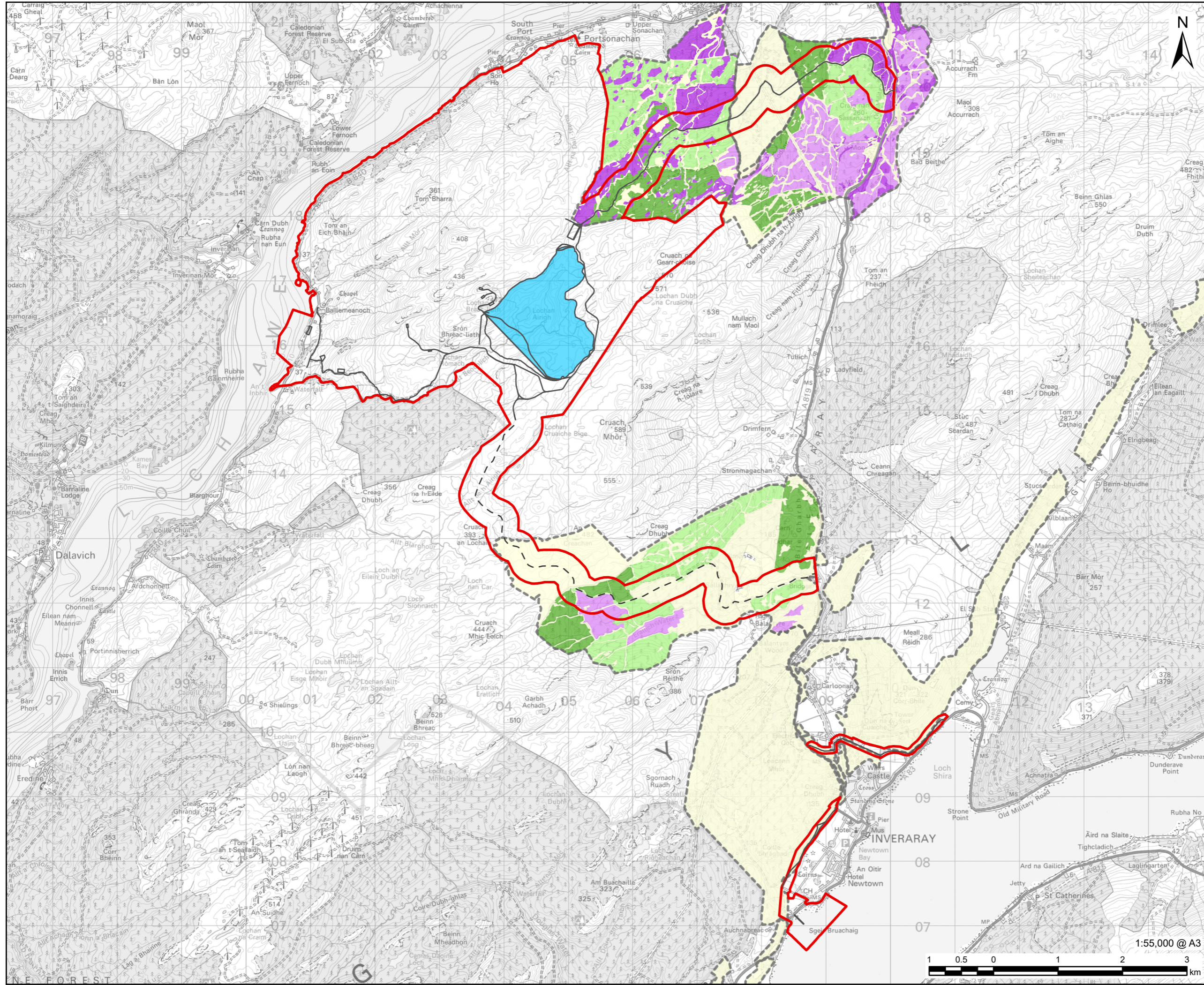
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PROJECT NUMBER
 60570241

FIGURE TITLE
 Landscape and Habitat Restoration Plan – Operational Year 15

FIGURE NUMBER
 Figure 5.4.3

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PROJECT
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PUMPED STORAGE
HYDRO

CLIENT
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- LEGEND**
- Development Boundary
 - Headpond
 - Permanent Infrastructure
 - Proposed Blarghour wind farm access track*
 - Felling estate boundary
 - Felled pre-construction (Before 2026)
 - Felled during construction period (2026 - 2033)
 - Felled between operational year 1 and 15 (2034 - 2048)
 - Felled from operational year 15 onwards (2049 onwards)
 - No felling data available

NOTES

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*Blarghour wind farm access track to be used for Balliemanoch only if Blarghour wind farm is constructed. If wind farm is not constructed access will only be from the north

ISSUE PURPOSE
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FIGURE TITLE
 Felling Plan

FIGURE NUMBER
 Figure 5.4.4

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Autocad Version: 23.1S (LMS TECH) Last Plotted: 2024.05.09
Filename: \\VA-AECOM\NET\COM\FS\EMEA\EDN\B\RGH\JKED\ALLEGACY\UK\EDM\4\FR02\U\F\JOBS\PPR-261676\JL\PORTFOLIO_EIA\900_CAD_GIS\910_CAD\20 - SHEETS\LANDSCAPE\S03-Z1-09-DR-LA-319101.DWG



PROJECT

**Balliemeanoch
Pumped Storage Hydro**

CLIENT

ILI (Borders PSH) Ltd.
The Shires, 33 Bothwell Road
Hamilton, ML3 0AS

CONSULTANT

AECOM
1 Tanfield
Edinburgh, EH3 5DA
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www.AECOM.com

LEGEND

-  RED LINE BOUNDARY
-  ACCESS TRACK
-  HEADPOND WATER
-  PCXX PERMANENT (PC) COMPOUND
-  HEATHLAND SOWING
-  MEADOW GRASSLAND
-  NATIVE WOODLAND PLANTING
-  WET WOODLAND PLANTING
-  TREE PLANTING WITH GROUND FLORA TRANSLOCATION

NOTES

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ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	14/05/24	Planning Issue

SHEET TITLE

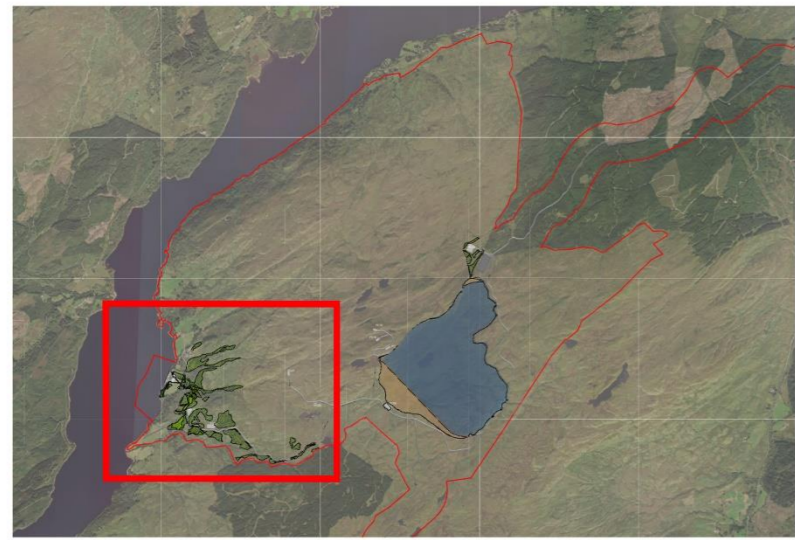
GENERAL ARRANGEMENT - ZONE 1 - LANDSCAPE

SHEET NUMBER

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LEGEND

- RED LINE BOUNDARY
- ACCESS TRACK
- HEADPOND WATER
- PCXX PERMANENT (PC) COMPOUND
- HEATHLAND SOWING
- MEADOW GRASSLAND
- NATIVE WOODLAND PLANTING
- WET WOODLAND PLANTING
- TREE PLANTING WITH GROUND FLORA TRANSLOCATION

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SHEET TITLE

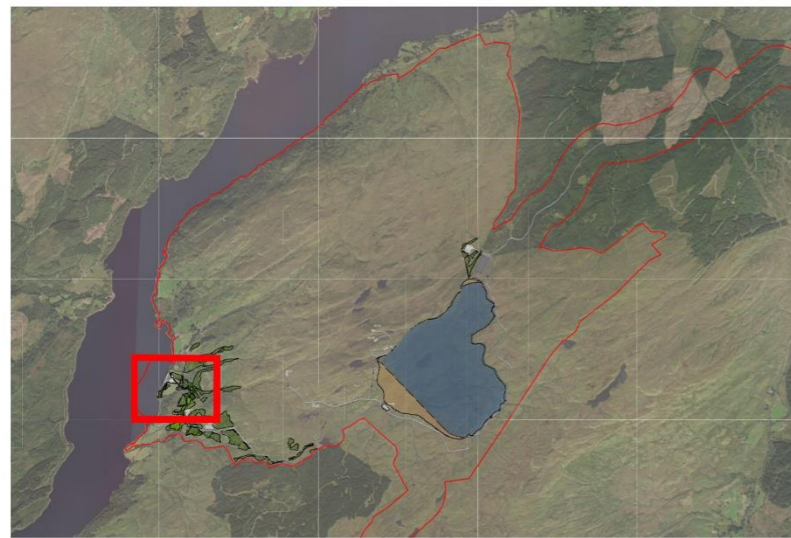
GENERAL ARRANGEMENT - TAILPOND INFRASTRUCTURE
 - LANDSCAPE

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LEGEND

	RED LINE BOUNDARY
	ACCESS TRACK
	HEADPOND WATER
	PERMANENT (PC) COMPOUND
	HEATHLAND SOWING
	MEADOW GRASSLAND
	NATIVE WOODLAND PLANTING
	WET WOODLAND PLANTING
	TREE PLANTING WITH GROUND FLORA TRANSLOCATION

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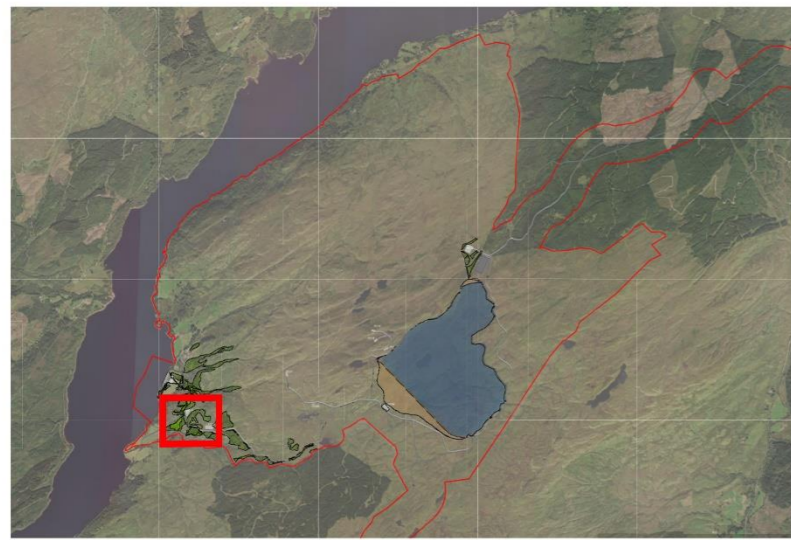
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LEGEND

- RED LINE BOUNDARY
- ACCESS TRACK
- HEADPOND WATER
- PCXX PERMANENT (PC) COMPOUND
- HEATHLAND SOWING
- MEADOW GRASSLAND
- NATIVE WOODLAND PLANTING
- WET WOODLAND PLANTING
- TREE PLANTING WITH GROUND FLORA TRANSLOCATION

- NOTES**
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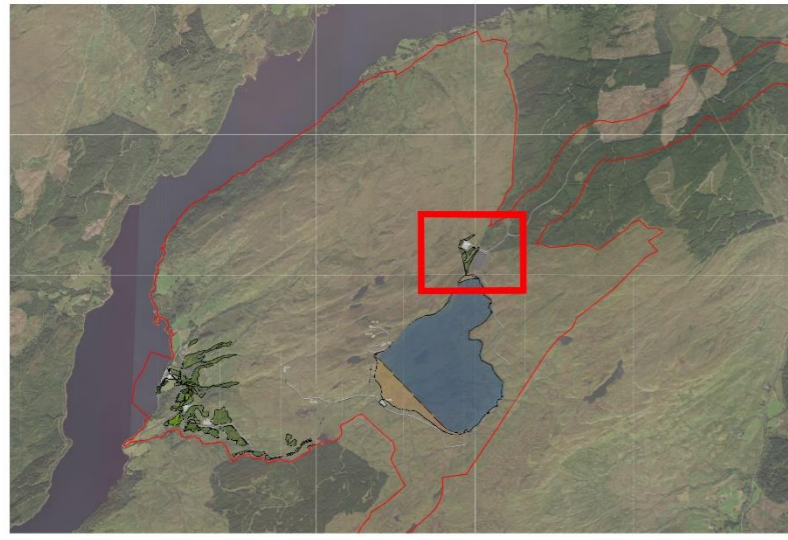
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SHEET TITLE
GENERAL ARRANGEMENT - TUNNEL PORTAL 1 - LANDSCAPE

SHEET NUMBER
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WOODLAND PLANTING TO BE CAREFULLY SITED TO AVOID AREAS OF HABITAT RESTORATION SITED IN THE LEMP

- LEGEND**
- RED LINE BOUNDARY
 - ACCESS TRACK
 - HEADPOND WATER
 - PCXX PERMANENT (PC) COMPOUND
 - HEATHLAND SOWING
 - MEADOW GRASSLAND
 - NATIVE WOODLAND PLANTING
 - WET WOODLAND PLANTING
 - TREE PLANTING WITH GROUND FLORA TRANSLOCATION

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SHEET TITLE

GENERAL ARRANGEMENT - TUNNEL PORTAL 1 - LANDSCAPE

SHEET NUMBER

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