



Technical Report to Inform Updated Ness Woods SAC Compensation Package

Loch Kemp Storage Scheme

ASH Design + Assessment

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Basis of Report

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Acronyms and Abbreviations

AI	Additional Information
AWI	Ancient Woodland Inventory
BGS	British Geological Survey
CIEEM	Chartered Institute of Ecology and Environmental Management
EclA	Ecological Impact Assessment
ECU	Energy Consents Unit
FLS	Forestry and Land Scotland
HRA	Habitats Regulations Appraisal
NVC	National Vegetation Classification
NRM	Natural Resources Management
NWSS	Native Woodland Survey of Scotland
OS	Ordnance Survey
PAWS	Plantation on Ancient Woodland Site
THC	The Highland Council
SSSI	Site of Special Scientific Interest
SAC	Special Area of Conservation



1.0 Introduction

1.1 Terms of Reference

SLR Consulting Limited was commissioned by ASH Design + Assessment Limited, on behalf of Loch Kemp Storage Limited, to produce a technical report to inform an updated compensation package for Ness Woods Special Area of Conservation (SAC), to address comments from NatureScot in relation to compensation for impacts to the SAC as a result of the proposed Loch Kemp Storage Scheme.

1.2 Summary of Existing Compensation Package

A compensation package was submitted with the Section 36 application for Loch Kemp Storage Scheme in November 2023 (planning application ref: ECU0003398), as part of the Derogation Report¹. This proposed a package of compensatory measures to compensate for significant effects upon Ness Woods SAC qualifying interest woodland habitats, that would arise as a result of construction and operation of the proposed Loch Kemp Storage Scheme. The compensation package was developed through extensive pre-application consultation with NatureScot.

The compensation package was developed to provide compensation for the following significant residual adverse effects upon Ness Woods SAC, as detailed within the Habitats Regulations Appraisal (HRA) report²:

- Loss of up to 0.60 ha, and habitat change (via fragmentation) of 0.13 ha of ‘*Tilio-Acerion* forests of slopes, screes and ravines’ (qualifying woodland priority habitat), including associated trees, bryophytes, lichens and ground flora; and
- Loss of up to 4.96 ha, and habitat change (via fragmentation) of 1.04 ha of ‘Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles’ (qualifying woodland habitat), including associated trees, bryophytes, lichens and ground flora.

The residual effects would undermine Ness Woods SAC Conservation Objectives 1, 2, 2a, 2b and 2c for the ‘*Tilio-Acerion* forests of slopes, screes and ravines’ and ‘Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles’ qualifying features.

In summary, the existing compensation package submitted with the planning application comprised:

- The adaptive management (focused on managing grazing in the first instance) of 234.76 ha of the Ness Woods SAC (all of the SAC in the Dell Estate) to improve its condition from unfavourable, to unfavourable recovering and, in due course, to favourable;
- The adaptive management of 8.08 ha of land (Compensation areas 3 to 8) adjacent to but outwith Ness Woods SAC, to bring these sites into the SAC in time; and
- Restoration of the 4 x 4 track within Ness Woods SAC to reintroduce hazel (*Corylus avellana*), oak (*Quercus* spp.), holly (*Ilex aquifolium*) and birch (*Betula* spp.) to 0.26 ha of the SAC with no current ecological value.

The predicted loss (and possible change) to gain ratios associated with this are:

¹ Royal Haskoning DHV (2023) Loch Kemp Storage: Derogation Report. V9. Document No.: 120012-R-DR

² SLR Consulting (2023) Loch Kemp Storage: Habitats Regulations Appraisal Report (Stage 1 & 2). V9. 428.V04707.00036



- For all habitat types, 1 to 36 - based on managing all 234.76 ha of the SAC in the Dell Estate and 8.08 ha outside the Estate;
- For qualifying woodland habitat types, at least 1 to 26 - based on 166.22 ha of the SAC in the Dell Estate being qualifying woodland habitat and the 8.08 ha outside the SAC having the potential to be qualifying woodland habitat. Of this gain, it is acknowledged that 8.08 ha would be new qualifying habitat (in due course) and 166.22 ha would be restored condition qualifying habitat;
- For ‘*Tilio-Acerion* forests of slopes, screes and ravines’ (and its associated lichen and bryophyte communities), of which there is 10.18 ha in the SAC on the Dell Estate, at least 1 to 14; and
- For ‘Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles’ (and its associated lichen and bryophyte communities) and bracken with restoration potential, of which there is 156.08 ha in the SAC on the Dell Estate (plus the 8.08 ha outside the SAC), at least 1 to 27.

1.3 Post-Submission Consultation Summary

NatureScot provided consultation comments on the Section 36 application (in a letter to Energy Consents Unit (ECU) dated 06 August 2024, Ref CDM173569). In summary, in relation to Ness Woods SAC:

- NatureScot agreed with the conclusions of the HRA report².
- NatureScot advised that, in its view, the proposed compensatory measures were not yet sufficient to protect the coherence of the UK national site network. In NatureScot’s view, the compensatory measures proposed do not yet fully off-set the proposal’s impacts on Conservation Objective 2a (maintaining habitat area) for both qualifying habitats and will not maintain the ability of the UK national site network to restore these habitats to favourable conservation status. NatureScot offered the following recommendations to address the shortfall:
 - Completing National Vegetation Classification (NVC) survey work to help clarify whether the proposed woodland habitat creation areas outside the SAC will develop into qualifying woodland habitat.
 - Identifying opportunities to create or restore an additional approximately 7.3 ha of the priority habitat *Mixed woodland on base rich soils* [i.e. *Tilio-Acerion* forests of slopes, screes and ravines] to SAC standard, in order to off-set the loss of area of this qualifying interest [i.e. loss / change to gain ratio of 1:10]. NatureScot recommend using the NVC survey to inform whether this habitat type could develop in Compensation Area 8, and suggest considering other parts of the SAC beyond Dell Estate where this woodland type is present (e.g. Glen Tarff, Inverfarigaig), and whether there are opportunities to expand or restore non qualifying habitat (e.g. with <20% canopy or Plantation on Ancient Woodland Sites (PAWS)) within or adjacent to these.
 - Identifying opportunities to restore a greater area of *Western acidic oak woodland* [i.e. Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles] to fully off-set the loss of area of this qualifying interest. Locations to explore could include grassland habitat within the SAC and heath habitat adjacent to the SAC.
- NatureScot recommended providing further detail, in the proposed Habitat Management Plan, on the proposed measures to deliver herbivore management within and adjacent to the SAC.



- NatureScot advised that planting is not likely to be required in order to restore the 4x4 track through the Ness Woods SAC, as it is likely that this area would regenerate naturally once it is no longer used, as bare earth provides an excellent niche for seed germination.

ASH Design + Assessment, on behalf of Loch Kemp Storage, submitted Additional Information (AI) in September 2024.

The AI included an NVC report for the full extent of Ness Woods SAC within the Dell Estate, as well as the proposed Compensatory Areas (3 - 8) outside of Ness Woods SAC³. The AI also included a Deer Management Strategy Statement of Intent⁴, which set out the approach to deer management, and committed to providing full details of proposed deer management prior to construction (post-determination), as part of the detailed Habitat Management Plan.

The AI also included details of habitat loss re-calculations, to account for a reduction in the proposed working corridor to the north of the powerhouse within Ness Woods SAC, to further minimise qualifying woodland habitat loss, and in particular the loss of '*Tilio-Acerion* forests of slopes, screes and ravines'. This results in a 0.09 ha reduction in the total loss of '*Tilio-Acerion* forests of slopes, screes and ravines' qualifying priority habitat, and a 0.01 ha reduction in the total loss of 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' qualifying habitat.

Therefore, the updated significant residual adverse effects upon Ness Woods SAC are as follows:

- **Loss of up to 0.51 ha, and habitat change (via fragmentation) of 0.13 ha of '*Tilio-Acerion* forests of slopes, screes and ravines' (qualifying woodland priority habitat), including associated trees, bryophytes, lichens and ground flora; and**
- **Loss of up to 4.96 ha, and habitat change (via fragmentation) of 1.04 ha of 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' (qualifying woodland habitat), including associated trees, bryophytes, lichens and ground flora.**

A letter was also submitted to NatureScot and ECU in September 2024, in response to NatureScot's comments. In summary, the letter set out:

- A preliminary discussion of the suitability of Compensation Areas 3 - 8 for qualifying woodland restoration, and which woodland type (with confirmation that further work to confirm the suitability would be provided in due course). In summary, it was estimated that 0.45 – 0.71 ha of restoration / new woodland regeneration of '*Tilio-Acerion* forests of slopes, screes and ravines' could occur within Compensation Area 8, based on the existing / surrounding habitat mosaics, topography and presence of a steep-sided watercourse.
- A proposal that bracken-dominated areas within the existing SAC within Dell Estate currently comprise non-qualifying habitat, and that it is reasonable to assume that these could regenerate into qualifying woodland types (including the two qualifying woodland types, in a similar mosaic to the existing adjacent mosaics) following the proposed adaptive management. It was considered that these areas could contribute to compensation for Conservation Objective 2a 'area', as it would create new

³ ASH Design + Assessment (September 2024) NVC Habitat Survey Report. Orrin Ecology

⁴ Victor Clements: Native Woodland Advice (September 2024) Kemp PSH Deer Management Strategy – Statement of Intent



qualifying habitat. This could provide in the region of an additional 1-2 ha of 'Tilio-Acerion forests of slopes, screes and ravines' habitat.

- A questioning of the justification of a 1:10 ratio of loss to gain recommended by NatureScot, as this does not appear to be based on any particular legislation, policy or guidance relating to the Habitats Regulations. Several case studies were provided showing lower compensation ratios, and an argument was made that a lower ratio is appropriate for fragmentation of habitats (rather than loss). An argument was also made that the significant habitat restoration already proposed should reduce the appropriate ratio for habitat creation.
- A case that the majority of the 39.05 ha of bracken within the SAC in Dell Estate is suitable for regeneration to 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles'. It was also concluded that areas of unimproved acid grassland, acid grassland with scattered trees, dry heath, dry heath with scattered trees, and the existing 4x4 track have potential to regenerate into new 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' habitat. It was argued that this would represent new qualifying habitat, and therefore should contribute towards compensation for Conservation Objective 2a 'area'. Details of suitable areas for this habitat type within Compensation Areas 3 - 8 were also given.

A (virtual) meeting was held with ECU, NatureScot and The Highland Council (THC) on 16th December 2024, and NatureScot subsequently provided a written response⁵. A summary of the relevant comments are as follows:

- NatureScot viewed that the overall package could (subject to agreement of the final deer management strategy) off-set the proposal's impacts on Conservation Objectives 2b and 2c for the *Mixed woodland on base-rich soils associated with rocky slopes* [i.e. *Tilio-Acerion* forests of slopes, screes and ravines] priority qualifying habitat. However, they viewed that the updated package of compensatory measures described in the AI remains **insufficient** to protect the coherence of the UK network for this habitat type. This relates to Conservation Objective 2a (maintaining habitat area) only, and is primarily due to:
 - The potential for development of this habitat type within Compensatory Area 8 being likely to be towards the lower end of the range estimated in the AI information, due to the acidic nature of the current habitats; and
 - Current areas of bracken within the SAC which are proposed for woodland regeneration for the two woodland qualifying habitat types, which are in mosaic with woodland NVC types, not counting towards new habitat creation (i.e. compensation for Conservation Objective 2a 'area'), as they already constitute part of the Annex 1 woodland features for which Ness Woods SAC is designated, and would thus contribute to restoration [i.e. compensation for Conservation Objectives 2b and 2c] only.
- NatureScot accepted the argument that a lower compensation ratio for the area of this habitat fragmented (0.13 ha) may be appropriate compared to the 1:10 ratio for the area that will be lost to development (0.51 ha).
- NatureScot agreed that areas of bracken within the SAC, which are not part of a woodland mosaic, and which are proposed for woodland regeneration for the two woodland qualifying habitat types, would comprise new woodland habitat [i.e. would therefore contribute towards compensation for Conservation Objective 2a 'area'].

⁵ Letter from Corrina Mertens at NatureScot, to James MacKenzie at ECU, dated 18th December 2024.



- Subject to the findings of the further assessment work, and additional assessments recommended by NatureScot, should the updated predictions of the additional *Western acidic oak woodland* [i.e. Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles] that could regenerate under the proposed habitat management measures be confirmed, NatureScot advised that the package would be **sufficient** to protect the coherence of the UK network for this qualifying habitat, as the woodland creation compensation ratio would approach or achieve 1:10, and if effectively deployed, the management measures should bring the habitat within the SAC into favourable condition. The following assessment recommendation was provided:
 - Further analysis to calculate the potential area of new woodland (including which Annex 1 woodland habitat is likely to develop in non-woodland mosaic bracken areas, which NatureScot consider is mostly likely to develop into *Western acidic oak woodland* [i.e. Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles]), from NVC maps.
- NatureScot agreed that areas within the SAC currently mapped as grassland, dry heath and dry heath with scattered trees, would regenerate into *Western acidic oak woodland* [i.e. Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles].
- NatureScot also provided further advice regarding a deer management strategy, and commented that they agreed that the general principles within the Deer Management Strategy Statement of Intent⁴ are appropriate to deliver feature condition and compensatory woodland creation.

1.4 Purpose and Scope of this Report

This report, and the associated appendices, details the technical work undertaken to identify further areas for compensation, to inform an updated package of compensatory measures for Ness Woods SAC. This report also details the options considered, rationale, and evolution of the updated compensation package for Ness Woods SAC.

The updates to the compensatory measures proposed have been informed by the following additional technical work:

- **Desk-Based Habitat Search Report**, detailing relevant existing geological, soil, topographical and habitat-based information within Ness Woods SAC and the immediately surrounding areas (Appendix A);
- **Priority Woodland Habitat Survey Report**, detailing additional survey work undertaken in areas identified as having woodland creation / restoration potential, within the wider Ness Woods SAC and immediately surrounding areas, beyond Dell Estate (Appendix B); and
- **Baseline Soil Sampling Report**, detailing the results of soil samples taken within areas of existing qualifying woodland habitat (controls) and areas being considered for woodland creation / restoration (Appendix C).

The proposed package of compensatory measures has been updated to address NatureScot comments raised throughout the consultation process (see Section 1.3). The final proposed package of compensatory measures for Ness Woods SAC is reported separately, within the revised 'Loch Kemp Storage: Case for Derogation' Report⁶.

⁶ Royal HaskoningDHV (2025), *Loch Kemp Storage: Case for Derogation (Version Final/05)*. Published 23rd February 2025.



1.5 Evidence of Technical Competence and Experience

This report has been produced by Hazel Douglas MCIEEM MBiolSci, Principal Ecologist with SLR Consulting. Hazel has over ten years' experience within ecological consultancy, and is a competent and experienced terrestrial ecologist, who specialises in Ecological Impact Assessment (EclA). Hazel authored the Shadow HRA Report for the Loch Kemp Storage Section 36 application, and has been involved with the development of compensatory measures for Ness Woods SAC since 2022.

This report has been technically reviewed by Duncan Watson MCIEEM CEnv, Technical Director with SLR Consulting. Duncan is an Ecologist with over 26 years' professional experience, much of which relates to projects in the renewable energy sector. Duncan has a particular interest in EclA and HRA and was a member of the technical review group responsible for revising and updating the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for EclA in the UK (published in 2018 and recently updated). He has also led CIEEM workshops on EclA and HRA. Duncan also reviewed the Shadow HRA report for the Loch Kemp Storage Section 36 application, and has been involved with the development of compensatory measures for Ness Woods SAC since 2022.

Details of the surveyors and authors for the desk-based study, habitat survey and soil sampling are contained within the relevant reports in Appendices A – C.



2.0 Methodology

A summary of the methodologies used during the additional technical work is provided in the following Sections; please refer to Appendices A – C for full details.

2.1 Desk Based Habitat Search

In order to identify further areas that could be suitable for qualifying woodland habitat creation / restoration in areas within and immediately adjacent to Ness Woods SAC (beyond Dell Estate), a desk based habitat search has been completed, with a particular focus on 'Tilio-Acerion forests of slopes, screes and ravines' qualifying woodland priority habitat.

The search included the following areas (see Study Location Plan in Appendix A):

- Easter Ness Forest SSSI (plus adjacent land) within the Knockie and Glendoe Estates located to the south-west of the Proposed Development; and
- Forestry and Land Scotland (FLS) land within and adjacent to Inverfarigaig SSSI located to the north-east of the Proposed Development.

The following publicly available online sources were used:

- Superficial geology: BGS Onshore GeoIndex⁷;
- Soil type: UK Soil Observatory viewer at 1:250,000 scale⁸;
- Soil geochemistry and base potential: BGS Geochemical Atlas of the Great Glen region⁹;
- Habitats: NatureScot NVC database for the Ness Woods SAC Habitat Survey 2003¹⁰; and
- Topography: Ordnance Survey (OS) mapping.

Areas that were identified as potentially suitable were then subject to further survey and soil sampling (see Sections 2.2 and 2.3 and Appendices B and C) to confirm suitability.

The following criteria were used for areas of potential suitability for habitat creation / restoration of 'Tilio-Acerion forests of slopes, screes and ravines': areas of steep topography; with suitable bedrock; with soil geochemistry with base-rich potential; and where 'Tilio-Acerion forests of slopes, screes and ravines' qualifying woodland habitat is unlikely to already be present (within Ness Woods SAC), or where 'Tilio-Acerion forests of slopes, screes and ravines' already occurs but has restoration potential to bring it up to SAC condition (outwith but adjacent to Ness Woods SAC).

2.2 Habitat Walkover Survey

Areas of potential suitability, identified through the desk-based study (see Appendix A) and the surveyor's knowledge of habitats adjacent to Dell Estate, were surveyed to identify existing priority woodland habitat, and mapped, with habitat descriptions of each area provided (see Appendix B).

⁷ BGS (2024) GeoIndex Onshore (<https://mapapps2.bgs.ac.uk/geoindex/home.html>)

⁸ Soil Survey of Scotland Staff (1981) Soil maps of Scotland at a scale of 1:250,000. Macaulay Institute for Soil Research, Aberdeen. DOI: 10.5281/zenodo.4646891

⁹ BGS (1987) Regional Geochemical Atlas: Great Glen (keyworth, Nottinghamshire: BGS)

¹⁰ NatureScot (2003) NVC Survey. <https://opendata.nature.scot/datasets/snh::nvc-survey-coverage/>



The survey work was undertaken by Orrin Ecology, on the following dates: 30th October, and 1st, 7th and 11th November 2024.

2.3 Soil Analysis

Baseline soil composition data was collected for potential compensation areas, including Compensation Areas 7 and 8 and the potentially suitable areas identified by the desk-based study (Appendix A), as well as 'control' areas of existing woodland qualifying priority habitat, in order to help determine the suitability of potential habitat creation / restoration areas.

Eighteen samples were collected on 31st October and 2nd December 2024, at the following locations (see Drawing 01 in Appendix C):

- Control locations:
 - **HA02** and **HA17**: '*Tilio-Acerion* forests of slopes, screes and ravines' within Dell Estate Ness Woods SAC;
 - **HA10** and **HA11**: '*Tilio-Acerion* forests of slopes, screes and ravines' within Knockie Estate Ness Woods SAC; and
 - **HA07** and **HA08**: '*Tilio-Acerion* forests of slopes, screes and ravines' within Inverfarigaig Ness Woods SAC.
- Potential compensation areas:
 - **HA01**: Compensation Area 8, Dell Estate, adjacent to Ness Woods SAC (conifer plantation);
 - **HA03**, **HA04**, **HA05**, **HA15**, **HA16** and **HA18**: Bracken areas within Dell Estate Ness Woods SAC;
 - **HA06**: Compensation Area 7, Dell Estate, adjacent to Ness Woods SAC;
 - **HA09** and **HA12**: Potential compensation areas, Knockie Estate, adjacent to Ness Woods SAC;
 - **HA13**: PAWS conifer plantation at FLS Foyers South 'Camas' land, adjacent to Ness Woods SAC; and
 - **HA14**: mosaic of '*Tilio-Acerion* forests of slopes, screes and ravines' and 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' (qualifying habitat) at FLS Foyers South 'Camas' land, adjacent to Ness Woods SAC.

At each sample location, hand auger pits were excavated, and sampling and logging of the soil strata was undertaken in accordance with BS5930:2015+A1:2020¹¹. The soil samples were sent for chemical analysis at the Natural Resources Management (NRM) laboratory, to determine the pH, phosphorus, potassium, magnesium, nitrogen, calcium and sodium contents, and the particle size distribution.

2.4 Limitations

2.4.1 Desk-Based Habitat Search

The resolution of mapping of the soils database⁸ at 1:250,000 may not account for any local variation. However, alternative data sources were also used, including the BGS

¹¹ BS 5930:2015+A1:2020, Code of Practice for Ground Investigations, 31 May 2020.



Geochemical Atlas of the Great Glen region⁹, which is a higher resolution dataset, and is likely more representative of any variation in soil geochemistry.

2.4.2 Habitat Walkover Survey

Surveys were undertaken in October and November, outwith the optimal survey season for woodland habitat types. The requirement for survey was driven by the need to gather additional survey data to inform compensatory measures and built on the existing NVC survey data gathered in summer 2021. Flowering species were not all evident at the time of survey and broadleaved trees were not all in leaf, but with the existing knowledge of the typical composition of areas of priority woodland habitats within the Ness Woods SAC in Dell Estate, it was still possible to identify the key species for the relevant habitat communities and qualifying SAC habitats.

Common and indicator species were noted where encountered but the survey did not constitute a lichen and bryophyte survey.

In areas of broadleaved woodland above Loch Ness, small areas of precipitous cliffs and ledges prevented access to all areas. Where these constraints occurred, areas were viewed from vantage points from either below or above. This was sufficient to attribute habitat communities but may have led to some indicator plant species being missed in localised areas.

2.4.3 Soil Analysis

No significant limitations were identified.



3.0 Results

A summary of the results of the further studies are provided in the following sections; refer to Appendices A – C for detailed results.

3.1 Desk-based Habitat Search

The recorded superficial deposits are generally less than 20% and confined to valley floors, comprising Alluvium and Glacial Till deposits and flat-lying areas comprising Peat, with bedrock at the surface in the remaining areas. Hummocky Glacial Deposits (sand and gravel) are recorded in the north-east of the Dell Estate area, however the extent is undeterminable using the source of superficial geology data⁷.

The recorded bedrock geology is variable, with the Dell Estate and Knockie Estate FLS area comprising a complex sequence of metasediments comprising psammites intruded by the Foyers Igneous Complex of Granodiorite and Tonalite with minor occurrences of diorite and hornblende formation type. The remaining bedrock geology predominantly comprises metasediments from the Moine Supergroup (Loch Laggan Formation) and Grampian group (Gairbeinn Pebbly Psammite) in the south and the lower grade metamorphosed units of the Middle Old Red Sandstone in the north (Inverfarigaig area). Localised alteration assemblages are likely present within sedimentary and meta-sedimentary units in close proximity to the igneous intrusives of the Foyers Complex.

The desk study indicates that the southern Ness Woods SAC areas have the following soils type: peaty gleyed podzols – derived from metasediments and igneous rocks. The Inverfarigaig area has peaty rankers and humus-iron podzols mapped as present. The complete coverage of peaty podzols in the south indicates the presence of acidic soils (i.e. base poor). However, given the prevalence of base rich woodland this may not be considered representative of the entire area given the resolution of the mapping.

In regard to the potential identification of base-rich soils, the study provides soils geochemistry for concentrations of calcium (CaO), magnesium (MgO) and potassium (K₂O), all of which are considered representative, when occurring at higher concentrations, to have the potential to form base-rich soils. The data indicates a strong correlation between calcium and magnesium concentrations, which correlate with the Foyers Igneous Complex (Diorite / Hornblende). In the absence of any recorded calcareous bedrock strata, it is likely that units within the igneous complex are the predominate influence on the concentrations of calcium and magnesium across each area.

Of the areas studied, Ness Woods SAC (and immediate surrounds) within Dell Estate, Knockie Estate / Knockie Estate FLS, and Inverfarigaig are considered to be areas of moderate or above base potential based on CaO concentrations. Ness Woods SAC (and immediate surroundings) within Dell Estate, Knockie Estate / Knockie Estate FLS, and Glendoe Estate, as well as land adjacent to Ness Woods SAC to the north of Dell Estate (FLS Foyers South 'Camas' land) are considered to be areas of moderate or above base potential based on MgO and K₂O concentrations.

The NatureScot 2003 NVC mapping data indicates the presence of '*Tilio-Acerion* forests of slopes, screes and ravines' qualifying habitat (i.e. corresponding to the NVC habitat W9) at Inverfarigaig, predominantly along the Allt Mór ravine. Other areas investigated within Ness Woods SAC mainly correspond to the 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' qualifying habitat type (i.e. NVC habitats W11 and W17).

Based on these desk-top results, the following areas were brought forward for further investigation (i.e. habitat survey and soil sampling) to ascertain their potential for creation / restoration of '*Tilio-Acerion* forests of slopes, screes and ravines' qualifying woodland habitat (search areas are mapped in Figures 2 – 4 in Appendix B):



- **Search Area 1:**
 - **Knockie Estate FLS land:**
 - Areas within Ness Woods SAC which are not currently mapped as qualifying woodland habitat, but where potentially suitable conditions exist (i.e. steep topography / base rich potential / in close proximity to existing qualifying woodland habitat); and
 - Areas immediately outwith Ness Woods SAC, adjacent to qualifying habitat within Ness Woods SAC, with base rich potential and steep topography.
- **Search Area 2:**
 - **Inverfarigaig:**
 - Areas within Ness Woods SAC which are not currently mapped as qualifying woodland habitat, but where potentially suitable conditions exist (i.e. steep topography / base rich potential / in close proximity to existing qualifying woodland habitat); and
 - Areas immediately outwith Ness Woods SAC, adjacent to qualifying habitat within Ness Woods SAC, on the southern side of the Allt Mór ravine, with base rich potential and steep topography.
- **Search Area 3:**
 - **FLS Foyers South ‘Camas’ Land:** areas immediately to the north of Dell Estate / Ness Woods SAC, adjacent to qualifying habitat and with suitable steep topography and base rich potential¹².

3.2 Habitat Walkover Survey

3.2.1 Search Area 1: Knockie Estate FLS land

Within the 16.5 ha search area, 0.3 ha was identified as comprising existing ‘*Tilio-Acerion* forests of slopes, screes and ravines’ qualifying woodland priority habitat, along steep sided banks of watercourses within Ness Woods SAC.

Enhancement opportunities are considered limited, with respect to managing grazing (due to existing deer impacts already being low to moderate) and bracken control (as bracken present does not represent a large component of the ground flora in existing qualifying woodland areas). Creation of mixed woodland priority woodland habitat through felling of existing conifer plantations and replanting with broadleaved tree species in suitable areas is not considered applicable in this location as conifer plantation has previously been clear felled and birch has largely become dominant in these areas already.

3.2.2 Search Areas 2: Inverfarigaig

Within the 7.58 ha search area, 0.2 ha was identified as comprising ‘*Tilio-Acerion* forests of slopes, screes and ravines’ qualifying woodland priority habitat, within Ness Woods SAC.

Other compartments surveyed largely comprised non-native conifers, with smaller areas of broadleaved tree regeneration (mostly birch and rowan (*Sorbus aucuparia*)) within clear fell

¹² This area was not originally targeted as part of the desk study, due to initial land access constraints. However, the desk-study mapping did cover this area, and this area was subsequently subject to survey (see Section 3.2) and soil analysis (see Section 3.3) due to the surveyor’s knowledge of the area (and potential suitability), and once access was arranged.



areas, and two small areas of planted broadleaved trees. Herbivore management appears to be undertaken more frequently than within Dell Estate, although trampling effects on underlying habitats could be seen along frequented areas (e.g. fence lines).

Enhancement opportunities are considered limited, with respect to managing grazing (due to existing deer impacts already being low to moderate) and bracken control (as bracken present does not represent a large component of the ground flora in existing qualifying woodland areas). Non-native conifer plantations are present within the identified compartments and could be clear felled and planted to create broadleaved woodland habitats. The area of existing priority mixed woodland habitat is limited in extent and it is considered that this restriction is caused by limited suitable ground conditions in the compartments identified. It is considered more likely that clear felling of existing conifer plantations and planting of selected broadleaved trees would more likely create other woodland habitat types rather than '*Tilio-Acerion* forests of slopes, screes and ravines'.

3.2.3 Search Area 3: FLS Foyers South 'Camas' land

A total of 2.31 ha of existing '*Tilio-Acerion* forests of slopes, screes and ravines' has been identified, consisting of two areas (making up 1.01 ha), along with a further 1.3 ha from a 6.52 ha area comprising a mosaic of the two qualifying woodland types (i.e. in mosaic with 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles', which makes up 5.22 ha of the mosaic).

Areas of broadleaved woodland had regular birch within them, with varying amounts of hazel, ash (*Fraxinus excelsior*), aspen (*Populus tremuloides*), rowan and occasional alder (*Alnus glutinosa*). The ground slopes off more steeply to the shore of Loch Ness. The topography and species composition of the areas of broadleaved woodland are broadly similar in structure to the Ness Woods SAC on Dell Estate, however the hazel is younger and the number of veteran trees are limited to scattered oak.

The remainder of the area (22.55 ha) consists of non-native conifer plantation.

Moderate to high browsing pressures were recorded. Similar to Dell Estate, there are no saplings present in the understorey of the woodland apart from occasional encroachment from natural regeneration of non-native conifer trees. Improving herbivore control could lead to enhancement of existing stands of the two qualifying woodland types.

Bracken is found in varying abundance throughout the areas of broadleaved woodland, but is largely absent from the non-native conifer plantation. It is more common in areas where there is a mosaic of the two qualifying woodland types. Control of bracken could potentially improve the quality of existing habitat.

Adjacent to the areas of broadleaved woodland where existing areas of '*Tilio-Acerion* forests of slopes, screes and ravines' are found, non-native conifer plantation could be clear felled and replanted with species such as hazel and birch, with ongoing removal of self-sown non-native conifers undertaken. Due to the presence of signs of ash dieback within certain areas of Ness Woods SAC, ash tree planting is not recommended, with emphasis being on the management of herbivore browsing leading to natural regeneration after felling.

A combination of clear felling, herbivore control and planting with broadleaved tree species (if required) could encourage natural regeneration of '*Tilio-Acerion* forests of slopes, screes and ravines'. It is estimated that habitat restoration over the 22.55 ha felled area would result in the creation of approximately 3.38 ha of '*Tilio-Acerion* forests of slopes, screes and ravines' – 15 % of the felled area. The 15 % is considered a likely mosaic between the two qualifying woodland types, based on the proportion in existing areas of mosaic habitat but allowing for '*Tilio-Acerion* forests of slopes, screes and ravines' being likely to be less prevalent in the eastern section of the compartment, further upslope away from Loch Ness. It



is expected that habitat creation of 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' would occur in the remaining 85% of the area totalling 19.17 ha.

Although outwith the Ness Woods SAC boundary, the area of non-native conifers is included in the ancient woodland inventory (AWI) as Category 1a (semi-natural woodland that has been continuously wooded since at least 1750) with smaller areas of Category 3 (woodland that has had a short break in woodland cover). It is identified in the Native Woodland Survey of Scotland (NWSS) as a PAWS. Removal of non-native conifers and restoration of PAWS sites can help meet the goals of the Scottish Biodiversity Strategy.

3.3 Soil Analysis

The soil analysis results indicate broadly similar characteristics across the majority of the samples taken, including between the control locations (i.e. where 'Tilio-Acerion forests of slopes, screes and ravines' is already present), and areas investigated for compensation suitability.

Control areas sampled (HA02, HA17, HA10, HA11, HA07, HA08) vary in pH from 5.1 – 5.9, with an average pH of 5.5, indicating soils that are close to neutral, rather than being base-rich or strongly acidic. Within the control areas, phosphorus concentrations ranged from <2.5 – 5.4 mg/L (3.52 mg/L average); potassium from 26.2 – 101 mg/L (average of 65.45 mg/L); magnesium from 12.6 – 158 mg/L (average of 84.2 mg/L); nitrogen from 0.137 – 0.715 mg/L (average of 0.347 mg/L); sodium (where recorded) from 12.4 – 31.7 mg/L (average of 18.6 mg/L); and calcium (where recorded) from <50 – 591 (average of 324 mg/L). The textural class of the control samples was mainly sandy clay loam, with some sandy loam and sandy silty loam.

Typically, most of the non-control samples (i.e. those being investigated for compensation suitability) correlate with the control samples, and the soil chemistry results are not significantly different. The concentrations can vary in some locations, but the bases were typically detected. A further discussion of the different study areas is provided in the following sections.

- **Knockie Estate FLS land:**
 - **HA09** and **HA12**: has a good correlation with the results from the adjacent control samples (HA10 and HA11);
- **FLS Foyers South 'Camas' land:**
 - **HA13** (non-native conifer plantation): has a good correlation with the results from the adjacent HA02 control sample;
 - **HA14** (existing mosaic of the two qualifying woodland types): the results are similar to HA13 but not as good a correlation as with HA02.
- **Compensation Area 8:**
 - **HA01** (existing conifer plantation): typically correlates with the soil conditions recorded from the adjacent HA02 control sample;
- **Compensation Area 7:**
 - **HA06** (dry heath): typically correlates with the soil conditions recorded from the adjacent HA02 control sample;
- **Bracken areas within Dell Estate:**
 - **HA03, HA04, HA05, HA15, HA16** and **HA18**: typically correlate with the soil conditions recorded from the adjacent HA02 control sample.



4.0 Selection of Additional Compensation Areas

Based on the results of the further desk-based, field-based, and soil analysis studies, it is proposed that the following additional areas are suitable for habitat creation / restoration (i.e. contributing to compensation for Conservation Objective 2a), and are brought forward for inclusion within the Ness Woods SAC Compensatory Measures Package:

- FLS Foyers South 'Camas' Land (see Figure 4 in Appendix B): 2.31 ha of existing 'Tilio-Acerion forests of slopes, screes and ravines'; 5.22 ha of existing 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles'; and 22.55 ha of PAWS non-native conifer which could create 3.38 ha of new 'Tilio-Acerion forests of slopes, screes and ravines' and 19.17 ha of new 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles'.

This additional area has been selected due to:

- Its location adjacent to, but outwith Ness Woods SAC and the existing proposed compensation areas within Dell Estate (Compensation Areas 7 and 8), which would extend the existing compensation areas with good ecological connectivity. This additional compensation area could be incorporated into the SAC in time, once qualifying woodland habitat status has been reached;
- The presence of a suitable seed bank for natural regeneration, due to the presence of the two qualifying woodland habitat types within and adjacent to this area;
- The presence of suitable topography and soil chemistry;
- The securing of arrangements and access with the landowner; and
- This area represents the largest area of suitable habitat, with creation / restoration potential, compared to the other study areas investigated.

Felling of the existing PAWS conifer plantation is proposed within this area. Then, similarly to the existing proposed compensation areas, the primary management action would be control of grazing (from deer / goats) with adaptive management in place, guided by monitoring outcomes. As with the existing proposed compensation areas, it is expected that the cessation of grazing would result in natural regeneration of native woodlands, which would in turn control bracken as a canopy develops. Control of regenerating non-native conifers would be undertaken in perpetuity. Supplementary tree planting of suitable native species would be considered, if natural regeneration is not responding as expected. Within the FLS Foyers South 'Camas' Land, deer exclusion fencing is the primary method of grazing control proposed. Full details of proposed deer management would be provided as part of the detailed Habitat Management Plan, prior to construction (post-determination), which would take account of comments provided by NatureScot to date.

The further studies presented within this report also provide further clarification on the suitability of existing proposed compensation areas within Dell Estate, for creation / restoration of qualifying woodland types, where previously queried by NatureScot.

The final areas proposed for compensation, and the associated ratios, are summarised within the following sections (4.1 – 4.2) for each qualifying woodland type. The final compensation package, including figures showing all proposed compensation areas, is provided in the updated Derogation Report⁶.



4.1 *Tilio-Acerion* forests of slopes, screes and ravines

Table 4-1: Proposed Compensation Areas for *Tilio-Acerion* forests of slopes, screens and ravines

Location	Area (ha)	Comments	Ratio
Habitat creation: compensation for Conservation Objective 2a			
Compensation Area 8 (outwith Ness Woods SAC, on Dell Estate): restoration of existing habitat	0.17	Existing qualifying woodland priority habitat outwith Ness Woods SAC, which would be restored to favourable condition and brought into the SAC.	Habitat loss / fragmentation to gain ratio of 1:9.6 (0.64 ha lost / fragmented: 6.12 ha gained). Further broken down into: Loss to gain ratio of 1:10 (0.51 ha lost: 5.1 ha gained). Fragmentation to gain ratio of 1:7.8 (0.13 ha fragmented: 1.02 ha gained).
Compensation Area 8 (outwith Ness Woods SAC, on Dell Estate): habitat creation	0.26	Habitat creation from conifer plantation, bracken, bracken with trees and dry heath (based on 20% of mosaic, matching proportion of existing mosaic in adjacent areas). This is considered a conservative estimate as the terrain indicates a higher % could establish. The area would be brought into the SAC in time.	
FLS Foyers South 'Camas' Land: restoration of existing habitat	2.31	Existing qualifying woodland priority habitat outwith Ness Woods SAC, which would be restored to favourable condition and brought into the SAC.	
FLS Foyers South 'Camas' Land: habitat creation from PAWS conifer plantation	3.38	Habitat creation from the PAWS conifer plantation, assuming this habitat type established across 15% of the area. The area would be brought into the SAC in time.	
TOTAL	6.12	-	
Habitat restoration: compensation for Conservation Objectives 2b and 2c			
Ness Woods SAC within Dell Estate: restoration of existing habitat	10.18	Restoration of existing habitat from unfavourable to favourable condition.	Habitat loss / fragmentation to restoration ratio of 1:15.9 (0.64 ha lost / fragmented: 10.18 ha restored).

In summary, the proposed additional compensation would result in providing a 1:10 habitat loss to gain ratio, and 1:7.8 fragmentation to gain ratio. This would be achieved via a combination of new qualifying woodland priority habitat creation outwith the SAC, and restoring existing qualifying woodland priority habitat outwith the SAC. These compensation areas would be brought into the SAC, and would therefore compensate for the loss of the area of qualifying woodland priority habitat, specifically relevant to Conservation Objective 2a. The compensation ratios meet NatureScot's requirements, that a 1:10 compensation ratio is appropriate for lost habitat, but that a lower compensation ratio is appropriate for fragmented habitat.



The compensation proposals would also result in a 1:15.9 loss / fragmentation to restoration ratio, which would more than adequately off-set the proposed development's impacts on Conservation Objectives 2b and 2c.

Overall, it is concluded that the proposed additional compensation adequately compensates for the loss and fragmentation of 'Tilio-Acerion forests of slopes, screes and ravines', and is sufficient to protect the coherence of the UK national site network for this habitat type.

4.2 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Table 4-2: Proposed Compensation Areas for Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Location	Area (ha)	Comments	Ratio
Habitat creation: compensation for Conservation Objective 2a			
FLS Foyers South 'Camas' Land: restoration of existing habitat	5.22	Existing qualifying woodland habitat outwith Ness Woods SAC, which would be restored to favourable condition and brought into the SAC.	Habitat loss / fragmentation to gain ratio of 1:12.8 (6.0 ha lost / fragmented: 76.67 ha gained).
FLS Foyers South 'Camas' Land: habitat creation from PAWS conifer plantation	19.17	Habitat creation from the PAWS conifer plantation, assuming this habitat type established across 85% of the area. The area would be brought into the SAC in time.	
Compensation Areas 3 – 8: restoration of existing habitat	2.04	Outwith but adjacent to Ness Woods SAC, within Dell Estate. Existing qualifying woodland habitat would be restored to favourable condition and brought into the SAC.	
Compensation Areas 3 – 8: habitat creation	4.65	Outwith but adjacent to Ness Woods SAC, within Dell Estate. Current habitats: bracken, dry heath / dry heath with scattered trees, conifer plantation.	
Existing 4x4 access track: habitat creation	0.26	Within Dell Estate Ness Woods SAC.	
Bracken areas within Dell Estate Ness Woods SAC: habitat creation	2.79	Bracken areas which are in open areas and do not form part of a woodland mosaic.	
Dell Estate Ness Woods SAC: habitat creation	42.54	Habitat creation from unimproved acid grassland (2.0 ha) and dry heath / dry heath with scattered trees (40.54 ha).	
TOTAL	76.67	-	
Habitat restoration: compensation for Conservation Objectives 2b and 2c			
Ness Woods SAC within Dell Estate: restoration of existing habitat	153.29	Restoration of existing habitat from unfavourable to favourable condition (including bracken within a	Habitat loss / fragmentation to restoration ratio of 1:25.5 (6.0 ha lost /



Location	Area (ha)	Comments	Ratio
		woodland mosaic with restoration potential).	fragmented: 153.29 ha restored).

In summary, the proposed additional compensation would provide a 1:12.8 habitat loss / fragmentation to gain ratio. This would be achieved via a combination of new qualifying woodland priority habitat creation within and outwith the SAC, and restoring existing qualifying woodland priority habitat outwith the SAC. Compensation would increase the existing extent of the qualifying woodland habitat within the SAC, and compensation areas outside of the SAC would be brought into the SAC. The proposals would therefore compensate for the loss of the area of qualifying woodland priority habitat, specifically relevant to Conservation Objective 2a. The compensation ratio exceeds NatureScot's requirements, that a loss to gain compensation ratio approaching or meeting 1:10 is appropriate.

The compensation proposals would also result in a 1:25.5 loss / fragmentation to restoration ratio, which would more than adequately off-set the proposed development's impacts on Conservation Objectives 2b and 2c.

Overall, it is concluded that the proposed additional compensation adequately compensates for the loss and fragmentation of 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' and is sufficient to protect the coherence of the UK national site network for this habitat type.





Appendix A Desk Based Habitat Search Report

**Technical Report to Inform Updated Ness Woods SAC
Compensation Package**

Loch Kemp Storage Scheme

ASH Design + Assessment

SLR Project No.: 424.065342.00001

5 February 2025

23 September 2024

Attention: Rebecca Rae
ASH Design

SLR Project No.: 428.04707.00032

Client Reference No.: ECU00003398

RE: Loch Kemp Pumped Storage Scheme – Desk Based Habitat Search Report

SLR Consulting Ltd (SLR) have undertaken a Desk Based Habitat Search report in support of the proposed Loch Kemp Pumped Storage Scheme (hereafter referred to as the Proposed Development), completed for ASH Design + Assessment (the client) on behalf of Loch Kemp Storage Limited. The report has been completed in response to pre application consultation from NatureScot¹ requesting further information regarding habitat restoration and soil type suitability associated with the Proposed Development, in areas of Special Areas of Conservation (SAC), notably the Ness Woods SAC.

Scope

SLR have completed a desk-based review of publicly available information and relevant previous survey data to identify potential further areas for habitat compensation based on the creation/restoration of mixed woodland on base-rich soils.

This comprised a review of the existing Ness Woods SAC and surrounding adjacent areas for potential areas which meet the typical conditions for this habitat i.e. forest on steep slopes, ravines and screes.

This has been determined following a review of available information on topography, soil mapping, geological mapping and review of aerial imagery. The desk-based review aims to highlight potential areas of habitat which can be taken forward for further consideration and inclusion for further survey and sampling to confirm suitability. This has been presented within this letter report and within appended drawings outlining the locations of potential habitat areas.

Habitat Search Rationale and Results

Habitat Search Results

The report aims to identify areas of existing suitable habitat considered to be of 'mixed woodland on base-rich soils' in order for determination of areas for potential future compensation and restoration. This is to be achieved by reviewing public geological information regarding bedrock stratigraphy, superficial geology and outline soil geochemistry, combined with details of topography, current land coverage and existing habitat designations.

For the purposes of this study areas outwith of the Dell estate, within the Ness Woods SAC, have been included. These additional areas include:

- Easter Ness Woods SSSI Knockie Estate and Glendoe Estate Easter Ness Woods SSSI located to the southwest of the Proposed Development.

¹ ECU00003398 - Loch Kemp PSS - NatureScot Response- 6 August 2024

- FLS Inverfarigaig SSSI located to the northeast of the Proposed Development

The above additional areas have been further divided between landowners of the relevant section of the Ness Woods SAC.

Recorded Geology

A review of published geological information on the BGS Onshore GeoIndex², including details of recorded superficial geology and bedrock geology at 1:50,000 scale. Information related to the recorded soil type³ has been accessed from the UK Soil Observatory viewer at 1:250,000 scale.

The recorded information has been summarised within **Table 1**, segregated into each land ownership boundary within the Ness Wood SAC area only and including the northern Ness Wood SAC located to the east of Inverfarigaig.

Table 1 Geology Summary

Area	Superficial (1:50,000)	Strata	Bedrock (1:50,000)	Geology	Soils Type (1:250,000)
Dell Estate	- Hummocky Deposits - Glacial Till - Lacustrine Alluvium - Peat	Glacial	- Foyers Igneous Complex (Granodiorite/Tonalite) - Loch Laggan Psammite - Gairbeinn Peebly Psammite		- Peaty gleyed podzols – derived from metasediments and igneous rocks
Knockie FLS	- Glacial Till - Alluvium		- Foyers Igneous Complex (Granodiorite/Tonalite) - Foyers Igneous Complex (Diorite/Hornblende) - Gairbeinn Peebly Psammite		- Peaty gleyed podzols – derived from metasediments and igneous rocks
Knockie Estate	- None mapped		- Gairbeinn Peebly Psammite		- Peaty gleyed podzols – derived from metasediments and igneous rocks
Glendoe Estate	- Glacial Till		- Gairbeinn Peebly Psammite		- Peaty gleyed podzols – derived from metasediments and igneous rocks - Brown earths with humus -iron podzols
Inverfarigaig	- None mapped - None mapped		- Foyers Igneous Complex (Granodiorite/Tonalite) - Foyers Igneous Complex (Quartz/Diorite) - Craid A'Bhlair Formation Conglomerate - Balchraggan Formation Silstone and Mudstone and Sandstone - Farigaig Formation Breccia		- Peaty rankers with peaty gleyed podzols – derived from drifts of sedimentary units - Humus-iron podzols with peaty gleyed podzols – derived from drifts of igneous units

² BGS, 2024. GeoIndex Onshore (<https://mapapps2.bgs.ac.uk/geoindex/home.html>)

³ Soil Survey of Scotland Staff (1981). Soil maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen. DOI: 10.5281/zenodo.4646891



Superficial

The recorded superficial deposits are generally sparse and confined to valleys floors comprising Alluvium and Glacial Till deposits and flat-lying areas comprising Peat. Typically, superficial coverage for each area is less than 20% with bedrock at surface in the remaining areas.

In the northeast of the Dell Estate area, Hummocky Glacial Deposits (sand and gravel) are recorded with a straight western boundary, likely representative of the equivalent mapping tile boundary. The continuation of this strata west beyond the mapping limit is likely, however the extent is undeterminable using this source² of superficial geology data.

The superficial strata are presented within **Figure 14.2.3** of the EIA Report⁴.

Bedrock

The recorded bedrock geology varies significantly between different areas of the Ness Wood SAC, with the Dell Estate and Knockie FLS areas comprising a complex sequence of metasediments comprising psammities intruded by the Foyers Igneous Complex of Granodiorite and Tonalite with minor occurrences of diorite and hornblende formation type.

The Foyer Igneous Complex is recorded to predominately comprise facies of Granodiorite, which has a complex mineralogy made up of plagioclase feldspar (sodium rich), quartz and mica. The occurrences of diorite and hornblende are likely to comprise a similar mineralogy albeit poorer in silica (quartz) and predominately of calcium rich plagioclase feldspar.

The remaining bedrock geology predominately comprises metasediments from the Moine Supergroup (Loch Laggan Formation) and Grampian group (Gairbeinn Pebbly Psammite) in the south and the lower grade metamorphosed units of the Middle Old Red Sandstone in the north (Inverfarigaig Area), with the geology strongly influenced by the presence of the adjacent Great Glen Fault to the northwest and the series of parallel secondary faults throughout each area. Localised alteration assemblages are likely present within sedimentary and meta-sedimentary units in close proximity to the igneous intrusives of the Foyers Complex.

The bedrock strata are presented within **Figure 14.2.4.1** of the EIA Report⁴.

Soils

The 1:250k soil viewer indicates the southern Ness Wood SAC indicates full coverage of peaty gleyed podzol soil type, with the Inverfarigaig area indicating the presence of peaty rankers and humus-iron podzols.

The complete coverage of peaty podzols in the south indicates the presence of acidic soils (i.e. base poor). However, given the prevalence of base rich woodland this may not be considered representative of the entire area and given the resolution of mapping at 1:250,000, may not account for any local variation.

Soil Geochemistry and Base Potential

The soils and recoded geochemistry have been further reviewed below utilising a higher resolution dataset presented by a study published in 1987 by the BGS⁵ Geochemical Atlas of the Great Glen region. The data presented was collected at a soil sample density of 1 per 1.5m². The sample resolution is likely more representative any variation in soil geochemistry than the 1:250k dataset³.

⁴ Loch Kemp Storage. Environmental Impact Assessment. Volume 1. Chapter 14 Geology, Soils and Water. December 2023.

⁵ BGS 1987. Regional Geochemical Atlas: Great Glen (keyworth, Nottinghamshire: BGS)



In regard to the potential identification of base-rich soils, the study provides soils geochemistry for concentrations of calcium (CaO), magnesium (MgO) and potassium (K₂O), all of which are considered representative, when occurring at higher concentrations, to have the potential to form base-rich soils. These concentrations are presented within Map 5 of the report⁵, and for the purposes of this desk study have been digitised and summarised below relating to the range of concentrations for each study area in **Table 2** and presented in Drawing 02(a-c).

Table 2 Geochemical Summary – Base Minerals

Area	Dataset Percentile	Calcium (CaO) %	Coverage (ha)	Magnesium (MgO) %	Coverage (ha)	Potassium (K ₂ O) %	Coverage (ha)
Dell Estate (217 ha)	0 – 25%						
	25 – 50%			0 – 1.0	106		
	50 – 75%	2.2 – 3.1	163	1.0 – 2.0	88	2-6 – 3.4	190
	75 – 95%	3.1 – 6.0	54	2.0 – 4.9	23	3.4 – 4.2	27
	95 – 100%						
Knockie FLS (112 ha)	0 – 25%						
	25 – 50%						
	50 – 75%	2.2 – 3.1	7.8	1.0 – 2.0	43	2-6 – 3.4	112
	75 – 95%	3.1 – 6.0	98	2.0 – 4.9	69		
	95 – 100%	6.0 – 14	4.5	4.9 - 20	<1		
Knockie Estate (87 ha)	0 – 25%						
	25 – 50%	1.4 - 2.2	20	0 – 1.0	14		
	50 – 75%	2.2 – 3.1	67	1.0 – 2.0	73	2-6 – 3.4	87
	75 – 95%						
	95 – 100%						
Glendoe Estate (34)	0 – 25%	0 – 1.4	1				
	25 – 50%	1.4 - 2.2	33	0 – 1.0	4.7		
	50 – 75%			1.0 – 2.0	29	2-6 – 3.4	34
	75 – 95%						
	95 – 100%						
Inverfarigaig (100 ha)	0 – 25%					0 – 2.6	100
	25 – 50%						
	50 – 75%			1.0 – 2.0	89		
	75 – 95%	3.1 – 6.0	100	2.0 – 4.9	11		
	95 – 100%						

Calcium, magnesium and potassium within oxides are common constituents of rock forming minerals with their distribution in soils determined by variation predominately in lithology, greater influenced by the local bedrock strata in the absence of significant superficial soils across each area. In regard to the dataset percentiles, for the purposes of this study >50% is considered to be of moderate base potential and >75% of high base potential.

The data indicates a strong correlation between calcium and magnesium concentrations across the dataset, this is evident where the highest concentrations are recorded in the southwest of the Dell Estate and the Knockie FLS area. These elevated values correlate with the Foyers Igneous Complex (Diorite/Hornblende) located to the southeast of the Knockie FLS area, with diorite mineralogy higher in calcium rich plagioclase than the surrounding granodiorite sodium rich plagioclase. This is also noted to the north around the Inverfarigaig area, with elevated calcium and magnesium associated with diorite facies within the Foyers Igneous Complex.

In the absence of any recorded calcareous bedrock strata, its likely units within the igneous complex are the predominate influence on the concentrations of calcium and magnesium across each area.



The correlation between geology and potassium concentration appears less distinct. In the absence of typical potassium feldspar mineralogy within the igneous units and predominate psammitic metasediments, the potential for elevated potassium concentrations derived from bedrock geology is low.

Habitat Search

The habitat search includes public information from the NatureScot National Vegetation Classification (NVC) database for the Ness Woods SAC and Ness Woods SAC (Inverfarigaig Section) habitat Survey 2003⁶.

The NVC data in conjunction with review of aerial imagery, background geology, soil conditions, and topography have been used to generate an area of “Mixed woodland on base-rich soils associated with rocky slopes”, further outlined for each area in **Table 3** below and presented in Drawing 03(a-d).

Table 3: Habitat Search Results

Area/Estate	Rationale
Dell Estate FLS Knockie Knockie Estate Glendoe Estate	<ul style="list-style-type: none"> Area is noted to be dominated by mixed woodland cover by NatureScot NVC⁶ mapping. Area is located on steep topography generally absent of base-poor or acidic deposits including alluvium, till, peat etc. UK Soil Observatory (UKSO) created by the British Geological Survey (BGS) the Ness Woods SAC on the north facing shores of Loch Ness is recorded to be underlain by peaty podzols, a base-poor soil. Mapped at 1:250,000 the identification of specific soils at small scale is noted to be fairly inaccurate due to low resolution and as such the mosaic of differing soil types influenced by local geography/geology is probably missed. The Regional Geochemical Atlas⁵ data indicated higher concentrations of calcium and magnesium in the southwest of the Dell Estate and within the FLS Knockie Estate associated with the dioritic Foyers Igneous Complex, east of the FLS Knockie area. These areas may be supportive of base-rich soils locally. The remaining area indicate lower concentrations of base concentrations within the dataset. The designation of the Ness Woods SAC “Mixed woodland on base-rich soils associated with rocky slopes”. Review of the area has therefore removed sections of the designated sites that are underlain by superficial deposits with base-poor properties including Alluvium, Glacial Deposits and Till identified on BGS 1:50,000 Superficial Geology mapping. The exception is the area of Hummocky Deposits in the north of the Dell Estate which have been discounted due to the mapping inconsistencies.
FLS Inverfarigaig	<ul style="list-style-type: none"> Area is noted to be dominated by mixed woodland cover by NatureScot NVC mapping. Area is located on steep topography generally absent of base-poor or acidic deposits including alluvium, till, peat etc. UKSO 1:250,000 soils mapping indicates the areas identified within the Inverfarigaig SSSI are absent of any base-poor or acidic underlying soils. The Regional Geochemical Atlas⁵ data indicated higher concentrations of calcium and magnesium across the area associated with the dioritic Foyers Igneous Complex to the east. This area may be supportive of base-rich soils.

⁶ NatureScot. NVC Survey. <https://opendata.nature.scot/datasets/snh::nvc-survey-coverage/>



Area/Estate	Rationale
	<ul style="list-style-type: none">The designation of the Ness Woods SAC, which encompasses the Inverfarigaig SSSI states “Mixed woodland on base-rich soils associated with rocky slopes”. Review of the area has therefore removed sections of the designated sites that are underlain by superficial deposits with base-poor properties including Alluvium, Glacial Deposits and Till identified on BGS 1:50,000 Superficial Geology mapping.

Summary

This desk study outlines areas of potential habitat based on publicly available information relating to geology, habitat, topography and geochemistry, and validated through the correlation with aerial imagery. In order to fully delineate areas potentially suitable for habitat restoration, further assessment of the ecological and geomorphological conditions should be undertaken and supported with appropriate field-based surveys and investigation.

Attachments

Drawing 01 – Study Location Plan

Drawing 02a – Geochemical Atlas Data – Calcium

Drawing 02b – Geochemical Atlas Data – Magnesium

Drawing 02c – Geochemical Atlas Data – Potassium

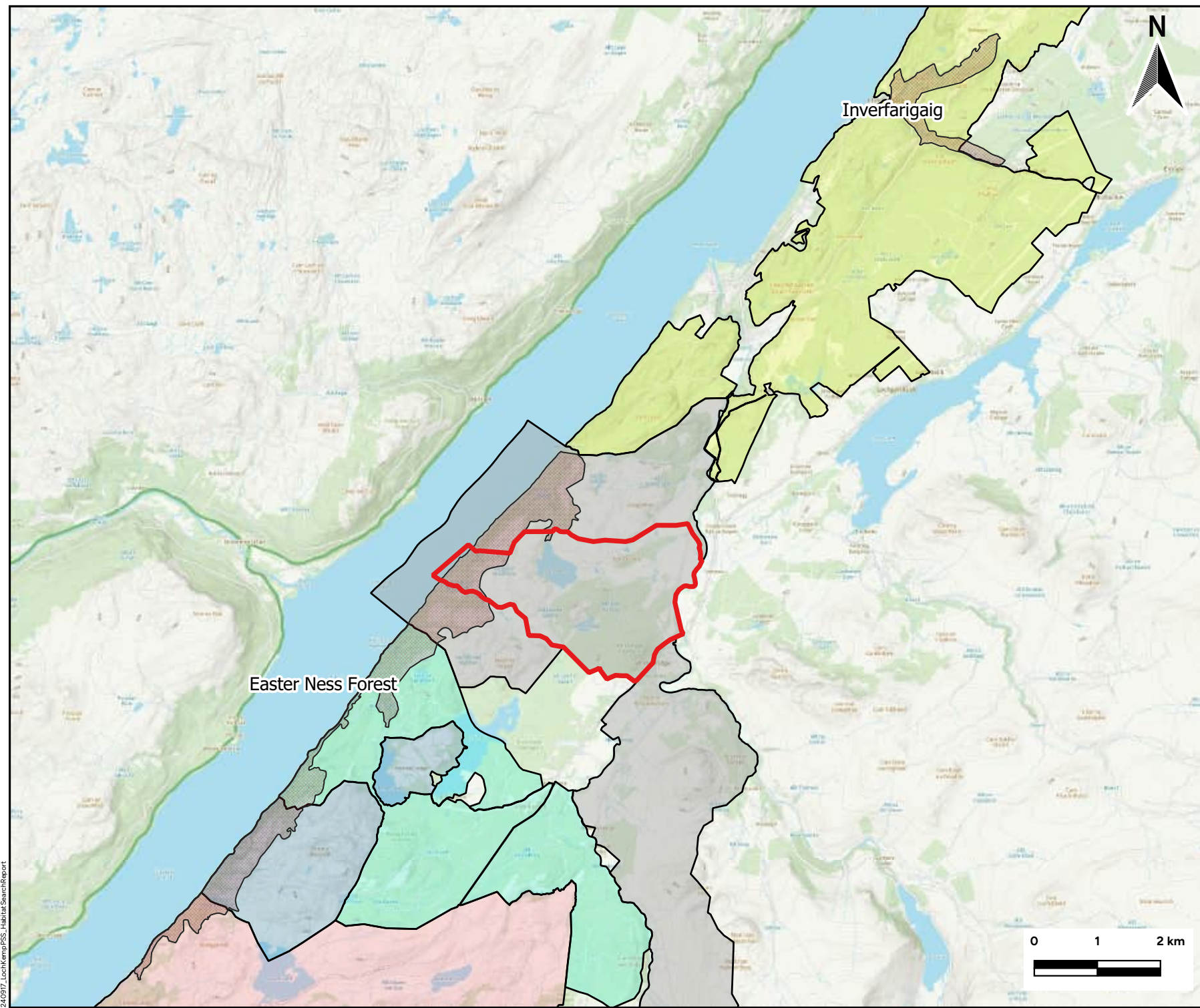
Drawing 03a – Habitat Search Area – Dell Estate

Drawing 03b – Habitat Search Area – Knockie FLS

Drawing 03c – Habitat Search Area – Knockie and Glendoe Estates

Drawing 03d – Habitat Search Area – Inverfarigaig FLS





Notes

Legend:

- PSS Site Boundary
- SSSI_SAC
- FLS Land Boundary Inverfarigaig
- Dell Estate Boundary
- Knockie Estate FLS
- Knockie Estate Boundary
- Glendoe Boundary



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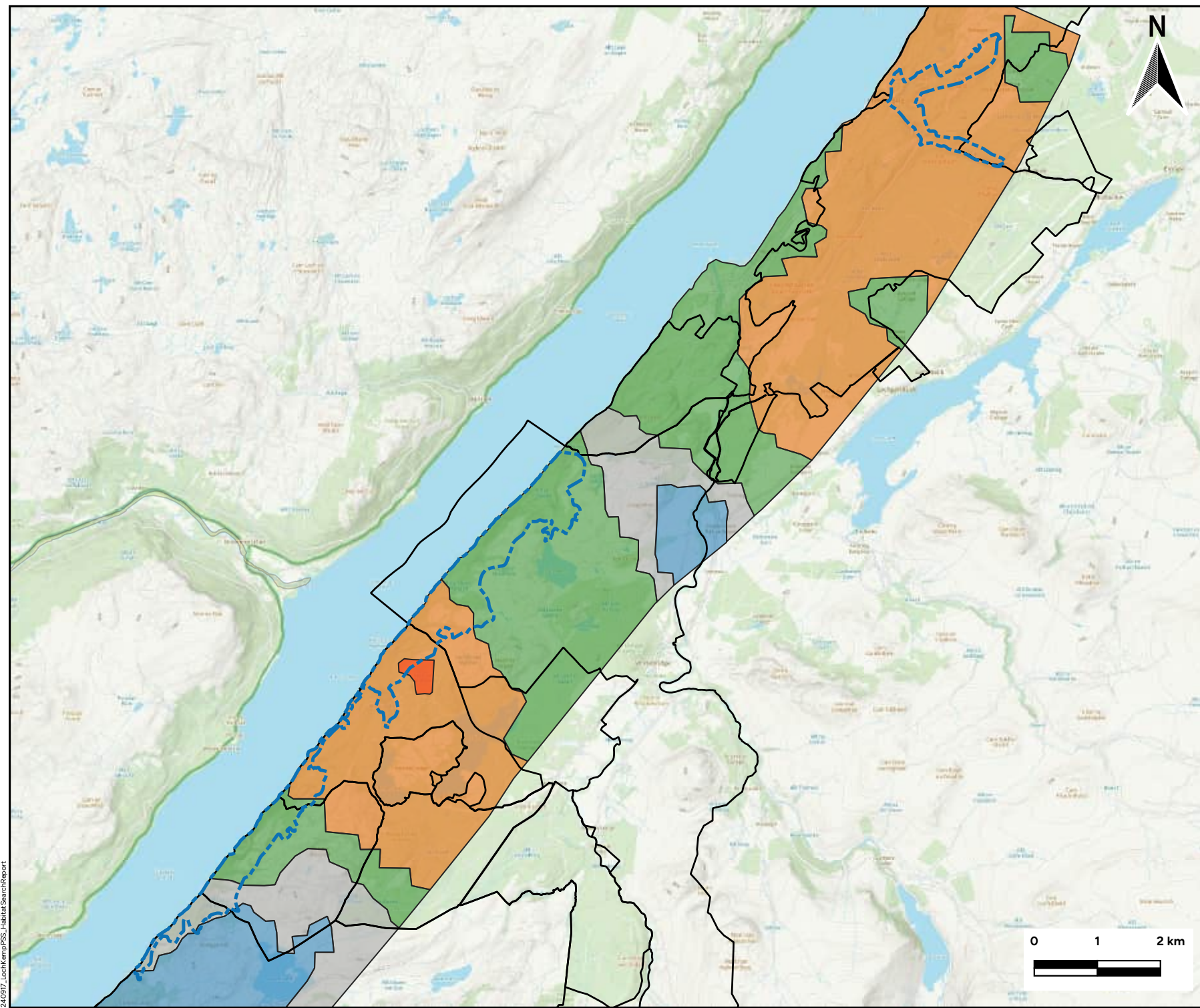
Project
Loch Kemp PSS
Habitat Search Report

Figure Title
Study Location Plan

Scale 1:80,000 @A4		SLR Project No. 428.04707.00032	
Designed JS	Drawn JS	Checked AH	Authorised AH
Date 17/09/24	Date 17/09/24	Date 18/09/24	Date 18/09/24
Figure Number Drawing 01			Rev. 1



240917_LochKempPSS_HabitatSearchReport



Notes

1. Calcium (CaO) concentrations reproduced from "BGS 1987. Regional Geochemical Atlas: Great Glen (keyworth, Nottinghamshire: BGS)".

Legend:

- Land Owner Boundary
- SAC_SCOTLAND**
- Ness Woods
- Calcium (CaO) (Base Potential)**
- (V. Low) 0 - 1.4 %
- (Low) 1.4 - 2.2%
- (Moderate) 2.2 - 3.1%
- (High) 3.1 - 6.0%
- (v High) 6.0 - 14%

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Project

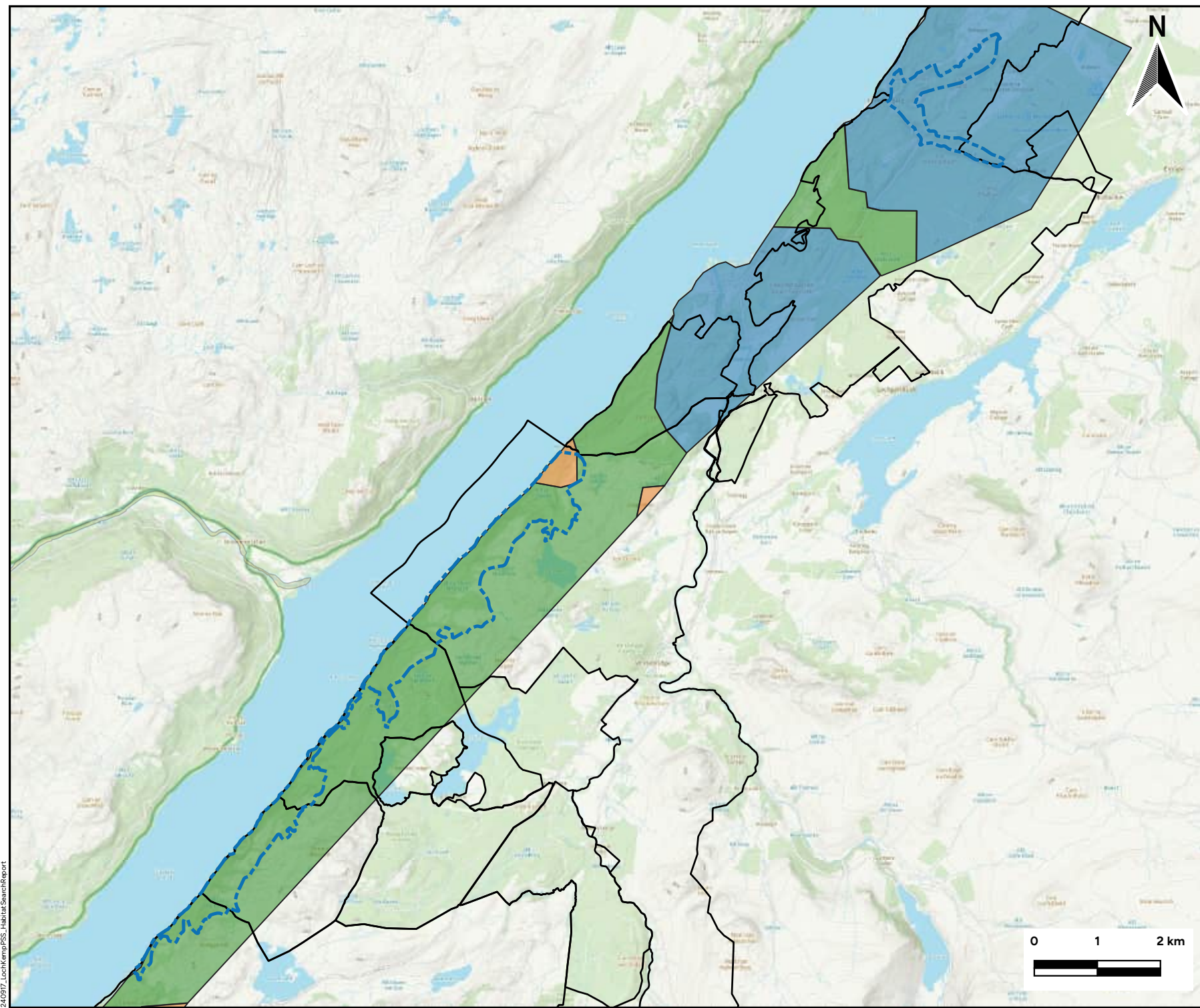
Loch Kemp PSS
Habitat Search Report

Figure Title

Habitat Search Base Potential Plan
Geochemical Atlas - Calcium

Scale	1:80,000 @A4	SLR Project No.	428.04707.00032
Designed	JS	Drawn	JS
Checked	AH	Authorised	AH
Date	17/09/24	Date	17/09/24
Date	18/09/24	Date	18/09/24
Figure Number	Drawing 02a		Rev. 1

240917_LochKempPSS_HabitatSearchReport



Notes

1. Magnesium (MgO) concentrations reproduced from "BGS 1987. Regional Geochemical Atlas: Great Glen (keyworth, Nottinghamshire: BGS)".

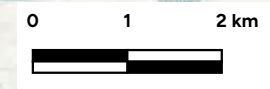
Legend:

- Land Owner Boundary
- SAC_SCOTLAND**
- Ness Woods
- Magnesium (MgO) (Base Potential)**
- (Low) 0 - 1.0%
- (Moderate) 1.0 - 2.0%
- (High) 2.0 - 4.9%
- (V. High) 4.9 - 20%

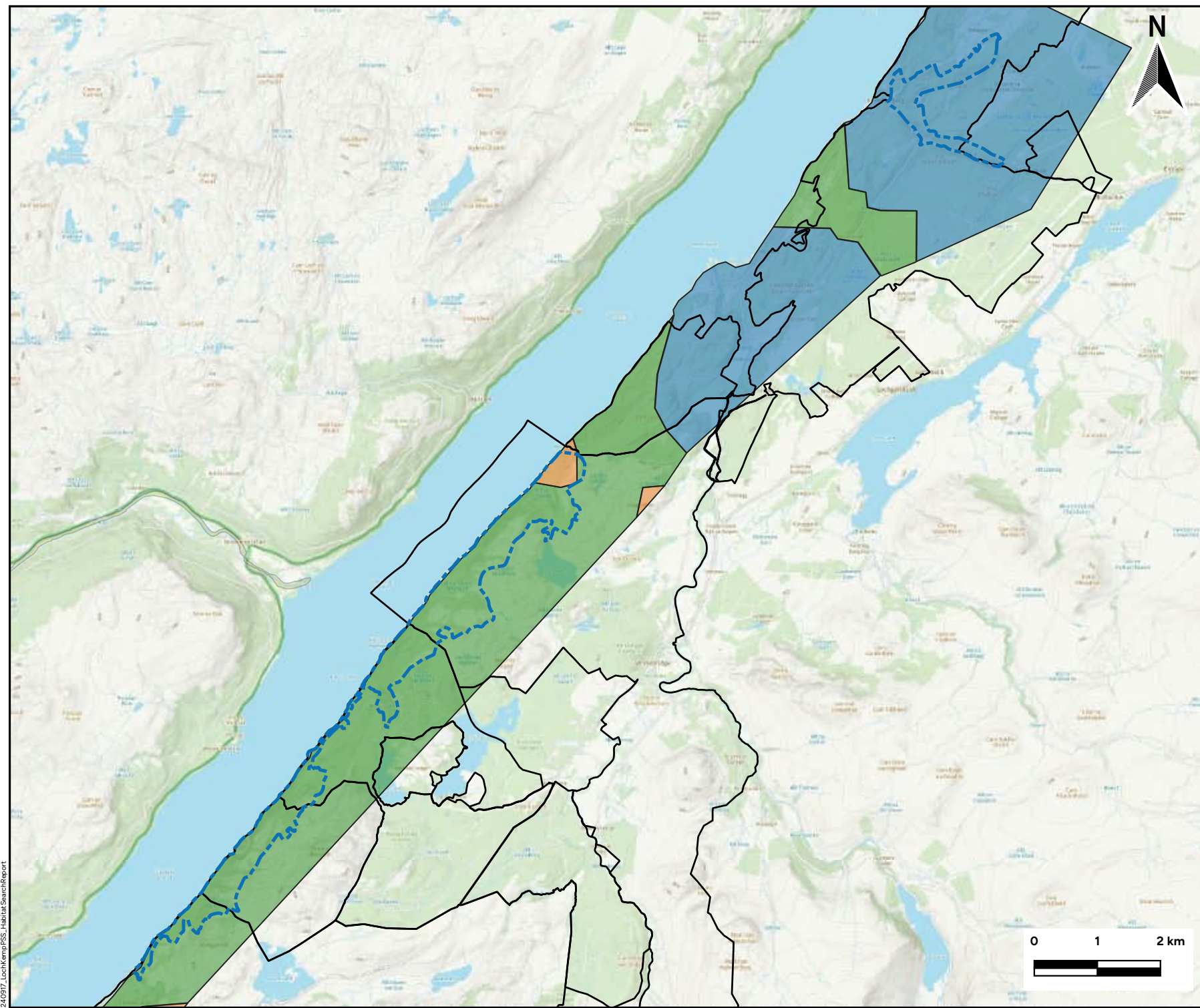


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Client			
Ash Design + Assessment			
Project			
Loch Kemp PSS Habitat Search Report			
Figure Title			
Habitat Search Base Potential Plan Geochemical Atlas - Magnesium			
Scale		SLR Project No.	
1:80,000 @A4		428.04707.00032	
Designed	Drawn	Checked	Authorised
JS	JS	AH	AH
Date	Date	Date	Date
17/09/24	17/09/24	18/09/24	19/09/24
Figure Number			Rev.
Drawing 02b			1



240917_LochKempPSS_HabitatSearchReport



Notes

1. Potassium (K2O) concentrations reproduced from "BGS 1987. Regional Geochemical Atlas: Great Glen (keyworth, Nottinghamshire: BGS)".

Legend:

- Land Owner Boundary
- SAC_SCOTLAND**
- Ness Woods
- Potassium (K2O) (Base Potential)**
- (Low) 0 - 2.6%
- (Moderate) 2.6 - 3.4%
- (High) 3.4 - 4.2%



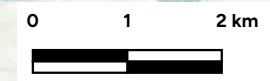
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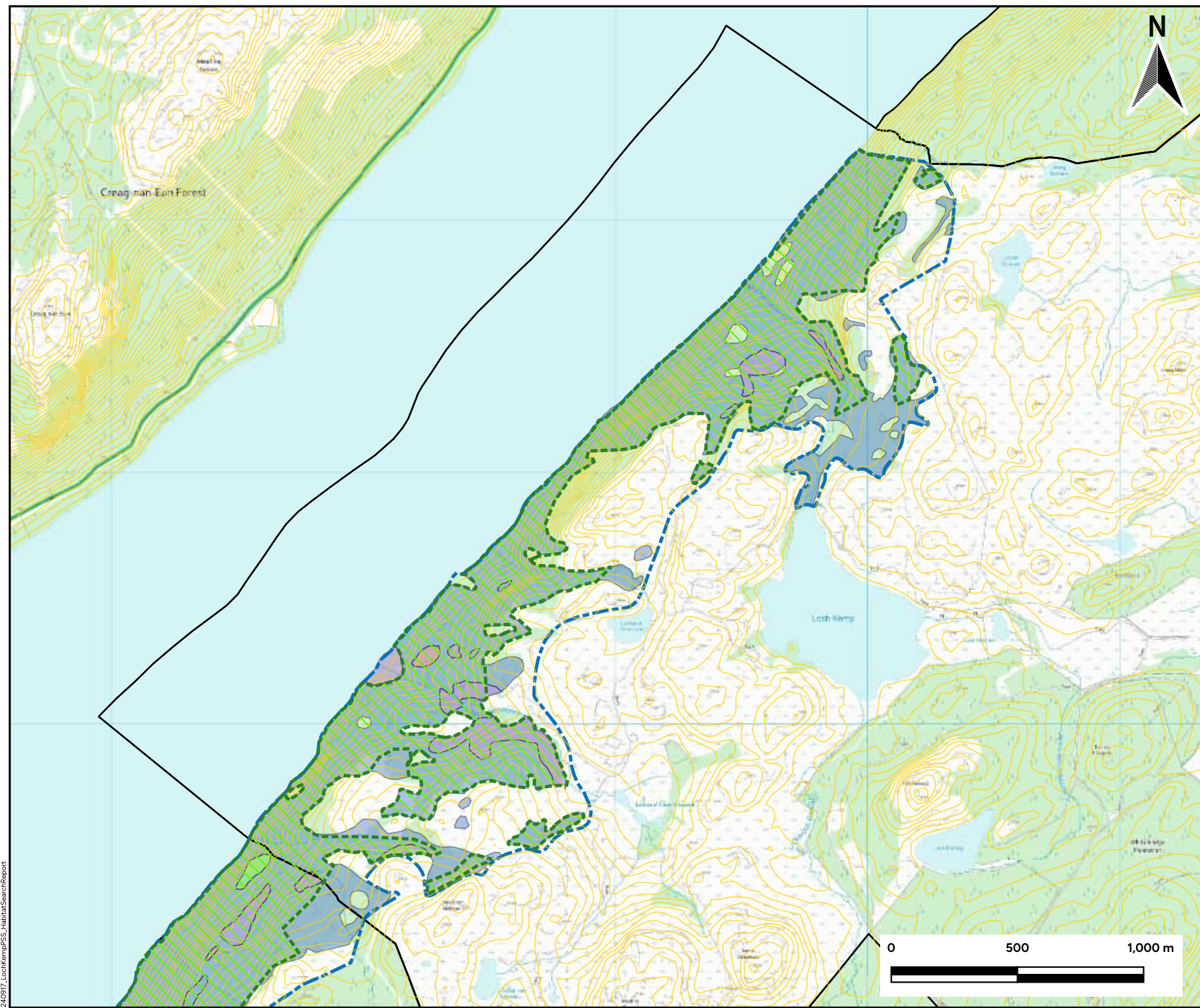
Project
Loch Kemp PSS
Habitat Search Report

Figure Title
Habitat Search Base Potential Plan
Geochemical Atlas - Potassium

Scale 1:80,000 @A4		SLR Project No. 428.04707.00032	
Designed JS	Drawn JS	Checked AH	Authorised AH
Date 17/09/24	Date 17/09/24	Date 18/09/24	Date 19/09/24
Figure Number Drawing 02c			Rev. 1



240917_LochKempPSS_HabitatSearchReport



Notes

1. Polygon of "Mixed woodland on base-rich soils associated with rocky slopes" developed using public data presented within the drawing. Developed for areas of steep terrain within NVC - Woodlands of Ness Wood SAC.

Legend:

Mixed Woodland on Base-Rich Soils with Rocky Slopes	
NH41_Contour Line (10m)	
Land Owner Boundary	
SAC_SCOTLAND	
Ness Woods	
NatureScot NVC Data	
W11 (100) H91AO	
W17 (100) H91AO	



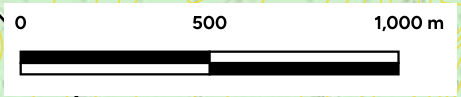
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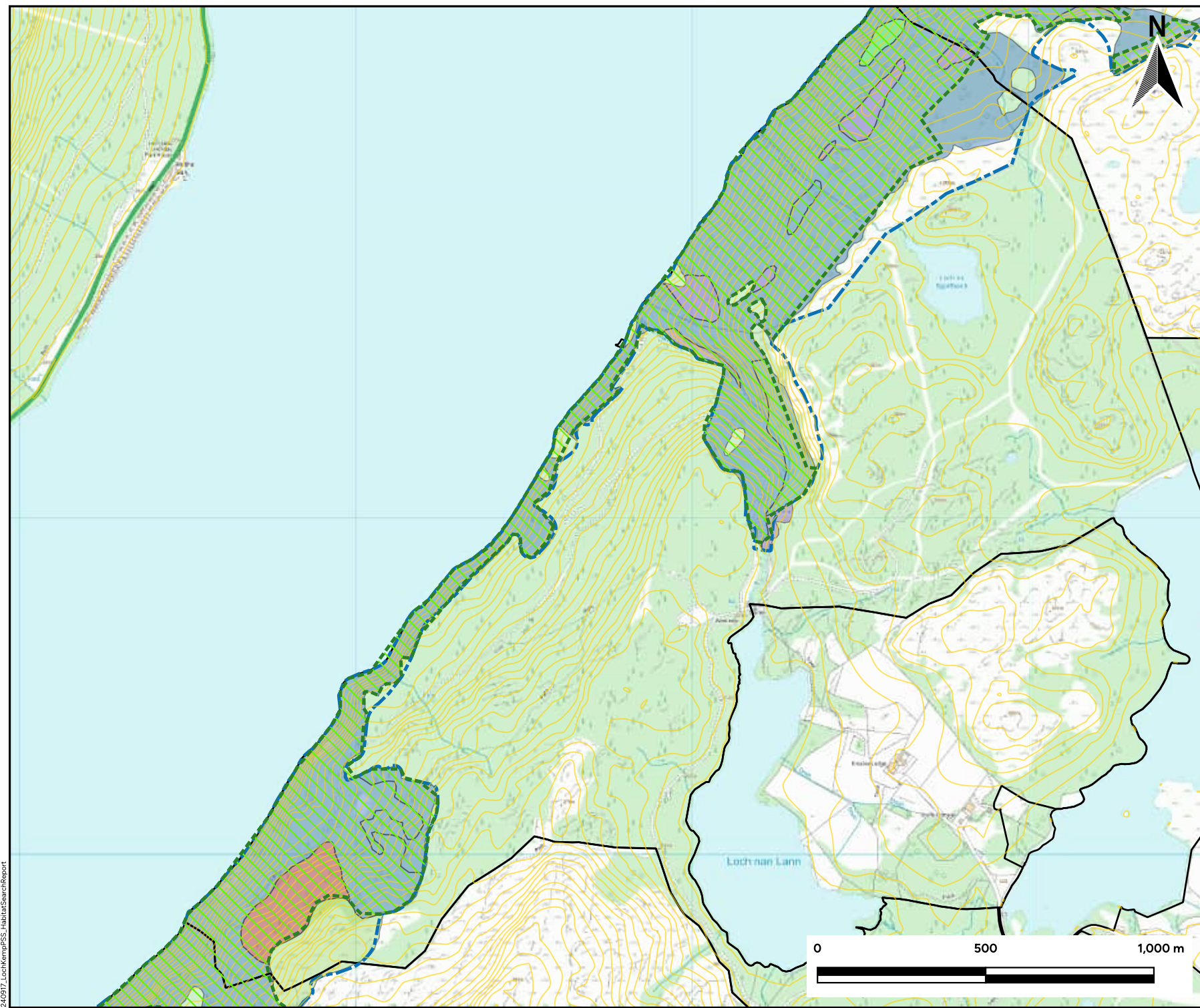
Project
Loch Kemp PSS
Habitat Search Report

Figure Title
Habitat Search Area - Ness Wood
Dell Estate

Scale 1:20,000 @A4		SLR Project No. 428.04707.00032	
Designed JS	Drawn JS	Checked AH	Authorised AH
Date 17/09/24	Date 17/09/24	Date 18/09/24	Date 19/09/24
Figure Number Drawing 03a			Rev. 1



240817_LochKempPSS_HabitatSearchReport



Notes

1. Polygon of "Mixed woodland on base-rich soils associated with rocky slopes" developed using public data presented within the drawing. Developed for areas of steep terrain within NVC - Woodlands of Ness Wood SAC.

Legend:

- Mixed Woodland on Base-Rich Soils with Rocky Slopes
- NH41_Contour Line (10m)
- Land Owner Boundary
- SAC_SCOTLAND**
- Ness Woods

NatureScot NVC Data

- W11 (100) H01AO
- W17 (100) H91AO
- W17 (60) H91AO

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Habitat Search Report

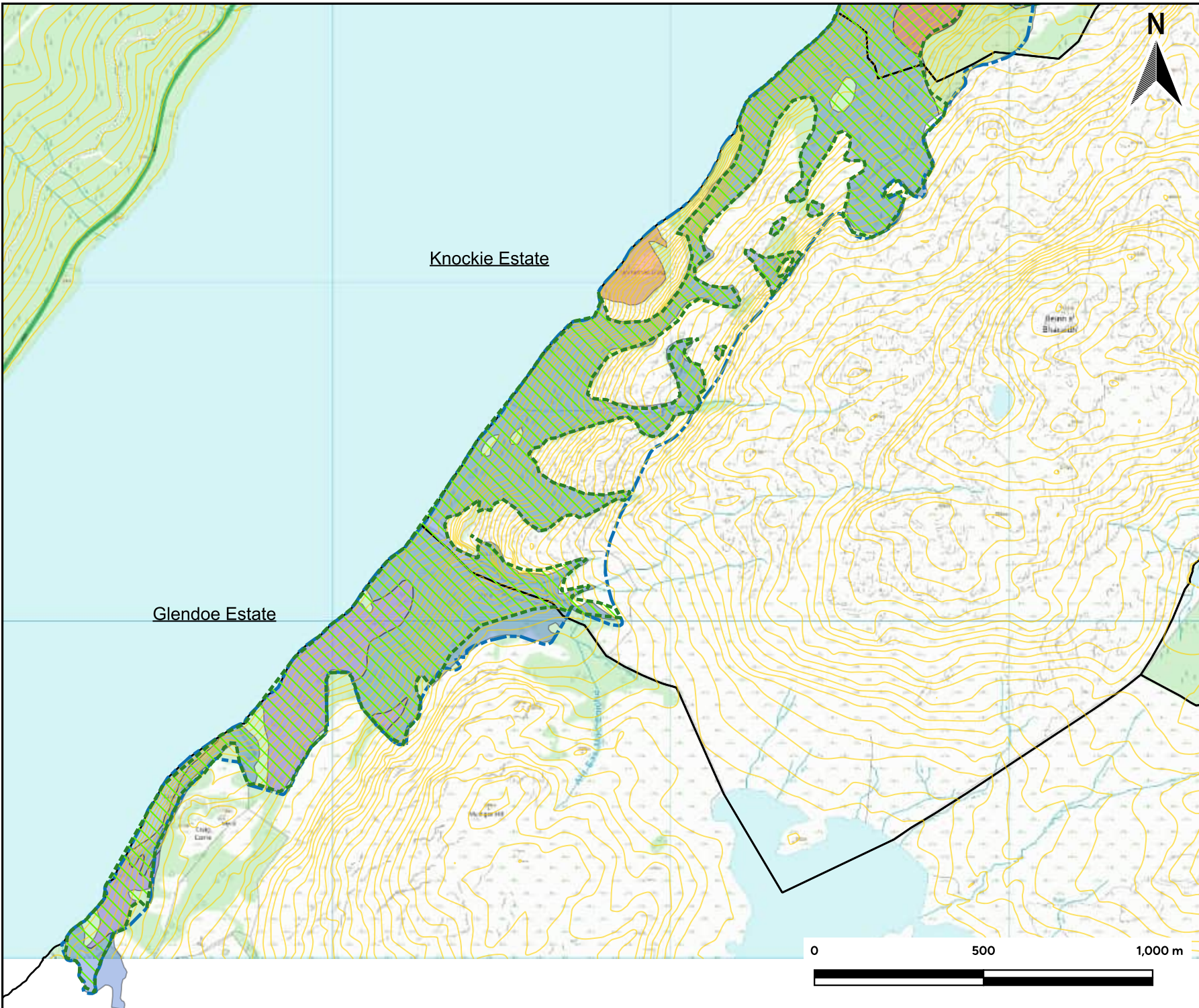
Figure Title

Habitat Search Area - Ness Wood
FLS Knockie

Scale		SLR Project No.	
1:15,000 @A4		428.04707.00032	
Designed	Drawn	Checked	Authorised
JS	JS	AH	AH
Date	Date	Date	Date
17/09/24	17/09/24	18/09/24	19/09/24

Figure Number Drawing 03b **Rev.** 1






240817_LochKempPSS_HabitatSearchReport





Notes

1. Polygon of "Mixed woodland on base-rich soils associated with rocky slopes" developed using public data presented within the drawing. Developed for areas of steep terrain within NVC - Woodlands of Ness Wood SAC.

Legend:

- Mixed Woodland on Base-Rich Soils with Rocky Slopes 
- NH41 Contour Line (10m) 
- Land Owner Boundary 
- SAC_SCOTLAND 
- Ness Woods 

NatureScot NVC Data

-  W11 (100) H01AO
-  W17 (100) H91AO



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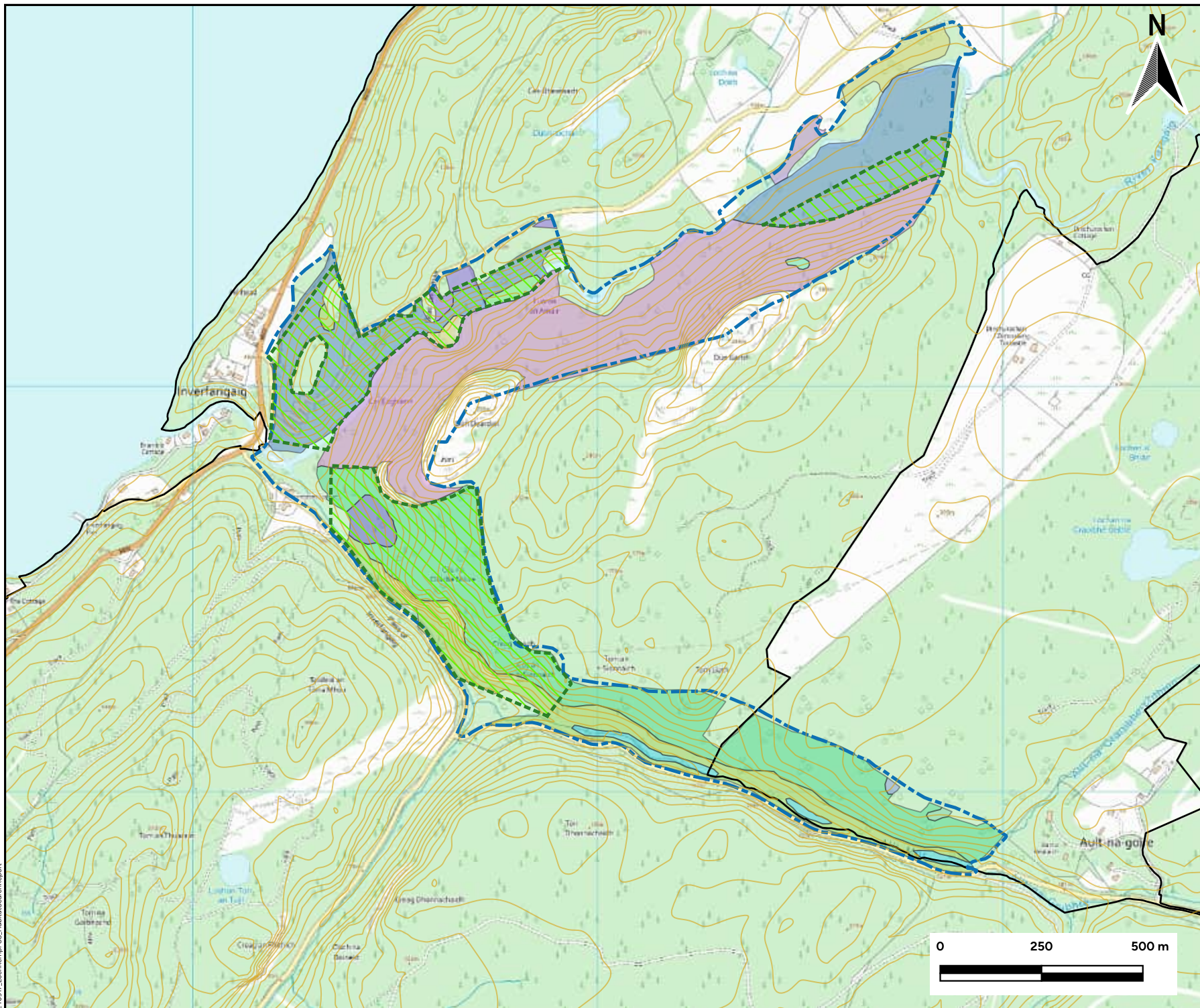
Project
Loch Kemp PSS
Habitat Search Report

Figure Title
Habitat Search Area - Ness Wood
Knockie Estate and Glendoe Estate

Scale 1:15,000 @A4		SLR Project No. 428.04707.00032	
Designed JS	Drawn JS	Checked AH	Authorised AH
Date 17/09/24	Date 17/09/24	Date 18/09/24	Date 19/09/24
Figure Number Drawing 03c			Rev. 1














240917_LochKempPSS_HabitatSearchReport

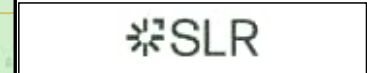


Notes

1. Polygon of "Mixed woodland on base-rich soils associated with rocky slopes" developed using public data presented within the drawing. Developed for areas of steep terrain within NVC - Woodlands of Ness Wood SAC.

- Legend:
- Mixed Woodland on Base-Rich Soils with Rocky Slopes 
 - NH41 Contour Line (10m) 
 - Land Owner Boundary 
 - SAC_SCOTLAND 
 - Ness Woods 

- NatureScot NVC Data**
-  W11 (100) H91AO
 -  W17 (100) H91AO
 -  W17 (50) W7 (50) H91AO
 -  W17 (90%) H91AO
 -  W17b (100%) H91AO
 -  W9 (100) H9180



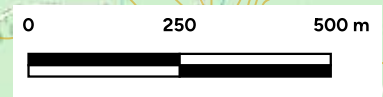
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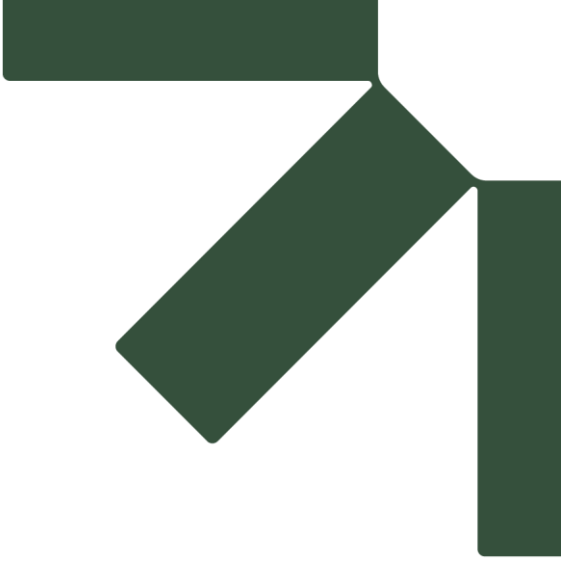
Project
Loch Kemp PSS
Habitat Search Report

Figure Title
Habitat Search Area - Ness Wood
Inverfergig FLS

Scale 1:12,500 @A4		SLR Project No. 428.04707.00032	
Designed JS	Drawn JS	Checked AH	Authorised AH
Date 17/09/24	Date 17/09/24	Date 18/09/24	Date 19/09/24
Figure Number Drawing 03d			Rev. 1



240917_LochKempPSS_HabitatSearchReport



Appendix B Results of Priority Woodland Habitat Survey (Orrin Ecology, 2024)

**Technical Report to Inform Updated Ness Woods SAC
Compensation Package**

Loch Kemp Storage Scheme

ASH Design + Assessment

SLR Project No.: 424.065342.00001

5 February 2025

Appendix B: Priority Woodland Habitat Survey Report

March 2025

ash



**Loch Kemp
Storage**
A STATERA COMPANY

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Figure 3: Prospective Base-Rich Mixed Woodland Compartments

Figure 4: Camas – Priority Woodland Habitats

List of Appendices

Appendix B.1 – Figures

1. Introduction

1.1 Background

1.1.1 The Applicant, Loch Kemp Storage Ltd, is proposing to construct and operate a new pumped storage hydro scheme and submitted an application for consent to the Scottish Ministers under Section 36 of The Electricity Act 1989 in December 2023 (ECU Reference: ECU00003398).

1.1.2 A compensation package was submitted with the Section 36 application for Loch Kemp Storage Scheme in November 2023, as part of the Derogation Report¹, setting out measures to compensate for significant effects upon Ness Woods Special Area of Conservation (SAC) qualifying interest woodland habitats, that would arise as a result of the construction and operation of the proposed Loch Kemp Storage Scheme. Further consultation has been undertaken with NatureScot regarding the measures included within the compensation package, as summarised in Section 1.3 of the Technical Report to Inform Updated Ness Woods SAC Compensation Package².

This Priority Woodland Habitat Survey Report has been prepared to provide further information on the Applicant's approach to identifying potential opportunities to create or restore further areas of the priority habitat Mixed woodland on base rich-soils to inform an updated package of compensatory measures for Ness Woods SAC.

1.2 The Loch Kemp Storage Scheme

1.2.1 The Loch Kemp Storage Scheme, as shown in **Appendix B.1, Figure 1**, comprises the construction and operation of a pumped storage hydro scheme with an installed capacity of up to 600 MW, 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 from its existing 177 m AOD elevation to approximately 205 m AOD. Four new saddle dams between 16 and 34 m high and four minor cut off dams would be constructed around Loch Kemp to form the upper reservoir.

1.2.2 A new powerhouse would be constructed on the shore of Loch Ness, including an integral tailrace arrangement with fish screens connecting the system to Loch Ness. The scheme would utilise an underground tunnelled waterway system to link between the intake on Loch Kemp and the powerhouse at Loch Ness, with the potential inclusion of two surge shafts (with associated access) on the hilltop between Loch Kemp and Loch Ness.

1.3 Ness Woods SAC

1.3.1 Ness Woods SAC is composed of three areas of woodland running alongside and to the south of Loch Ness. It contains a mixture of woodland habitats and these, together with several watercourses that run through the site, provide suitable habitat for otters. This complex of sites includes one of the

¹ Royal Haskoning DHV (2023) Loch Kemp Storage: Derogation Report. V9. Document No.: 120012-R-DR

² SLR Consulting (2025) Technical Report to Inform Updated Ness Woods SAC Compensation Package. 424.065342.00001

best and most extensive examples of a ravine woodland in Scotland at Glen Tarff; further examples occur along the north-facing shores of Loch Ness. The canopy is a mixture of alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*) and wych elm (*Ulmus glabra*) with a locally abundant hazel (*Corylus avellana*) shrub layer. The ground flora is rich in ferns, mosses and herbaceous plants, and the woods have a luxuriant epiphytic flora of lichens, liverworts and mosses with Atlantic affinities.

- 1.3.2 The site supports 25 ha of mixed woodland on base rich soils associated with rocky slopes; and 538 ha of western acidic oak woodland. Both qualifying woodland features are in an unfavourable condition (no change) (last updated in 2008). Otter (*Lutra lutra*) is in an unfavourable condition (declining) (last updated in 2011), although the Conservation Advice Package identifies that the level of confidence in the otter survey results are low due to difficult survey conditions and no access to one of the areas where otter signs were previously found. The Conservation Advice Package states that management of 'Tilio-Acerion forests of slopes, screes and ravines' should have priority over the other features of the site given its status as a Habitats Directive priority habitat.

1.4 Mixed Woodland on Base-Rich Soils

- 1.4.1 Mixed woodland on base-rich soils associated with rocky slopes is a type of woodland habitat known as *Tilio-Acerion* forests of slopes, screes and ravines. It is usually found in steep-sided river valleys and nutrient-rich soils that often accumulate in the shady micro-climates towards the bases of slopes and ravines, often where inaccessibility has reduced human impact. Such forests are not extensive but occur in fragmented stands that grade into other woodland types. The habitat type is ecologically variable, particularly with respect to the dominant tree species. To the north and west, ash and wych elm assume increasing importance in the canopy and lime may be completely absent. The main NVC type characteristic of this habitat in Scotland is W9 *Fraxinus excelsior* – *Sorbus aucuparia* – *Mercurialis perennis* woodland. In upland areas of norther Scotland, base-rich conditions tend to become more restricted in extent, birch and oak assume greater abundance in the canopy and species more typical of more acidic communities are often found alongside more basiphilous indicator species.
- 1.4.2 This habitat is an Annex I habitat, listed on the EC Habitats Directive, as translated into British and Scottish law by The Conservation (Natural Habitats, &c.) Regulations 1994 and subsequent legislation, a UK Biodiversity Action Plan (UKBAP) priority habitat and is included on the Scottish Biodiversity List (SBL) as a priority habitat for conservation.

1.5 Scope of this Report

- 1.5.1 This report aims to identify areas of existing suitable habitat considered to be of 'mixed woodland on base-rich soils' to aid determination of areas for potential future compensation and restoration. Consideration has also been given to areas which may be potentially suitable for creation of this habitat, either within or adjacent to the Ness Woods SAC. Areas of existing mixed woodland on base-rich soils and potential areas for enhancement were mapped with habitat descriptions of each area provided alongside target note photographs.

2. Methodology

2.1 Review of Existing and Available Data

- 2.1.1 SLR Consulting Ltd (SLR) undertook a desk-based habitat search (see Appendix A) which comprised a review of existing habitat survey data, topography, soil mapping, geological mapping and aerial imagery to identify Prospective Search Areas within and adjacent to the Ness Woods SAC. These areas, alongside surveyors' knowledge of habitats adjacent to Dell Estate, were used to identify the locations to survey for priority woodland habitat.

2.2 NVC Survey

- 2.2.1 Prospective Search Areas out with Dell Estate that have been considered within the Desk Study, as displayed on **Figures 2 and 3, Appendix B.1** are:
- Knockie: part of Easter Ness Woodland SSSI (Site of Special Scientific Interest) and Ness Woods SAC - located to the southwest of the Proposed Development;
 - Inverfarigaig: part of Inverfarigaig SSSI and Ness Woods SAC - located northeast of the Proposed Development; and
 - Camas: immediately northeast of Dell Estate and adjacent to the Easter Ness Forest Site of SSSI and Ness Woods SAC boundary.
- 2.2.2 All three locations are located on Forestry and Land Scotland (FLS) ground. Orrin Ecology were commissioned to carry out survey to identify existing priority woodland habitat, as described in Section 1.4 above, in these three locations on 30 October 01, 07 and 11 November 2024 on behalf of ASH Design and Assessment Ltd (ASH), the Applicant's appointed environmental consultant. Surveys were undertaken by Helen Chance MCIEEM and Gareth Marshall.

2.3 Survey Limitations

- 2.3.1 The following survey limitations were encountered during the course of field survey work for habitats:
- Surveys were undertaken in October and November, out with the suitable survey season for woodland habitat types. The requirement for survey was driven by the need to gather additional survey data to inform compensatory measures and built on the existing NVC survey data gathered in summer 2021. Flowering species were not all evident at the time of survey and broadleaved trees were not all in leaf, but with the existing knowledge of the typical composition of areas of priority woodland habitats within the Ness Woods SAC in Dell Estate, it was still possible to identify the key species for habitat communities and qualifying SAC habitats;
 - Common and indicator species were noted where encountered but this survey does not constitute a lichen and bryophyte survey; and
 - In areas of broadleaved woodland above Loch Ness, small areas of precipitous cliffs and ledges prevented access to all areas. Where these constraints occurred, areas were viewed

from vantage points from either below or above. This was sufficient to attribute habitat communities, but may have led to some indicator plant species being missed in localised areas.

3. Survey Results

3.1 Habitat Descriptions

- 3.1.1 Areas of priority mixed woodland habitat within the Prospective Search Areas, as described in Section 1.4 above were recorded during the survey. Descriptions for each of the Prospective Search Areas are provided below.

Knockie

- 3.1.2 Seven compartments comprising 16.50 ha within Knockie were identified in the desk-study and surveyed for priority habitats. These were on north facing slopes on the southern side of Loch Ness, located between 50 m and 275 m above ordnance datum (AOD).
- 3.1.3 The seven compartments vary considerably in woodland age and composition to the woodland habitats found within the SAC on Dell Estate. Similarities shared include extensive areas of bracken in more open areas of the woodland, with dry heath found further upslope. The woodland is of a young age structure, with stands of pioneer birch over areas where conifer clearfell has previously taken place. There are limited veteran trees within the woodland, compared to the areas of hazel and scattered oak within the SAC within Dell Estate. Herbivore management appears to be undertaken more frequently within Knockie compared to Dell Estate and although feral goat and deer are present, tree saplings are present and not heavily damaged by browsing. Scattered non-native conifer regen is common to frequent within several of the compartments.
- 3.1.4 Existing areas of priority woodland mixed woodland on base-rich soils were limited to approximately 0.3 ha along steep sided banks of watercourses.

Inverfarigaig

- 3.1.5 Eight compartments comprising 7.58 ha within Inverfarigaig were identified in the desk-study and surveyed for priority habitats. These compartments were largely on north or northeast facing slopes were on steep ground, ranging between located between 60 m and 230 m AOD.
- 3.1.6 The Eight compartments varied significantly in tree nativeness and species composition to the woodland habitats found within the SAC on Dell Estate. The compartments were largely non-native conifers, with smaller areas of broadleaved tree regen (mostly birch and rowan) where the crop had previously been clearfelled. Two small areas of planted broadleaved trees were also found within two of the compartments. Herbivore management would appear to be undertaken more frequently here compared to the Ness Woods SAC within Dell Estate, although trampling effects on underlying habitats can be seen along frequented areas (e.g. fencelines).
- 3.1.7 An area of approximately 0.2 ha of existing mixed woodland in base rich soils has been identified in the selected compartments.

Camas

- 3.1.8 Northeast of the Dell Estate boundary is an area of non-native conifer plantation, with areas of broadleaved woodland. This area was not initially included within the scope of the desk-based study undertaken by SLR due to uncertainty over whether this site could be accessed agreement based on previous discussions with the landowner (Forestry and Land Scotland (FLS)). However, following

more recent discussions between the Applicant, FLS and Dell Estate, it is now considered feasible to access the Camas site. Based on habitat survey and tree tagging data previously undertaken adjacent to the Dell Estate / FLS boundary, further discussion was held with the landowner to allow survey and potential identification of suitable areas for enhancement and compensation.

- 3.1.9 Areas of broadleaved woodland had regular birch within them, with varying amounts of hazel, ash, aspen, rowan and occasional alder. The ground slopes off more steeply to the shore of Loch Ness. The topography and species composition of the areas of broadleaved woodland in the Camas compartment are broadly similar in structure to the Ness Woods SAC on Dell Estate, however the hazel is younger and the number of veteran trees are limited to scattered oak. Similar to the areas of *Tilio-Acerion* forests of slopes, screes and ravines habitat recorded in Dell Estate, this habitat is found in a fine scale mosaic with the priority habitat Old sessile oak woodland.
- 3.1.10 An area of approximately 2.31 ha of existing mixed woodland in base rich soils has been identified within the Camas compartment, this consists of two areas of mixed woodland accounting for 1.08 ha, plus 1.30 ha from an area of 6.52 ha mosaic of Old sessile oak woodland and Mixed woodland.

3.2 Summary of Potential Enhancement Opportunities

- 3.2.1 To promote the creation of further areas and enhancement of existing stands of mixed woodland priority habitat, the following potential measures have been considered:
- Habitat restoration or improvement through managing grazing;
 - Habitat restoration or improvement through the removal of bracken; and
 - Habitat creation through reintroduction of mixed woodland species into existing conifer plantations

This is considered for each area in Table 1 below.

Table 1: Habitat Enhancement Opportunities

Compartment	Measure	Comment
Knockie	Habitat restoration or improvement through managing grazing	FLS currently undertake herbivore control within the location. Herbivore impacts appear low to moderate. Several areas of saplings and young trees present. It is considered unlikely that additional herbivore control will create additional enhancement opportunities.
	Habitat restoration or improvement through the removal of bracken	Bracken present within the location, but does not represent a large component of the ground flora in areas of existing mixed woodland on base-rich soils. It is considered unlikely that bracken control will create additional enhancement opportunities.
	Creation of mixed woodland priority habitat in areas of existing conifer plantations	Not applicable at this location as conifer plantation has previously been clearfelled and birch has largely become dominant in these areas.
Inverfarigaig	Habitat restoration or improvement through managing grazing	FLS currently undertake herbivore control within the location. Herbivore impacts appear low to moderate. Several areas of saplings and young trees present. It is considered unlikely that additional herbivore control will create additional enhancement opportunities.
	Habitat restoration or improvement through the removal of bracken	Bracken present within the location, but does not represent a large component of the ground flora in areas of existing mixed woodland on base-rich soils. It is considered unlikely that bracken control will create additional enhancement opportunities.
	Creation of mixed woodland priority habitat in areas of	Non-native conifer plantations are present within the identified compartments and could be clearfelled

	existing conifer plantations	and planted to create broadleaved woodland habitats. The area of existing priority mixed woodland habitat is limited in extent and it is considered that this restriction is caused by limited suitable ground conditions in the compartments identified. It is considered more likely that clearfelling of existing conifer plantations and planting of selected broadleaved trees would more likely create other woodland habitat types rather than mixed woodland on base-rich soils.
Camas	Habitat restoration or improvement through managing grazing	FLS undertake occasional herbivore control in this area. Browsing pressure is similar to the adjacent ground at Dell Estate and considered moderate to high with extensive tracks throughout the woodland, running between Dell Estate and Cammas. Similar to Dell Estate there are no saplings present in the understorey of the woodland apart from occasional encroachment from natural regen of non-native conifer trees. Improving herbivore control at this location could lead to enhancement of existing stands of mixed woodland on base-rich soils.
	Habitat restoration or improvement through the removal of bracken	Bracken is found in varying abundance throughout the areas of broadleaved woodland, but is largely absent from the non-native conifer plantation. It is more common in areas where mixed woodland forms a mosaic with old sessile oak woodland. Control of bracken could potentially improve the quality of existing habitat. Consideration would be required to the feasibility of undertaking bracken control on such steep slopes.
	Creation of mixed woodland priority habitat in areas of existing conifer plantations	Adjacent to the areas of broadleaved woodland where existing areas of priority woodland are found, non-native conifer plantation could be clearfelled and replanted with species such as hazel and birch. Due to the presence of signs

		<p>of ash dieback within certain areas of Ness Woods SAC, ash tree planting is not recommended, with emphasis being on the management of herbivore browsing leading to natural regeneration after felling.</p> <p>Although out with the Ness Woods SAC boundary, the area of non-native conifers in Camas is included in the ancient woodland inventory (AWI) as Category 1a with smaller areas of Category 3. It is identified in the Native Woodland Survey of Scotland (NWSS) as a Plantation on Ancient Woodland Site (PAWS). Removal of non-native conifers and restoration of PAWS sites can help meet the goals of the Scottish Biodiversity Strategy.</p>
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4. Conclusions and Recommendations

4.1 Summary

4.1.1 Areas of existing priority woodland habitat ‘mixed woodland on base-rich soils’, as described in Section 1.4 above were recorded within the three Prospective Search Areas identified in Section 2.2 above. Of the three locations surveyed, the largest extent of existing priority habitat was found at the Camas location, immediately northeast of Dell Estate. An area of approximately 2.31 ha of existing mixed woodland in base rich soils has been identified within the Camas compartment, this consists of two areas of mixed woodland accounting for 1.01ha, plus 1.30 ha from an area of 6.52 ha mosaic of old sessile oak woodland and mixed woodland.

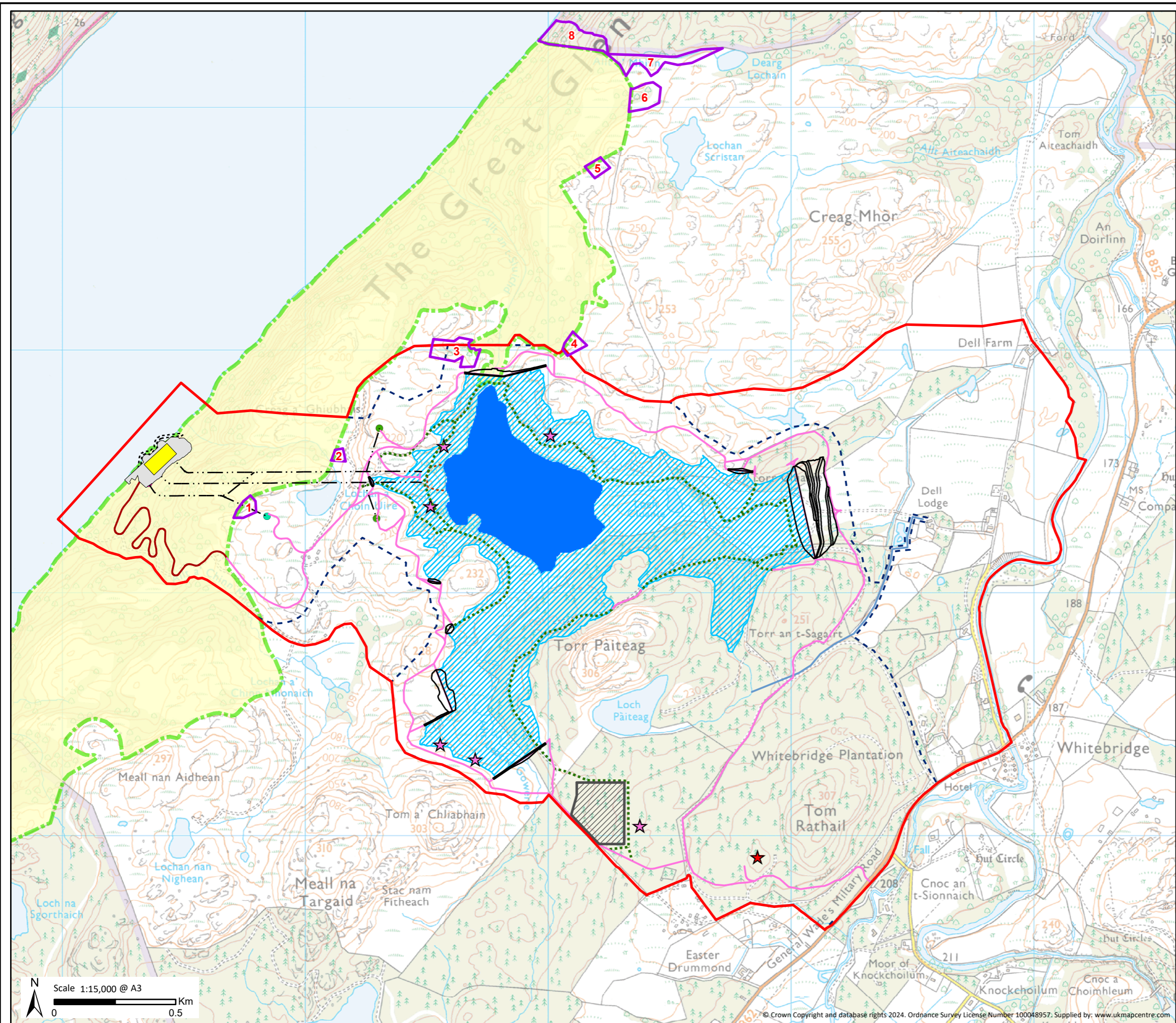
4.1.2 In addition, the Camas location provides potential opportunity for felling of 22.55 ha of non-native conifers to create additional priority woodland habitat, as displayed in **Figure 4: Cammas – Potential Compensation Measures**. A combination of clearfelling, herbivore control, planting with broadleaved tree species and non-native conifer regen control could encourage natural regeneration of mixed woodland priority habitat. Habitat restoration over the 22.55 ha felled area, could result in the creation of approximately 3.38 ha of mixed woodland habitat – 15 % of the felled area. The 15 % considered a likely mosaic between mixed woodland and old sessile oak woodland priority habitat, with mixed woodland likely to be less prevalent in the eastern section of the compartment, further upslope away from Loch Ness. Subject to the same measures of herbivore control, planting with appropriate broadleaved tree species and non-native conifer regen control, it is expected that habitat creation of old sessile oak woods would occur in the remaining 85% of the felled area, totalling 19.17 ha,

4.2 Recommendations

4.2.1 If the options for enhancing the existing 2.31 ha of mixed woodland and felling of non-native conifers to create 3.38 ha of priority habitat in Camas are to be taken forward, the following is recommended:

- Ongoing engagement with landowners FLS to ensure the area to be enhanced is secured via lease for a significant period of time to allow the creation of woodland habitat types;
- Soil sampling should be undertaken to confirm that the underlying soil types are suitable for restoration to mixed woodland on base-rich soils priority habitat; and
- A monitoring programme should be established in line with the monitoring proposed for the wider site compensation measures to review if the measures are being successful in delivering the required habitat enhancement and should be regularly reviewed to allow opportunities for further measures, if required, to be acted upon to ensure the successful delivery of priority woodland habitat establishment.

Appendix B.1: Figures



Key

- Site Boundary
- Ness Woods SAC / Easter Ness Forest SSSI
- Woodland for Possible Incorporation into the SAC
- Development Area
- Loch Kemp Surface Area (Existing)
- Maximum Inundation Area (Upper Reservoir)
- Powerhouse Building
- Powerhouse Platform, Quayside and Pier
- Revised Main Welfare Compound
- Underground Tunnel
- Dam
- Temporary Cofferdam
- Construction and Operational Access Track (8m Wide Running Surface, Reinstated to 4m where feasible)
- Construction and Operational Access Track within SAC
- Temporary Construction Access Track (8m Wide Running Surface)
- New Estate Water Supply
- Inlet/Outlet Excavation
- Surge Shaft
- Cable Shaft
- Access Tunnel Adit
- ★ Proposed Borrow Pit
- ★ Potential Borrow Pit

Loch Kemp Pumped Storage Scheme

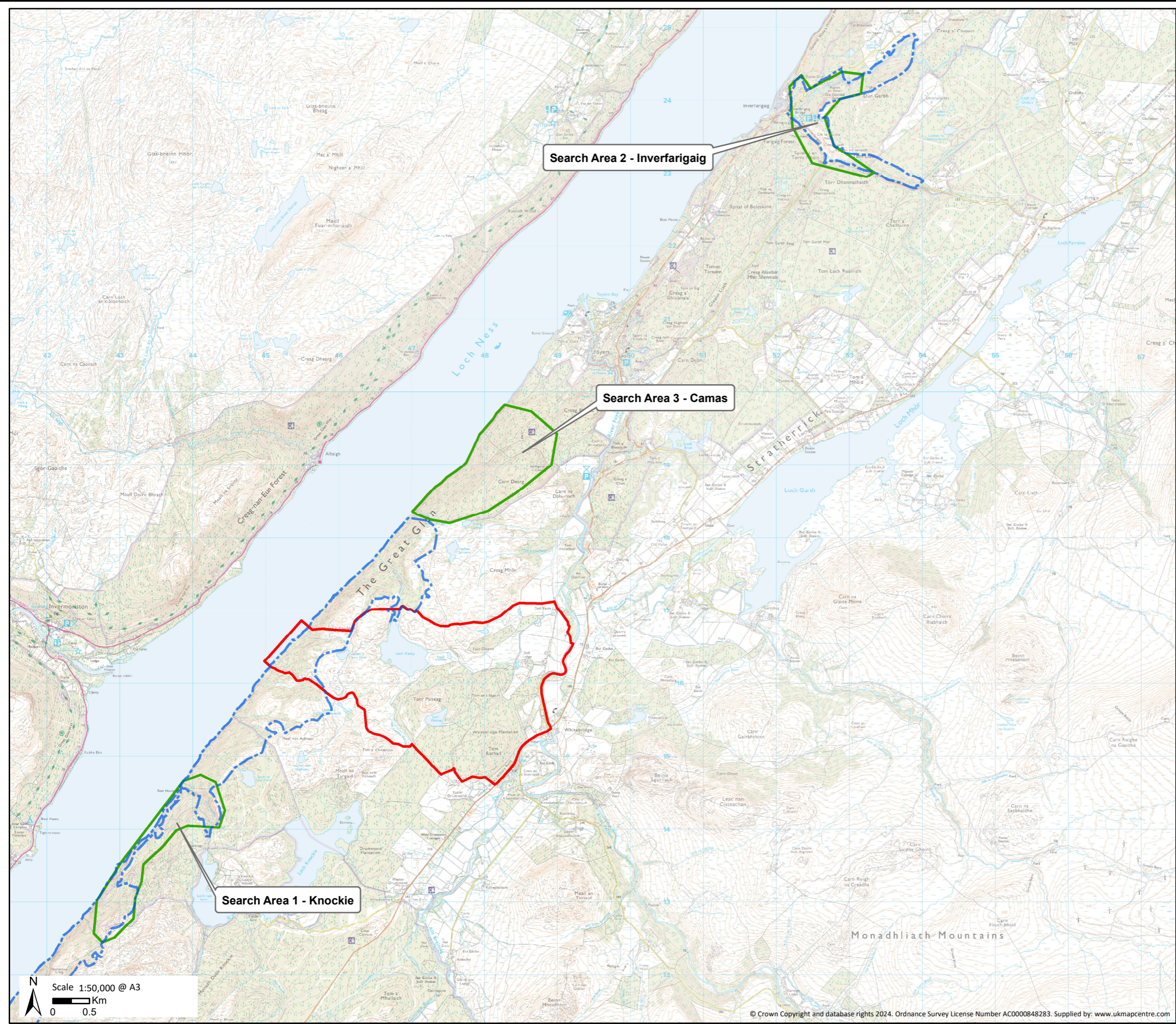
Figure 1 Site Location

Drawn by: HC Date: 16/09/2024
 Drawing: LKS_D_05_001A



Scale 1:15,000 @ A3
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- Key**
- Site Boundary
 - Search areas for candidate mixed woodland on base rich soils SAC qualifying habitat
 - Ness Woods SAC / Easter Ness Forest SSSI

Search Area 2 - Inverfargaig

Search Area 3 - Camas

Search Area 1 - Knockie

Scale 1:50,000 @ A3
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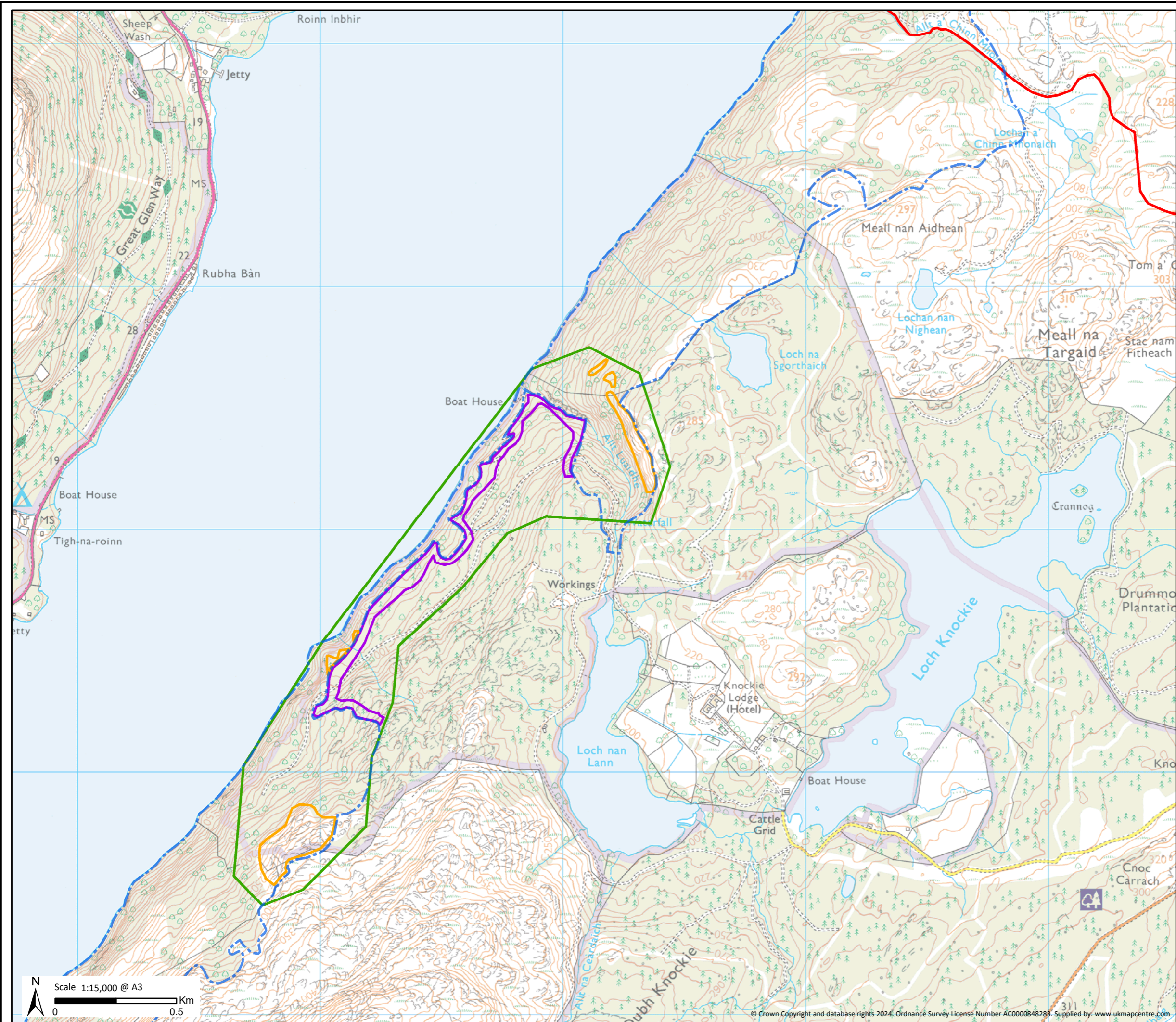
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Loch Kemp Pumped Storage Scheme

**Figure 2
 Overview of Search Areas
 for Priority Mixed Woodland**

Drawn by: HC Date: 20/01/2025
 Drawing: LKS_D_1055_02





- Key**
- Site Boundary
 - Search areas for candidate mixed woodland on base rich soils SAC qualifying habitat
 - Ness Woods SAC / Easter Ness Forest SSSI
- Prospective Base Rich Mixed Woodland Compartments**
- Outwith Ness Woods SAC
 - Within Ness Woods SAC

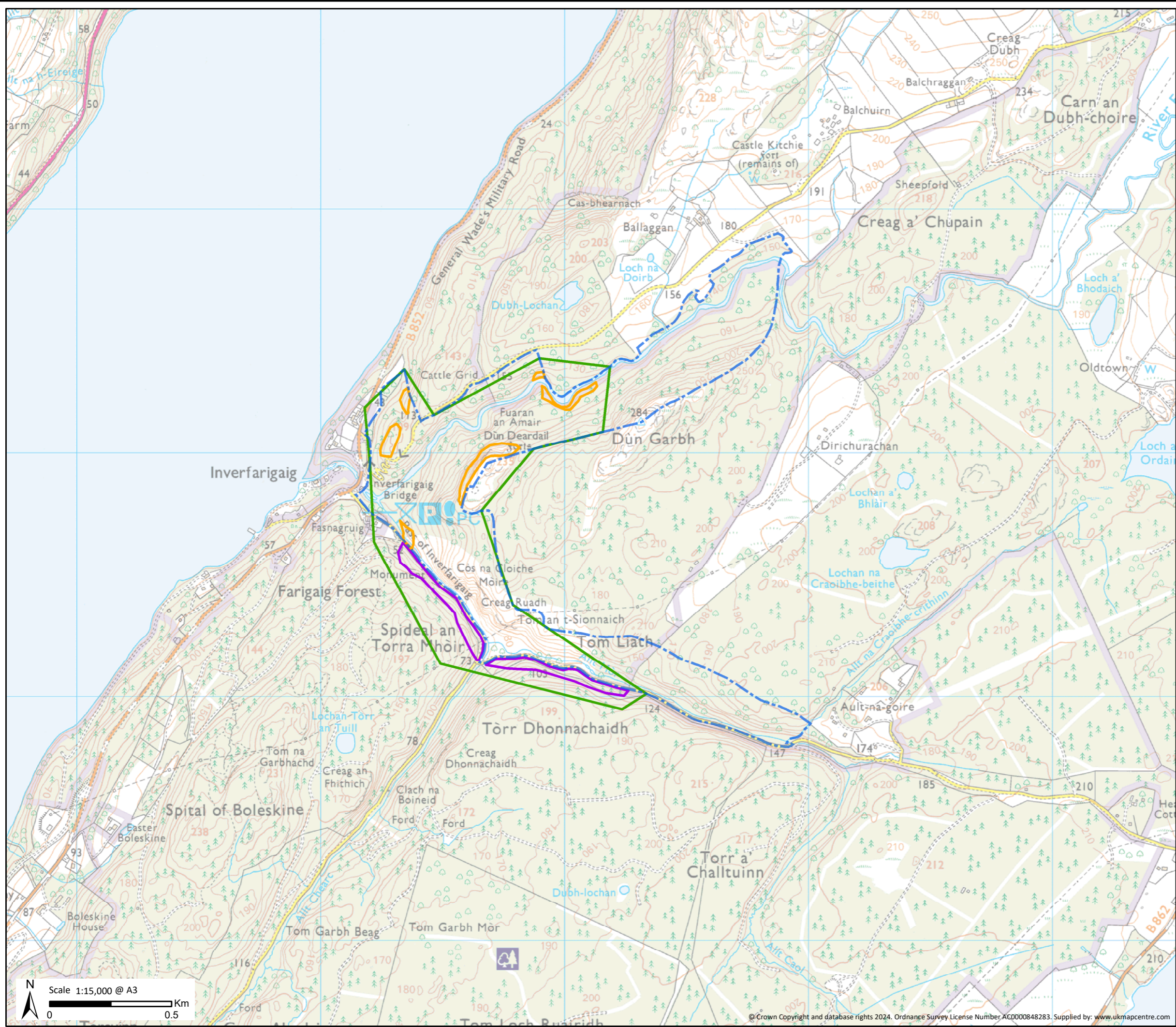
**Loch Kemp
Pumped Storage Scheme**

**Figure 3a
Knockie - Prospective Base-Rich
Mixed Woodland Compartments**

Drawn by: HC Date: 20/01/2025
Drawing: LKS_D_1055_031

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- Key**
- Search areas for candidate mixed woodland on base rich soils SAC qualifying habitat
 - Ness Woods SAC / Easter Ness Forest SSSI
- Prospective Base Rich Mixed Woodland Compartments**
- Outwith Ness Woods SAC
 - Within Ness Woods SAC

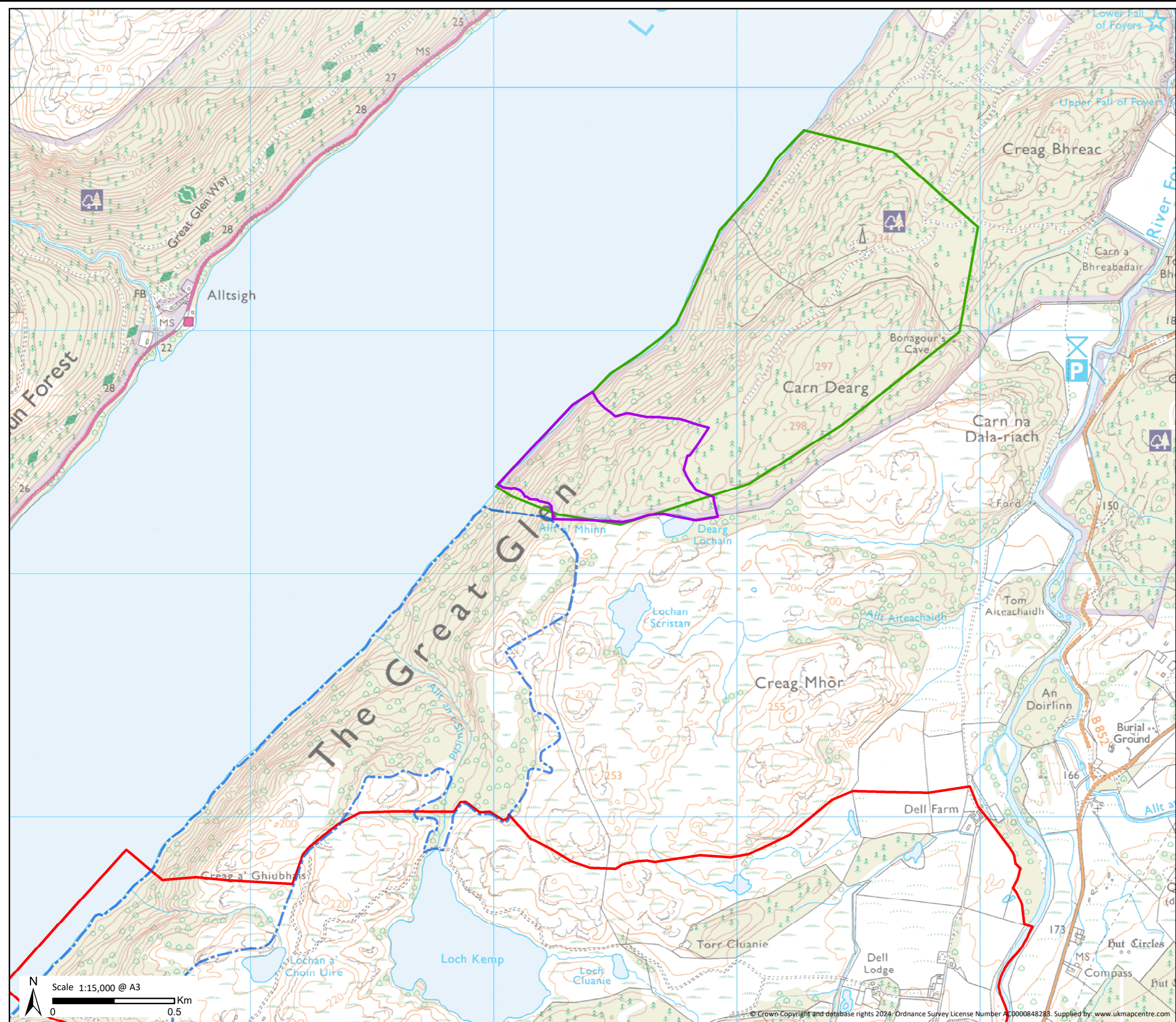
Loch Kemp Pumped Storage Scheme

**Figure 3b
Inverfarigaig - Prospective Base-Rich Mixed Woodland Compartments**

Drawn by: HC Date: 20/01/2025
Drawing: LKS_D_1055_032



Scale 1:15,000 @ A3
0 0.5 Km



- Key**
- Site Boundary
 - Search areas for candidate mixed woodland on base rich soils SAC qualifying habitat
 - Ness Woods SAC / Easter Ness Forest SSSI
- Prospective Base Rich Mixed Woodland Compartments**
- Outwith Ness Woods SAC

Loch Kemp
Pumped Storage Scheme

Figure 3c
Camas - Prospective Base-Rich
Mixed Woodland Compartments

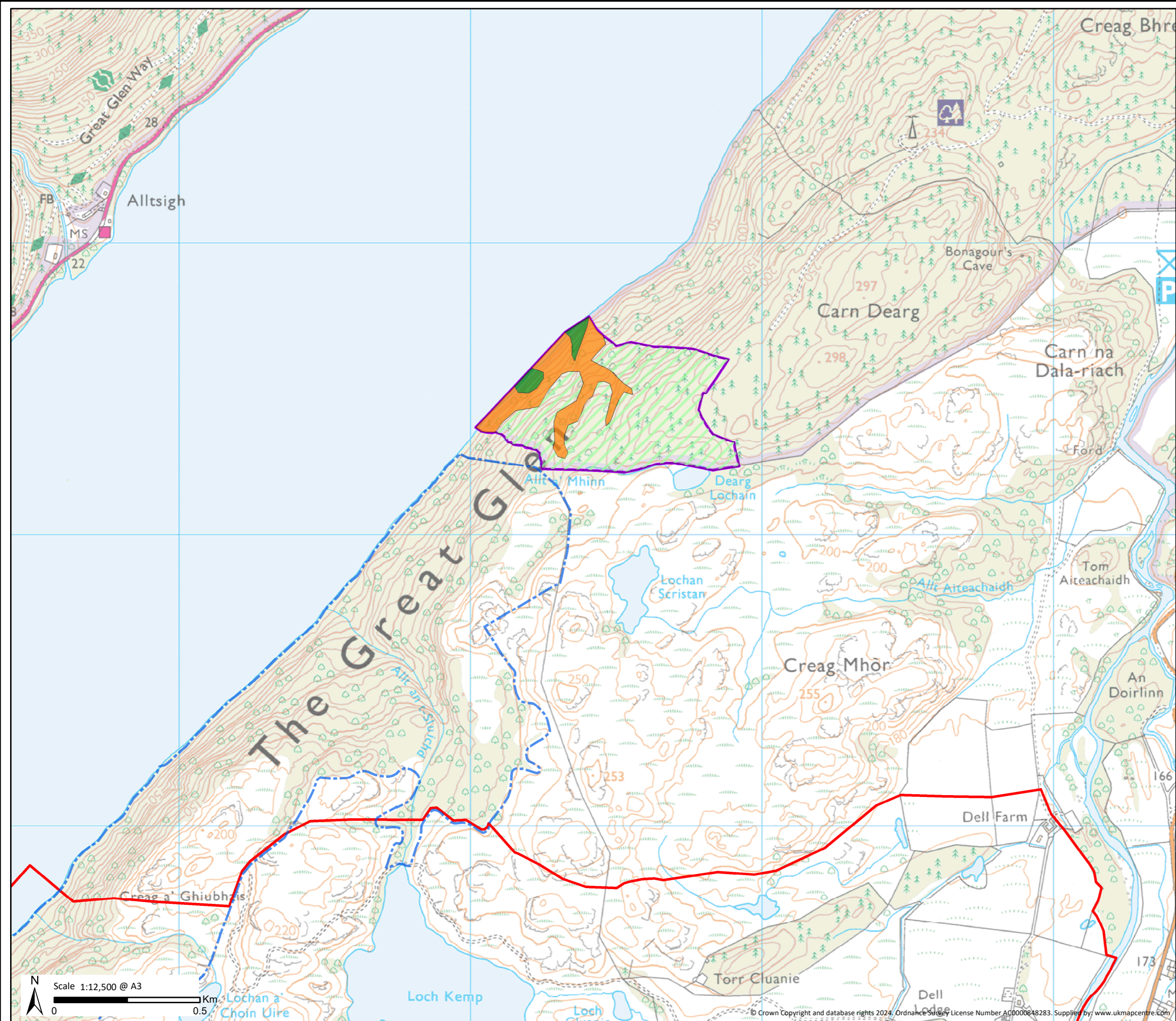
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Drawing: LKS_D_1055_03





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0 0.5 Km






Key

-  Site Boundary
-  Ness Woods SAC / Easter Ness Forest SSSI

Prospective Base Rich Mixed Woodland Compartments

-  Outwith Ness Woods SAC

Habitat

-  Mixed woodland / Tilio-Acerion Forests of Slopes, Scree and Ravines
-  Habitat Mosaic: 80 % Old Sessile Oak Woods : 20 % Mixed woodland / Tilio-Acerion
-  Non-native conifer plantation

Loch Kemp Pumped Storage Scheme

Figure 4 Camas - Priority Woodland Habitats

Drawn by: HC Date: 20/01/2025
 Drawing: LKS_D_1055_04



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Appendix C Baseline Soil Sampling Report

**Technical Report to Inform Updated Ness Woods SAC
Compensation Package**

Loch Kemp Storage Scheme

ASH Design + Assessment

SLR Project No.: 424.065342.00001

5 February 2025



Baseline Soil Sampling

Loch Kemp Habitat Search Areas

ASH Design + Assessment

Prepared by:

SLR Consulting Limited

No. 50 Stirling Business Centre, Wellgreen, Stirling,
FK8 2DZ

SLR Project No.: 428.04707.00032

15 January 2025

Revision: Draft

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
Draft	15 January 2025	C Rodgers	A Huntridge	A Huntridge
	Click to enter a date.			

Basis of Report

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Appendices

Appendix A	Drawing 01
Appendix B	Hand Auger Logs
Appendix C	Photographs
Appendix D	Laboratory Chemical Analysis



1.0 Introduction

1.1 Appointment

SLR Consulting Ltd (SLR) was appointed by ASH Design + Assessment in November 2024 to provide Baseline Soil Composition data within the area at and adjacent to the proposed Loch Kemp Pumped Storage Hydro Scheme (“The Proposed Development”). The Proposed Development is located within the Dell Estate, approximately northeast of Fort Augustus, Highlands, Scotland.

This report documents a factual summary of the soil data from soil sampling works completed at pre-selected locations within the area of the Proposed Development.

This report has been prepared by the Land Quality Group based at the Stirling Office of SLR, No. 50 Stirling Business Centre, Wellgreen, Stirling, FK8 2DZ.

1.2 Context

The soil sampling has been undertaken to confirm soil conditions in support of determining potential habitat restoration areas within the area of the Proposed Development.

1.3 Scope of Works

The works undertaken by SLR, are summarised below:

- Health and safety planning and project management;
- Excavation of hand auger pits from surface to 0.10 — 0.20 metres below ground level (m bgl) at 18 locations;
- Logging of soils to BS 5930:2015+A1:2020¹;
- Recording of each location on a GPS device;
- Taking photographs at each location;
- Provision of a factual report detailing the soil sampling works and chemical analysis results.

¹ BS 5930:2015+A1:2020, Code of practice for ground investigations, 31 May 2020.



2.0 Site Details

Site Details			
Site Name	Proposed Loch Kemp Pumped Storage Scheme		
Address	Loch Kemp, Fort Augustus, Highlands, Scotland.		
Post Code	IV2 6UN	Nat. Grid Ref. Centre of Site	NH 46885 16408
Site Use	Natural woodland on the lower slopes of Loch Ness, commercial forestry on higher elevations and areas of moorland offsite.		



3.0 Field Investigation Works

3.1 General

SLR conducted sampling on the 31/10/2024 (HA01 – HA06) and on the 02/12/2024 – 04/12/2024 (HA07 – HA18). The scope of work included the following:

- Excavation of hand auger pits to a maximum of 0.20 metres below ground level (m bgl) at 18 locations (HA01-HA18);
- Sampling and logging the soil strata in general accordance with BS5930:2015+A1:2020¹.

The soil sampling locations are shown on Drawing 01 taken from Figures 3 and 4² within Appendix A.

3.2 Exploratory Location

Hand augers were excavated to a maximum depth of 0.20 m bgl.

Soil sampling locations were recorded using a Trimble TDC600 Real-time SBAS³, with the locations provided in Table 3-1 below. The hand auger logs are provided in Appendix B and photographs of the sampling works are provided within Appendix C.

All site work was conducted in accordance with the SLR Consulting Ltd Standard Operating Procedures (SOP).

Table 3-1 Soil Sampling Locations

Hand Auger ID	Easting	Northing	Location	Detail
HA01	247051	818266	Dell	Compartment 8.
HA02	246960	818244	Dell	SAC Qualifying Habitat – Tillo Acerion forests of slopes, screes and ravines.
HA03	246835	817678	Dell	Bracken Stand.
HA04	246990	817742	Dell	Bracken Stand.
HA05	247058	817925	Dell	Bracken Stand.
HA06	247305	818163	Dell	Compartment 7.
HA07	252364	823692	Inverfarigaig	Adjacent to SAC - Tillo- acerion forests of slopes, screes and ravines.
HA08	252399	823659	Inverfarigaig	Adjacent to SAC - Tillo- acerion forests of slopes, screes and ravines.
HA09	243166	813595	Knockie	Area of young regenerating birch over scree.

² Loch Kemp Pump Storage Scheme. Figures 2,3, 3a, 3b & 4. SAC Qualifying Habitats.

³ Trimble TDC600 Real-time SBAS4SBAS4: 1.5 m typical, SBAS (Satellite Based Augmentation System). Typical accuracy on site (from experience) is 0.7-0.8m in none forested areas.



Hand Auger ID	Easting	Northing	Location	Detail
HA10	243128	813522	Knockie	SAC Qualifying Habitat – Tilio Acerion forests of slopes, screes and ravines.
HA11	243061	813475	Knockie	SAC Qualifying Habitat – Tilio Acerion forests of slopes, screes and ravines.
HA12	243109	813421	Knockie	Area of young regenerating birch over scree.
HA13	247541	818683	Foyers South	Area of non-native conifer woodland on steep slopes.
HA14	247500	818520	Foyers South	Bracken stand adjacent to SAC Habitat mosaic 80% Old Sessile Oak Woods 20% Mixed Woodland/ Tilio Acerion Forest of slopes, screes and ravines.
HA15	245773	816815	Dell	Bracken stand adjacent to SAC Habitat mosaic 80% Old Sessile Oak Woods 20% Mixed Woodland/ Tilio Acerion Forest of slopes , screes and ravines.
HA16	245159	815969	Dell	Bracken stand adjacent to SAC Habitat mosaic 80% Old Sessile Oak Woods 20% Mixed Woodland/ Tilio Acerion Forest of slopes , screes and ravines.
HA17	244731	815694	Dell	Bracken stand adjacent to SAC - Tilio-Acerion forests of slopes, screes and ravines.
HA18	244814	815598	Dell	Bracken stand adjacent to SAC Habitat mosaic 80% Old Sessile Oak Woods 20% Mixed Woodland/ Tilio Acerion Forest of slopes, screes and ravines.

3.3 Recorded Ground Conditions

The hand augers were logged in accordance with BS5930:2015+A1:2020¹ with the encountered ground conditions at each sampling location provided within the hand auger logs in Appendix B.

The sampling locations were located on steeply sloped hillsides with surrounding native forestry formed of shallow mineral soils. The strata encountered at each sampling location generally comprising a brown to dark brown gravelly sand with frequent rootlets.

No evidence of anthropogenic materials was recorded at any of the sampling locations.

3.4 Soil Sampling

In order to determine the soil chemistry within the near surface strata at each sampling location, 18 soil samples were collected for chemical analysis testing using a hand auger. The 18 soil samples were scheduled for the following chemical analysis:

- pH



- Phosphorus
- Potassium
- Magnesium
- Nitrogen
- Calcium (HA07 – HA18)
- Sodium (HA07 – HA18)

All soil samples were stored in cool boxes and transported by courier under chain of custody to 'NRM Laboratories'.

The soil chemical analysis are provided within Appendix D.



4.0 Chemical Analysis Results

18 soils samples were tested for a range of determinants. The results of the chemical analysis are summarised below and provided in full within Appendix D.

4.1 Summary

A summary of the detections at each location is provided below. All chemical analysis units are given in mg/L.

- HA01 recorded the following above the method of detection limit:
 - pH 4.9
 - Phosphorus 3.0
 - Potassium 125.0
 - Magnesium 83.6
 - Nitrogen 0.381

- HA02 recorded the following above the method of detection limit:
 - pH 5.1
 - Phosphorus 3.8
 - Potassium 60.5
 - Magnesium 141.0
 - Nitrogen 0.301

- HA03 recorded the following above the method of detection limit:
 - pH 4.6
 - Phosphorus 3.8
 - Potassium 140.0
 - Magnesium 152.0
 - Nitrogen 0.598

- HA04 recorded the following above the method of detection limit:
 - pH 5.1
 - Phosphorus 3.2
 - Potassium 78.9
 - Magnesium 53.9
 - Nitrogen 0.773

- HA05 recorded the following above the method of detection limit:
 - pH 5.0



- Phosphorus 4.4
- Potassium 89.4
- Magnesium 82.2
- Nitrogen 0.376

- HA06 recorded the following above the method of detection limit:
 - pH 5.3
 - Phosphorus 4.4
 - Potassium 110.0
 - Magnesium 99.6
 - Nitrogen 0.564

- HA07 recorded the following above the method of detection limit:
 - pH 5.9
 - Phosphorus 2.6
 - Potassium 78.9
 - Magnesium 77.8
 - Sodium 17.1
 - Calcium 437
 - Nitrogen 0.137

- HA08 recorded the following above the method of detection limit:
 - pH 5.7
 - Phosphorus 2.8
 - Potassium 46.8
 - Magnesium 72.8
 - Sodium 12.4
 - Calcium 459
 - Nitrogen 0.163

- HA09 recorded the following above the method of detection limit:
 - pH 4.7
 - Phosphorus 3.2
 - Potassium 21.0
 - Magnesium 33.3
 - Sodium 15.4



- Calcium 63
- Nitrogen 0.428

- HA10 recorded the following above the method of detection limit:
 - pH 5.3
 - Phosphorus <2.5
 - Potassium 26.2
 - Magnesium 12.6
 - Sodium 19.4
 - Calcium <50
 - Nitrogen 0.263

- HA11 recorded the following above the method of detection limit:
 - pH 5.2
 - Phosphorus 4.0
 - Potassium 79.3
 - Magnesium 42.8
 - Sodium 12.6
 - Calcium 84
 - Nitrogen 0.505

- HA12 recorded the following above the method of detection limit:
 - pH 4.5
 - Phosphorus 24.0
 - Potassium 116.0
 - Magnesium 31.0
 - Sodium 5.9
 - Calcium 65
 - Nitrogen 0.415

- HA13 recorded the following above the method of detection limit:
 - pH 6.2
 - Phosphorus <2.5
 - Potassium 44.3
 - Magnesium 163
 - Sodium 48.4



- Calcium 1051
- Nitrogen 0.847

- HA14 recorded the following above the method of detection limit:
 - pH 4.4
 - Phosphorus 2.6
 - Potassium 47.6
 - Magnesium 48.3
 - Sodium 28.5
 - Calcium <50
 - Nitrogen 0.796

- HA15 recorded the following above the method of detection limit:
 - pH 5.2
 - Phosphorus 2.8
 - Potassium 66.4
 - Magnesium 27.8
 - Sodium 15.3
 - Calcium <50
 - Nitrogen 0.528

- HA16 recorded the following above the method of detection limit:
 - pH 6.3
 - Phosphorus <2.5
 - Potassium 69.3
 - Magnesium 131.0
 - Sodium 36.7
 - Calcium 1424
 - Nitrogen 1.29

- HA17 recorded the following above the method of detection limit:
 - pH 5.7
 - Phosphorus 5.4
 - Potassium 101
 - Magnesium 158
 - Sodium 31.7



- Calcium 591
- Nitrogen 0.715

- HA18 recorded the following above the method of detection limit:
 - pH 5.4
 - Phosphorus <2.5
 - Potassium 60.9
 - Magnesium 50.0
 - Sodium 20.9
 - Calcium 132
 - Nitrogen 0.566

4.2 Particle Size Distribution Results

Six soils samples were tested for PSD, the resulting classifications are summarised below and provided in full within Appendix D.

Table 4-1 Soil Sampling PSD Results

Hand Auger ID	Sand, Silt, Clay %	Textural Class
HA01	49, 30, 21	Clay Loam
HA02	62, 18, 20	Sandy Clay Loam
HA03	47, 27, 26	Clay Loam
HA04	29, 28, 43	Clay
HA05	45, 33, 22	Clay Loam
HA06	42, 32, 26	Clay Loam
HA07	60, 29, 11	Sandy Loam
HA08	49, 37, 14	Sandy Silty Loam
HA09	40, 40, 20	MCL
HA10	64, 26, 10	Sandy Loam
HA11	52, 28, 20	Sandy Clay Loam
HA12	49, 32, 19	MCL
HA13	52, 38, 10	Sandy Loam



Hand Auger ID	Sand, Silt, Clay %	Textural Class
HA14	79, 13, 8	Loamy Sand
HA15	62, 20, 18	Sandy Clay Loam/Sandy Loam
HA16	79, 14, 7	Loamy Sand
HA17	51, 26, 23	Sandy Clay Loam
HA18	51, 31, 18	Sandy Clay Loam





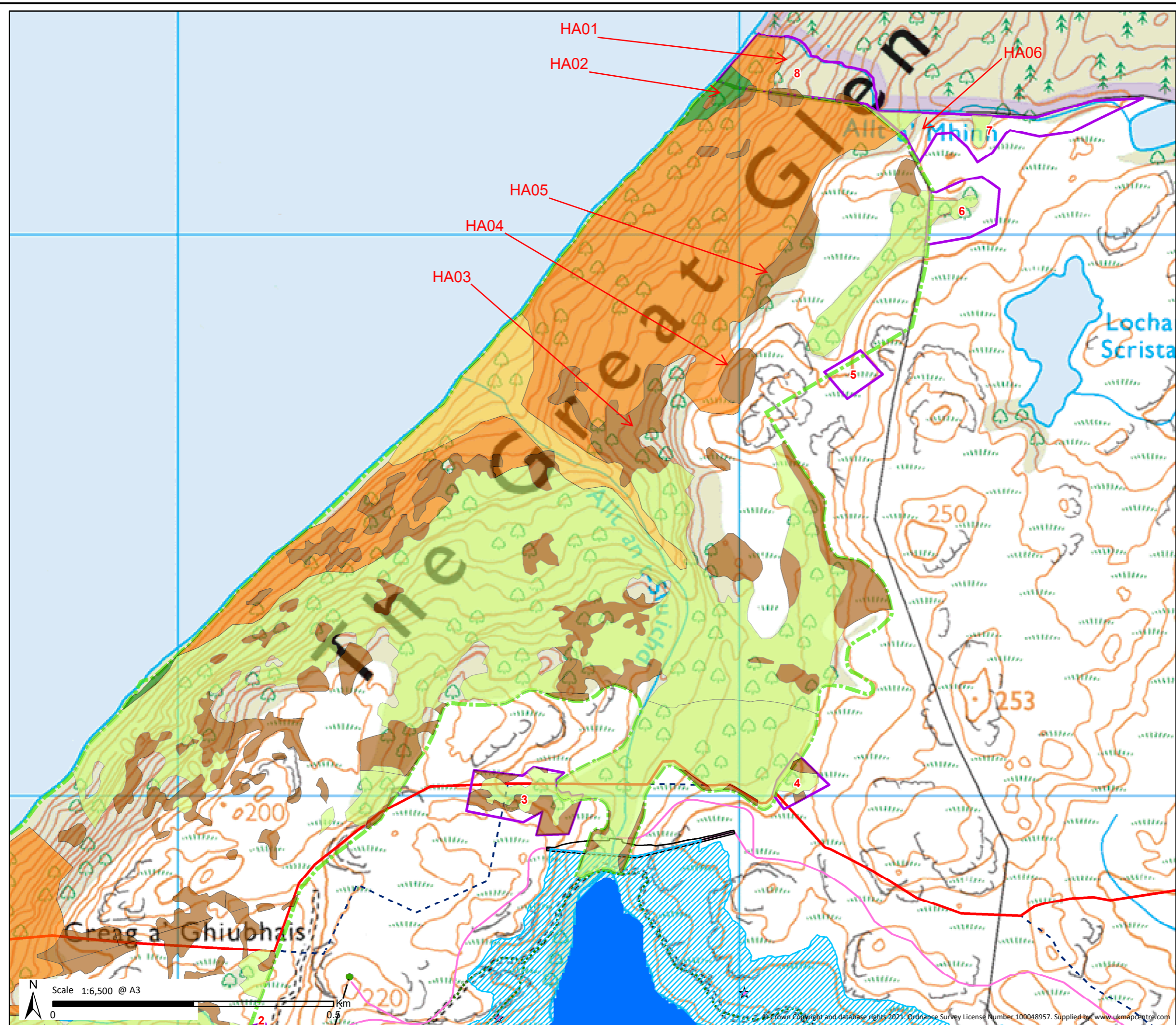
Appendix A Drawing 01

Baseline Soil Sampling

Loch Kemp Habitat Search Areas

ASH Design + Assessment

SLR Project No.: 428.04707.00032



Key

- Site Boundary
- Development Area
- Loch Kemp Surface Area
- Maximum Inundation Area (Upper Reservoir)
- Powerhouse Building
- Powerhouse Platform, Quayside and Pier
- Revised Main Welfare Compound
- Underground Tunnel
- Dam
- Temporary Cofferdam
- Construction and Operational Access Track (8m Wide Running Surface, Reinstated to 4m where feasible)
- Construction and Operational Access Track within SAC
- Temporary Construction Access Track (8m Wide Running Surface)
- New Estate Water Supply
- Inlet/Outlet Excavation
- Surge Shaft
- Cable Shaft
- Access Tunnel
- ★ Potential Borrow Pit
- Ness Woods SAC / Easter Ness Forest SSSI
- Woodland for Possible Incorporation into the SAC

SAC Qualifying Habitats

- Tilio-Acerion forests of slopes, screes and ravines
- Old sessile oak woods with Ilex and Blechnum in the British Isles
- Bracken stands – included as Old sessile oak woods with Ilex and Blechnum in the British Isles
- Habitat mosaic: 80% old sessile oak woods with Ilex and Blechnum in the British Isles, 20% Tilio-Acerion forests of slopes, screes and ravines
- Habitat mosaic: 60% Tilio-Acerion forests of slopes, screes and ravines, 40% old sessile oak woods with Ilex and Blechnum in the British Isles

**Loch Kemp
Pumped Storage Scheme**

**Figure 3a
SAC Qualifying Habitats**

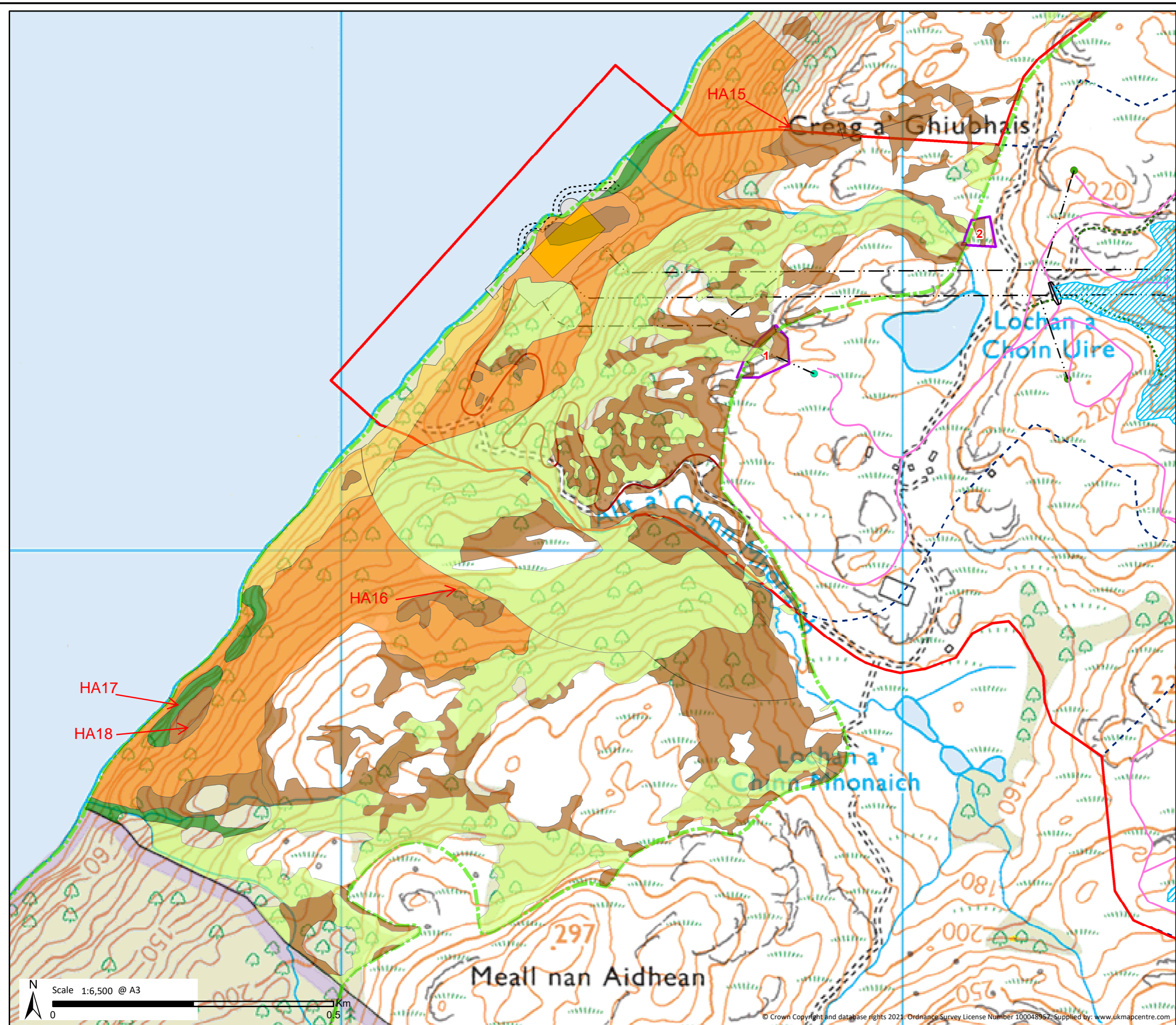
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Drawing:

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Scale 1:6,500 @ A3
0 0.5 1 Km

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Key

- Site Boundary
- Development Area
- Loch Kemp Surface Area
- Maximum Inundation Area (Upper Reservoir)
- Powerhouse Building
- Powerhouse Platform, Quayside and Pier
- Revised Main Welfare Compound
- Underground Tunnel
- Dam
- Temporary Cofferdam
- Construction and Operational Access Track (8m Wide Running Surface, Reinstated to 4m where feasible)
- Construction and Operational Access Track within SAC
- Temporary Construction Access Track (8m Wide Running Surface)
- New Estate Water Supply
- Inlet/Outlet Excavation
- Surge Shaft
- Cable Shaft
- Access Tunnel
- ★ Potential Borrow Pit
- Ness Woods SAC / Easter Ness Forest SSSI
- Woodland for Possible Incorporation into the SAC

SAC Qualifying Habitats

- Tilio-Acerion forests of slopes, screes and ravines
- Old sessile oak woods with Ilex and Blechnum in the British Isles
- Bracken stands – included as Old sessile oak woods with Ilex and Blechnum in the British Isles
- Habitat mosaic: 80% old sessile oak woods with Ilex and Blechnum in the British Isles, 20% Tilio-Acerion forests of slopes, screes and ravines
- Habitat mosaic: 60% Tilio-Acerion forests of slopes, screes and ravines, 40% old sessile oak woods with Ilex and Blechnum in the British Isles

**Loch Kemp
Pumped Storage Scheme**

**Figure 3b
SAC Qualifying Habitats**

Drawn by: HC Date: 26/08/2024
Drawing:

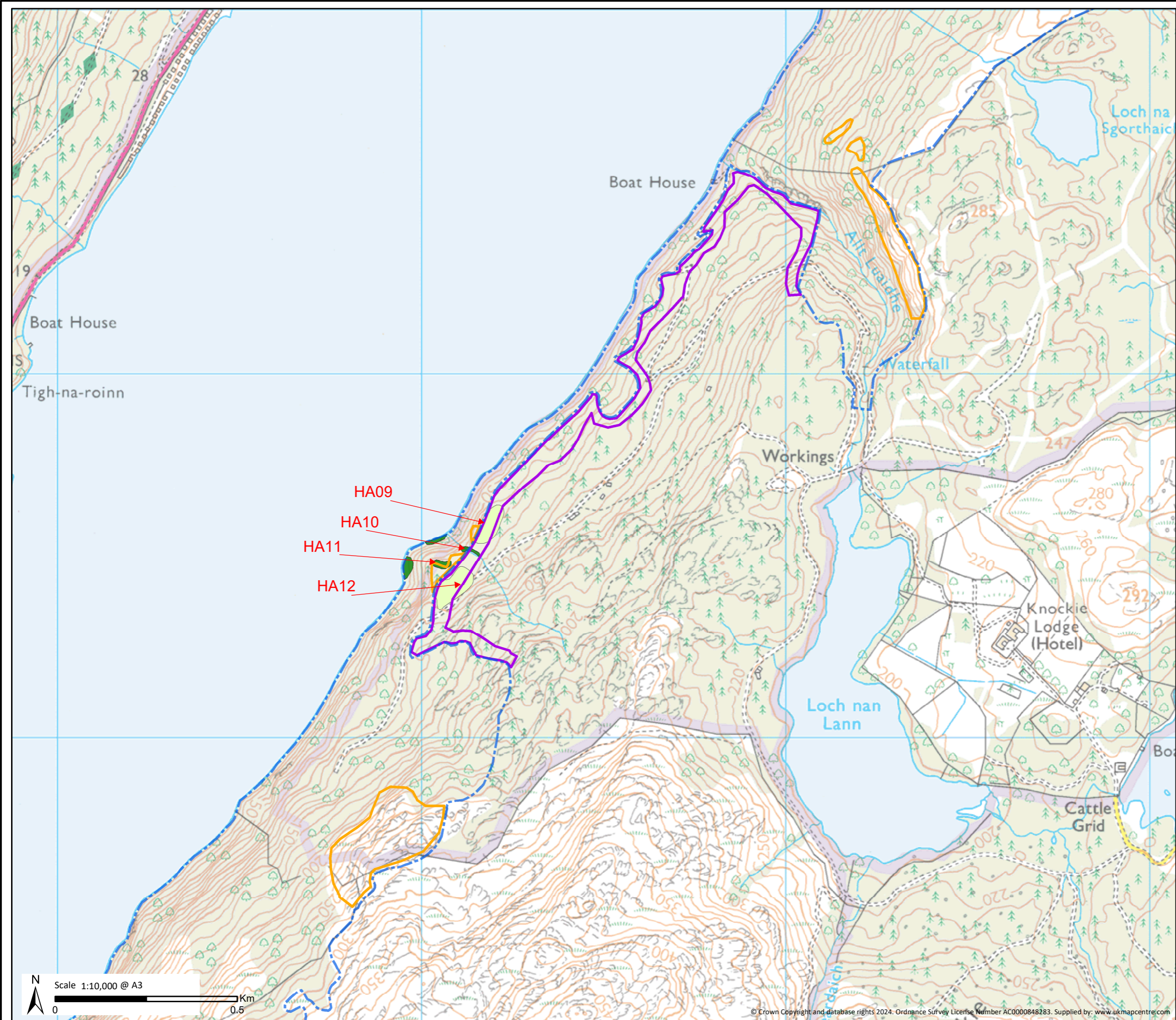


**Loch Kemp
Storage**
A STATERA COMPANY

ash

N
Scale 1:6,500 @ A3
0 0.5 Km

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Key

- Ness Woods SAC / Easter Ness Forest SSSI
- Prospective Base Rich Mixed Woodland Search Areas**
 - Outwith Ness Woods SAC
 - Within Ness Woods SAC
- SAC Qualifying Habitat**
 - Mixed Woodland / Tilio-Acerion
 - Forests of Slopes, Screes and Ravines
- Potential Enhancement Opportunities**
 - Area of young regenerating birch over scree

Loch Kemp
Pumped Storage Scheme

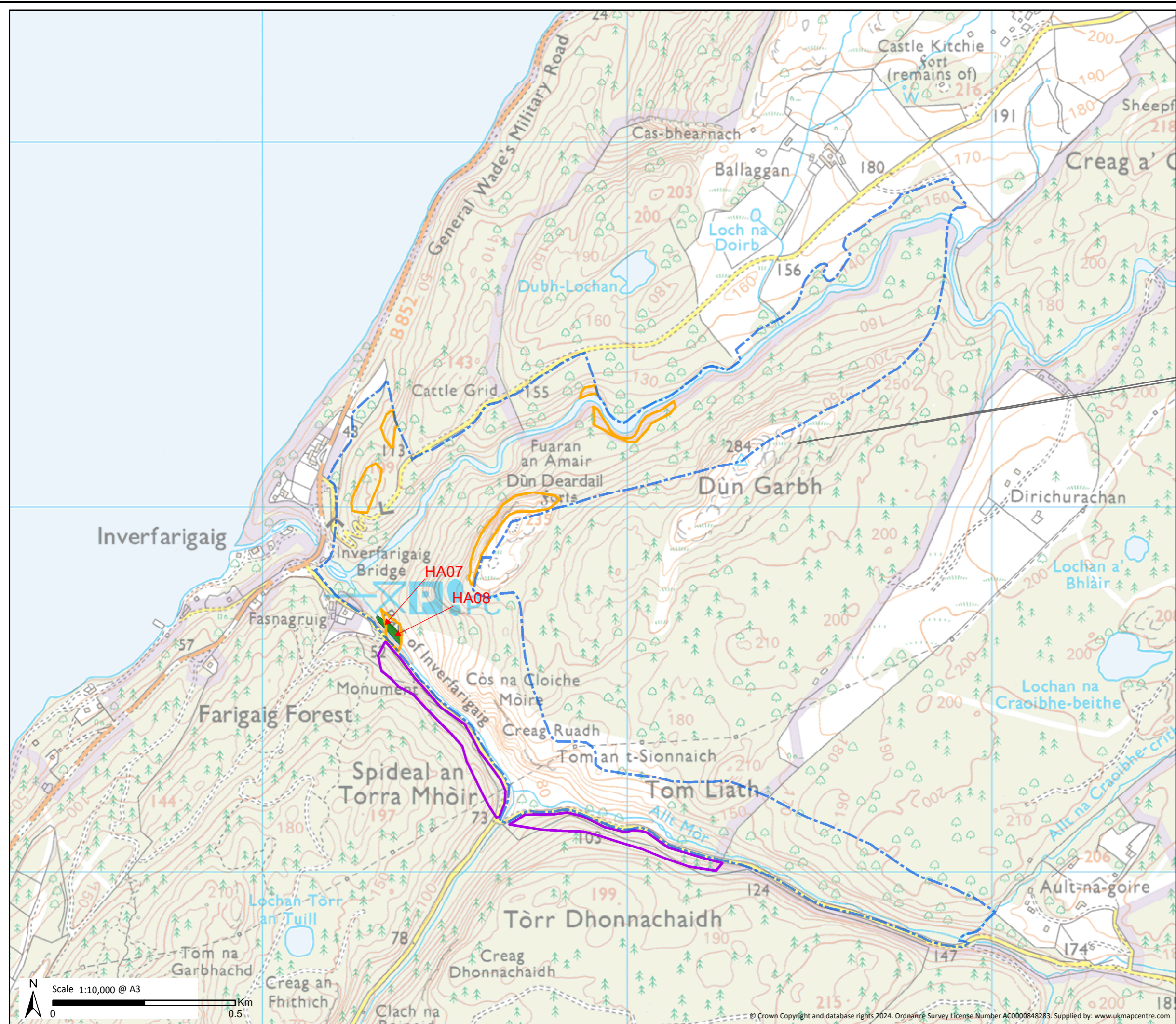
Figure 2
SAC Mixed Woodland Qualifying Habitat - Knockie Estate

Drawn by: HC Date: 25/11/2024
Drawing: LKS_D_1046_01

 **Loch Kemp Storage**
A STATERA COMPANY



N
Scale 1:10,000 @ A3
0 0.5 Km



Key

Ness Woods SAC / Easter Ness Forest SSSI

Prospective Base Rich Mixed Woodland Search Areas

Outwith Ness Woods SAC

Within Ness Woods SAC

SAC Qualifying Habitat

Mixed Woodland / Tilio-Acerion Forests of Slopes, Screens and Ravines

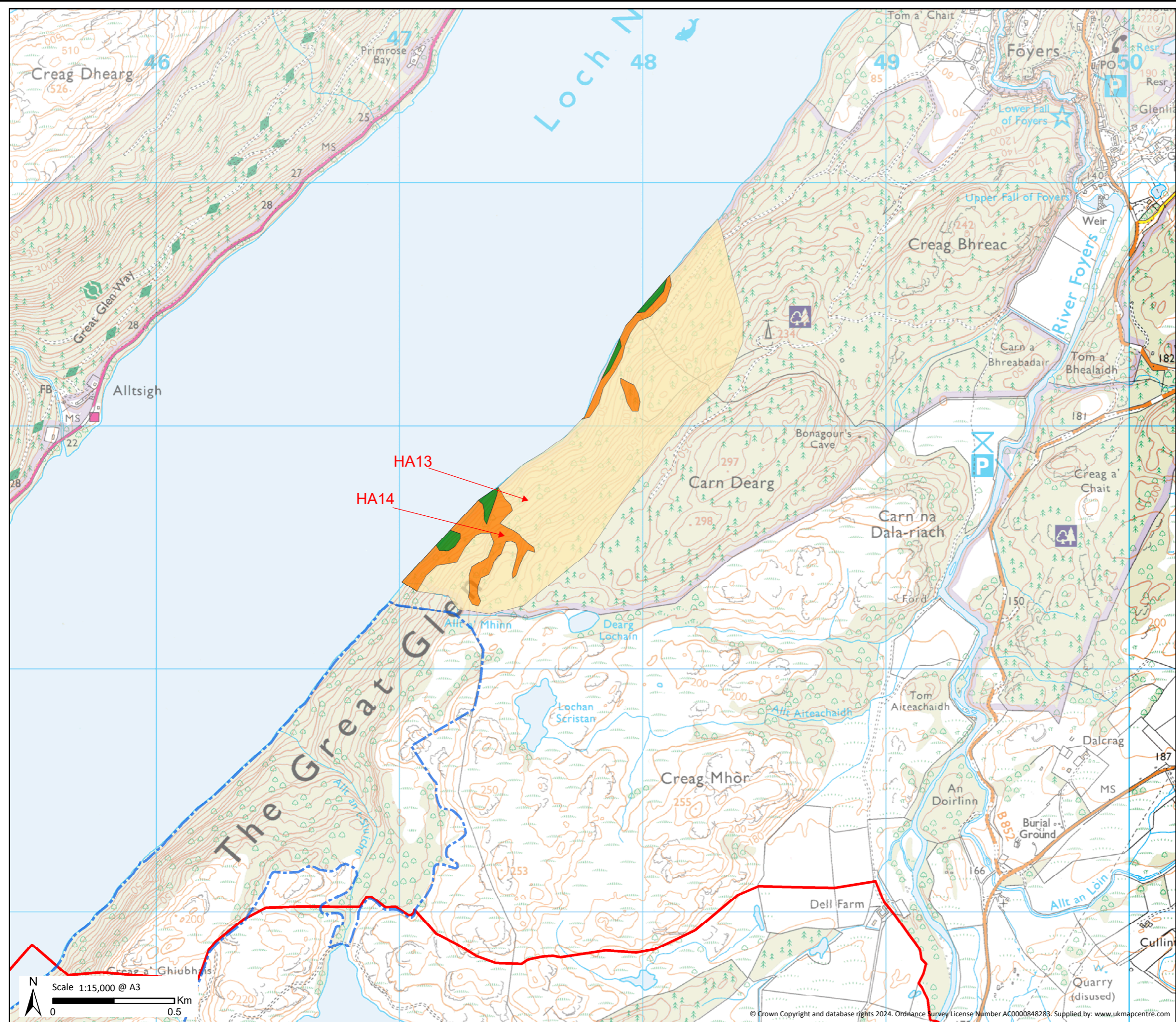
Loch Kemp Pumped Storage Scheme

Figure 3
SAC Mixed Woodland Qualifying Habitat - Inverfarigaig

Drawn by: HC Date: 25/11/2024
Drawing: LKS_D_1047_01

Loch Kemp Storage
A STATERA COMPANY

ash



Key

- Site Boundary
- Ness Woods SAC / Easter Ness Forest SSSI

SAC Qualifying Habitat

- Habitat mosaic: 80% Old Sessile Oak Woods with Ilex and Blechnum in the British Isles; 20 % Mixed Woodland / Tilio-Acerion Forests of Slopes, Screes and Ravines
- Mixed Woodland / Tilio-Acerion Forests of Slopes, Screes and Ravines

Potential Enhancement Opportunities

- Area of non-native conifer woodland on steep slopes

Loch Kemp Pumped Storage Scheme

**Figure 4
SAC Mixed Woodland Qualifying Habitat - Foyers South**

Drawn by: HC Date: 25/11/2024
Drawing: LKS_D_1048_01

Loch Kemp Storage
A STATERA COMPANY

ash

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Appendix B Hand Auger Logs


Baseline Soil Sampling

Loch Kemp Habitat Search Areas

ASH Design + Assessment

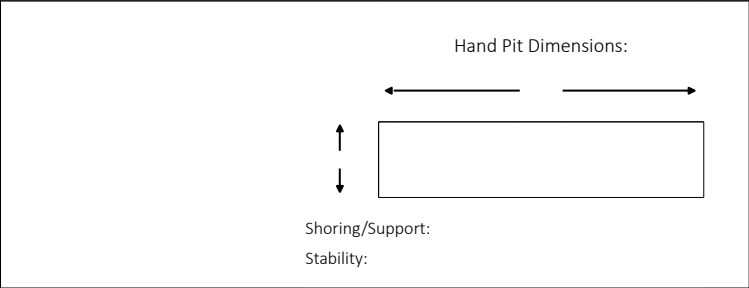
SLR Project No.: 428.04707.00032

HAND PIT LOG				HAND PIT No HA01	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 02/12/2024	Ground Level:	Co-ordinates: E247051 N818266	Sheet 1 of 1	


SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					0.05	Dark brown silty SAND. Sand is fine to coarse.		
						(0.15)	Reddish brown slightly gravelly silty SAND. Gravel is subangular pelitic rock. Sand is fine to coarse, faint organic odour.		
0.2						0.20	Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



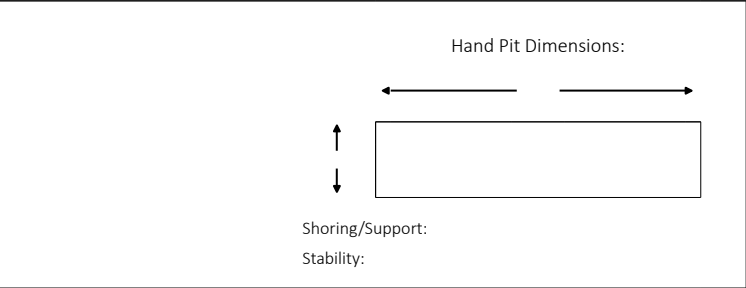
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA02	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 02/12/2024	Ground Level:	Co-ordinates: E246960 N818244	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20)	Black gravelly silty SAND. Gravel is angular to sub angular pelitic rock. Sand is fine to coarse, faint organic odour.		
0.2						0.20	Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA03	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 02/12/2024	Ground Level:	Co-ordinates: E246835 N817678	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.15	B					(0.15) 0.15	Dark brown gravelly silty SAND. Gravel is angular to sub angular red coloured rock, sand is fine to coarse.		
0.2							Hand Dug Pit Complete at 0.15m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

<p>GENERAL REMARKS:</p> <p>KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement</p>	<p>Hand Pit Dimensions:</p> <p>Shoring/Support: Stability:</p>
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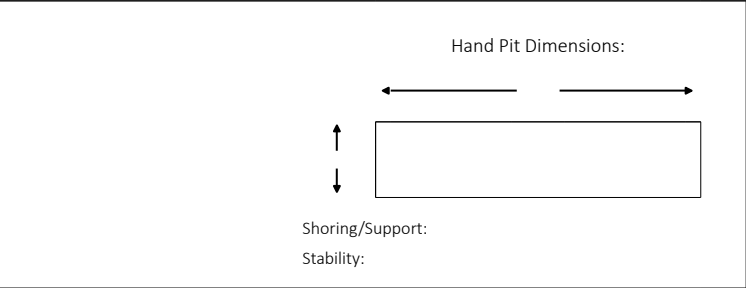
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA04	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 02/12/2024	Ground Level:	Co-ordinates: E246990 N817742	Sheet 1 of 1	


SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.15	B					(0.15) 0.15	Black slightly sandy CLAY. Sand is fine to medium. Frequent rootlets and infrequent wood chunks. Faint organic odour.		
0.2							Hand Dug Pit Complete at 0.15m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									


GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



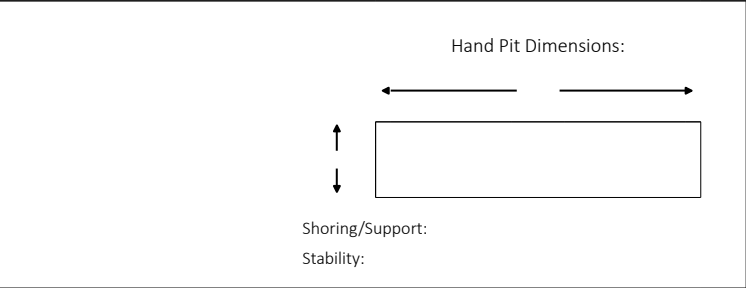
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA05	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 02/12/2024	Ground Level:	Co-ordinates: E247058 N817925	Sheet 1 of 1	


SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					0.10	Dark brown slightly gravelly sandy CLAY. Gravel is subangular psammitic rock. Sand is fine to coarse. Frequent rootlets and faint organic odour.		
0.2						0.20	Light brown slightly clayey, gravelly SAND. Gravel is subangular to subrounded psammitic rock. Sand is fine to coarse.		
							Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



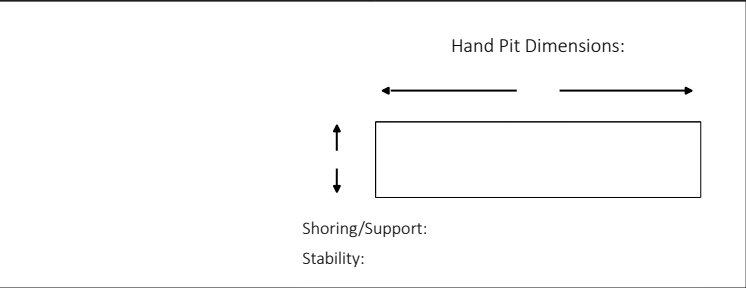
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA06	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 02/12/2024	Ground Level:	Co-ordinates: E247305 N818163	Sheet 1 of 1	


SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.15	B					(0.15)	Brown slightly gravelly sandy CLAY. Gravel is subangular pelitic rock. Sand is fin to coarse, faint organic odour.		
0.2						0.15	Hand Dug Pit Complete at 0.15m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									


GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



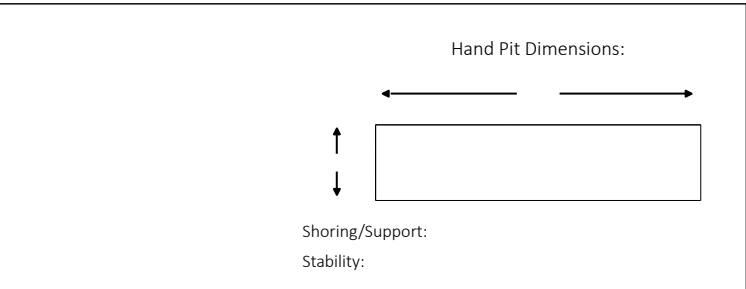
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA07	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 02/12/2024	Ground Level:	Co-ordinates: E252364 N823692	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20)	Light brown gravelly, clayey SAND. The sand is fine to medium, and the gravel is subrounded to rounded, composed of psammite and pelite.		
0.2						0.20	Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



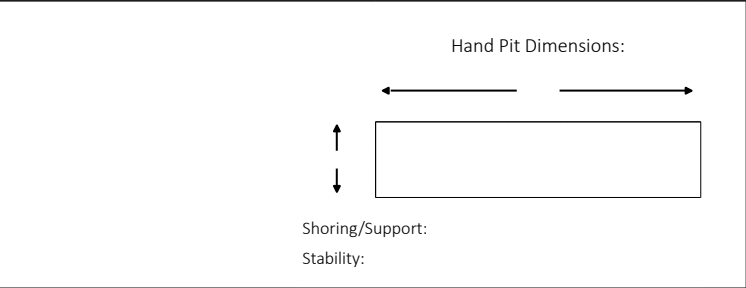
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA08	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 02/12/2024	Ground Level:	Co-ordinates: E252399 N823659	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20) 0.20	Light brown gravelly, clayey SAND. The sand is fine to coarse, and the gravel is fine to medium, subrounded to subangular, composed of psammite and pelite.		
0.2							Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement




All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA10	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 03/12/2024	Ground Level:	Co-ordinates: E243128 N813522	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20) 0.20	Loose orangish-brown slightly clayey gravelly SAND. The sand is fine to medium, and the gravel is fine to medium, angular to subangular, composed of psammite.		
0.2							Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

<p>GENERAL REMARKS:</p> <p>KEY</p> <p>V = Hand Vane Shear Strength</p> <p>PP = Pocket Penetrometer Shear Strength</p> <p>J = Jar Sample</p> <p>D = Disturbed Sample</p> <p>B = Large Bulk Sample</p> <p>HS = Head Space Measurement</p>	<p>Hand Pit Dimensions:</p> <p>Shoring/Support:</p> <p>Stability:</p>
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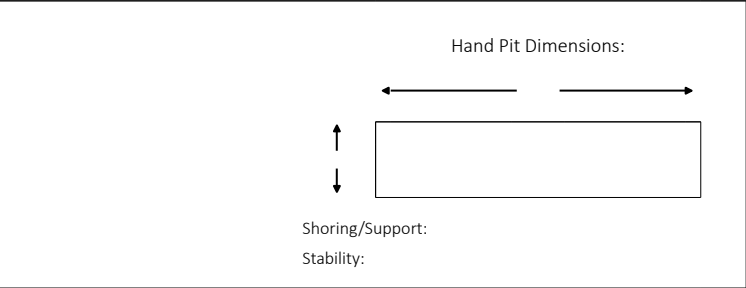
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA11	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 03/12/2024	Ground Level:	Co-ordinates: E243061 N813475	Sheet 1 of 1	


SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.15	B					(0.15)	Brown slightly clayey, sandy GRAVEL. The sand is loose, fine- to medium-grained. The gravel is angular, medium to coarse, composed of psammite with occasional boulders.		
0.2						0.15	Hand Dug Pit Complete at 0.15m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:

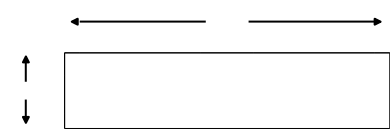
KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement




All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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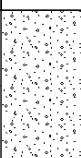

HAND PIT LOG				HAND PIT No HA12	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 03/12/2024	Ground Level:	Co-ordinates: E243109 N813421	Sheet 1 of 1	

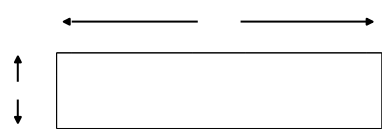
SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20)	Brown, slightly clayey, slightly gravelly SAND. The sand is loose, fine- to medium-grained. The gravel is angular to subangular, medium to coarse.		
0.2						0.20	Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:	<p>Hand Pit Dimensions:</p>  <p>Shoring/Support: Stability:</p>
<p>KEY</p> <p>V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement</p>	


All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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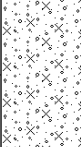

HAND PIT LOG				HAND PIT No HA13	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 03/12/2024	Ground Level:	Co-ordinates: E247541 N818683	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20)	Dark grey, slightly gravelly SAND. The sand is fine to medium grained, and the gravel is coarse, angular, composed of psammite.		
0.2						0.20	Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:		Hand Pit Dimensions:	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement			
		Shoring/Support: Stability:	

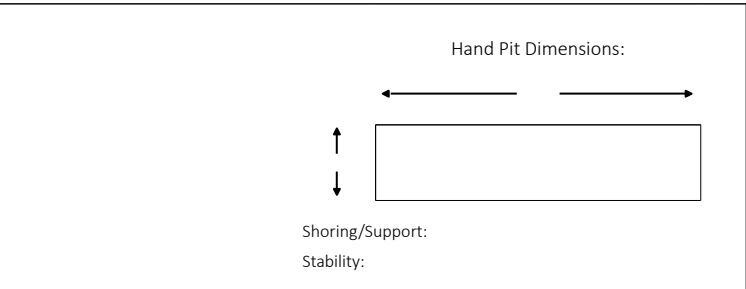
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA14	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 03/12/2024	Ground Level:	Co-ordinates: E247500 N818520	Sheet 1 of 1	


SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20) 0.20	Black, slightly silty, sandy GRAVEL. The gravels are angular, coarse, and composed of psammite.		
0.2							Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									


GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



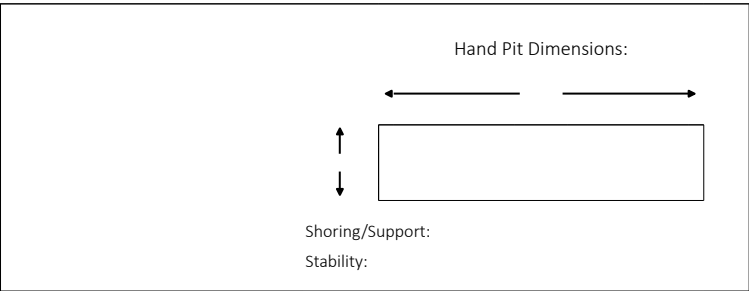
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA15	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 04/12/2024	Ground Level:	Co-ordinates: E245773 N816815	Sheet 1 of 1	


SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20)	Dark brown, slightly clayey, gravelly SAND. The sand is fine to medium grained, and the gravel is fine grained, angular to subangular, composed of psammite.		
0.2						0.20	Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

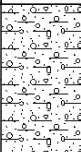

GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



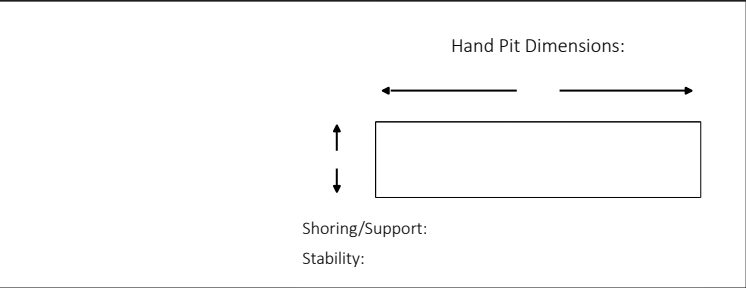
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
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HAND PIT LOG				HAND PIT No HA16	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 04/12/2024	Ground Level:	Co-ordinates: E245159 N815969	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20)	Brown, slightly gravelly, slightly sandy CLAY. The clay is not stiff, the sands are fine to medium grained, and the gravel is angular to subangular, composed of psammite.		
0.2						0.20	Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
--	---------------------------	--------------------	------------------	--------------------

HAND PIT LOG				HAND PIT No HA17	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 04/12/2024	Ground Level:	Co-ordinates: E244731 N815694	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.15	B					(0.15) 0.15	Dark brown very gravelly SAND. The sand is medium to coarse-grained, gravel is angular composed of psammite.		
0.2							Hand Dug Pit Complete at 0.15m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

<p>GENERAL REMARKS:</p> <p>KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement</p>	<p>Hand Pit Dimensions:</p> <p>Shoring/Support: Stability:</p>
--	--

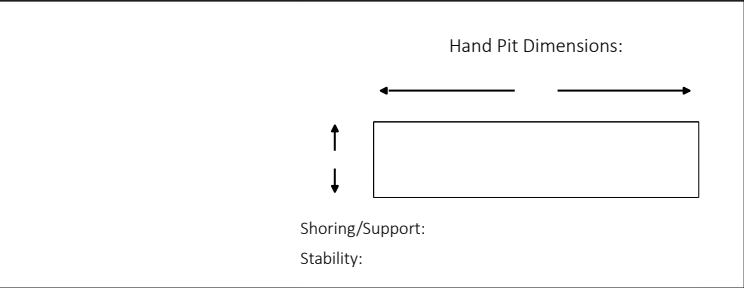
All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
--	---------------------------	--------------------	------------------	--------------------

HAND PIT LOG				HAND PIT No HA18	
Client: Ash Design + Assessment					
Project: Loch Kemp PSH Soil Sampling					
Project No: 428.V4707.00032	Date: 04/12/2024	Ground Level:	Co-ordinates: E244814 N815598	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.00 - 0.20	B					(0.20) 0.20	Light brown very sandy gravelly CLAY. The sand are fine to coarse. Gravel is angular, composed of psammite.		
0.2							Hand Dug Pit Complete at 0.20m		
0.4									
0.6									
0.8									
1.0									
1.2									
1.4									

GENERAL REMARKS:

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:10	Contractor: Plant: SLR	Method: Hand Auger	Logged By: CR	Approved By: AH
--	---------------------------	--------------------	------------------	--------------------



Appendix C Photographs

Baseline Soil Sampling

Loch Kemp Habitat Search Areas

ASH Design + Assessment

SLR Project No.: 428.04707.00032



HA01: View at locality



HA01: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA02: View at locality



HA02: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA03: View at locality



HA03: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA04: View at locality



HA04: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA05: View at locality



HA05: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
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Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA06: View at locality



HA06: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA07: View at locality



HA07: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA08: View at locality



HA08: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA09: View at locality



HA09: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA10: View at locality



HA10: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA11: View at locality



HA11: Soil Sample



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Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA12: View at locality



HA12: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA13: View at locality



HA13: Soil Sample



The Tun,
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Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA14: View at locality



HA14: Soil Sample



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Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA15: View at locality



HA15: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA16: View at locality



HA16: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA17: View at locality



HA17: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



HA18: View at locality



HA18: Soil Sample



The Tun,
4 Jackson's Entry,
Edinburgh,
EH8 8PJ.

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project: Loch Kemp PSH

ASH Design + Assessment

Project No. :- 428.04707.00032

Date :- December 2024



Appendix D Laboratory Chemical Analysis

Baseline Soil Sampling

Loch Kemp Habitat Search Areas

ASH Design + Assessment

SLR Project No.: 428.04707.00032

ANALYTICAL REPORT

Report Number	64372-24	H930	SLR CONSULTING LTD	Client ALAN HUNTRIDGE
Date Received	12-NOV-2024		6 VICTORY HOUSE	SLR CONSULTING
Date Reported	25-NOV-2024		EXETER	EDINBURGH
Project	SOIL		DEVON	
Reference	ALAN HUNTRIDGE		EX2 4AA	
Order Number				

Laboratory Reference		SOIL722751	SOIL722752	SOIL722753						
Sample Reference		HA01	HA02	HA03						
Determinand	Unit	SOIL	SOIL	SOIL						
pH water [1:2.5]		4.9	5.1	4.6						
Available Phosphorus (Index)	mg/l	3.0 (0)	3.8 (0)	3.8 (0)						
Available Potassium (Index)	mg/l	125 (2-)	60.5 (1)	140 (2-)						
Available Magnesium (Index)	mg/l	83.6 (2)	141 (3)	152 (3)						
Sand 2.00-0.063mm	% w/w	49	62	47						
Silt 0.063-0.002mm	% w/w	30	18	27						
Clay <0.002mm	% w/w	21	20	26						
Organic Matter LOI	% w/w	13.4	22.2	25.0						
Total Nitrogen	% w/w	0.381	0.301	0.598						
Textural Class **		MCL	SCL	MCL						

Notes

Analysis Notes	The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.
Document Control	This test report shall not be reproduced, except in full, without the written approval of the laboratory.

Reported by	<p>** Please see the attached document for the definition of textural classes.</p> <p><i>Gabrielle Parkes</i> Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 886338 Fax: 01344 890972 email: enquiries@nrm.uk.com</p>
-------------	---

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

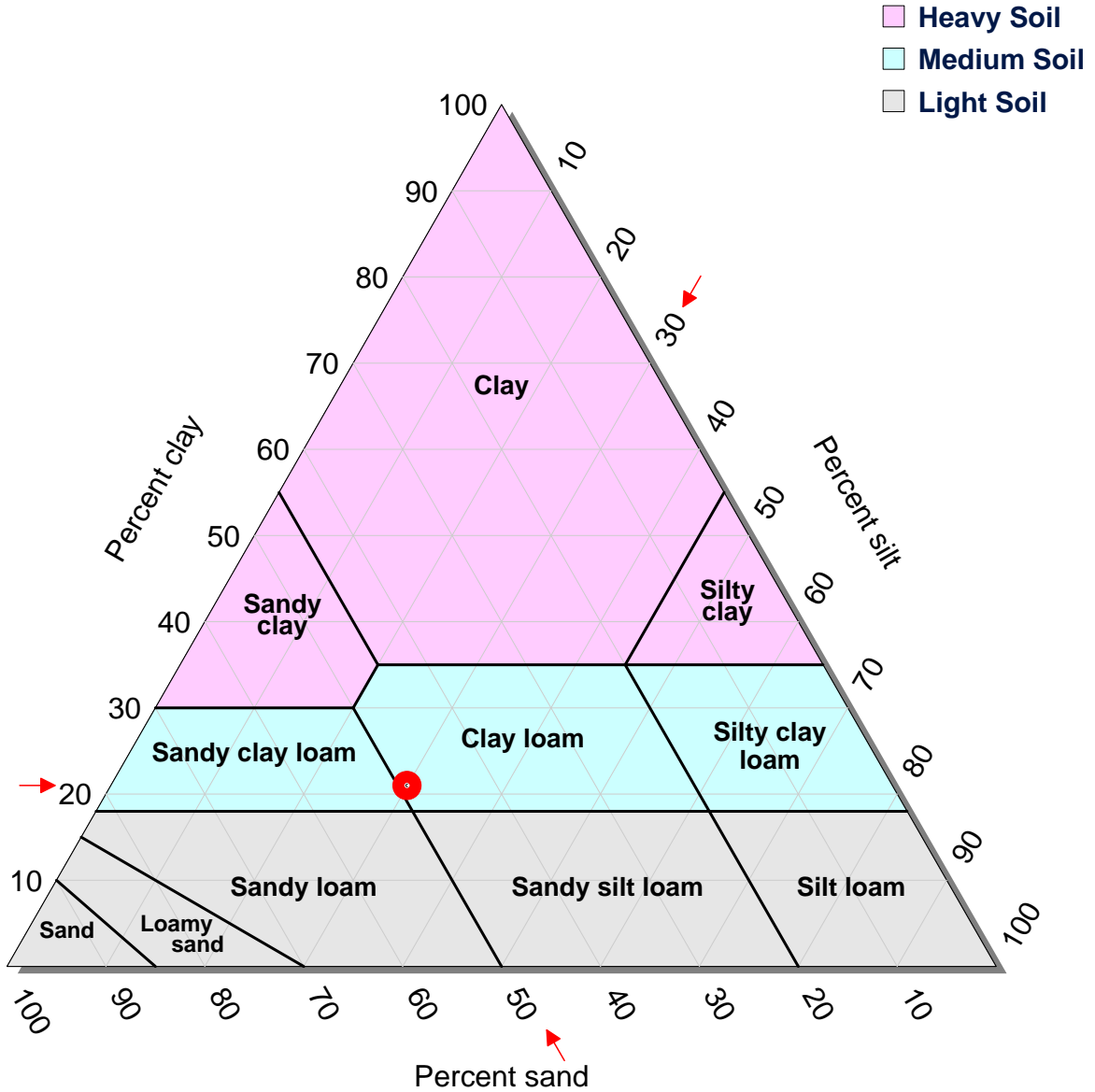


Report Ref: 64372/24

Date Received: 12-Nov-2024

Date Reported: 25-Nov-2024

Soil Textural Classification



Sample ID:	SOIL/722751	Sample Ref:	HA01
Breakdown:	Sand 49%	Silt 30%	Clay 21%
Textural Class:	Clay Loam		

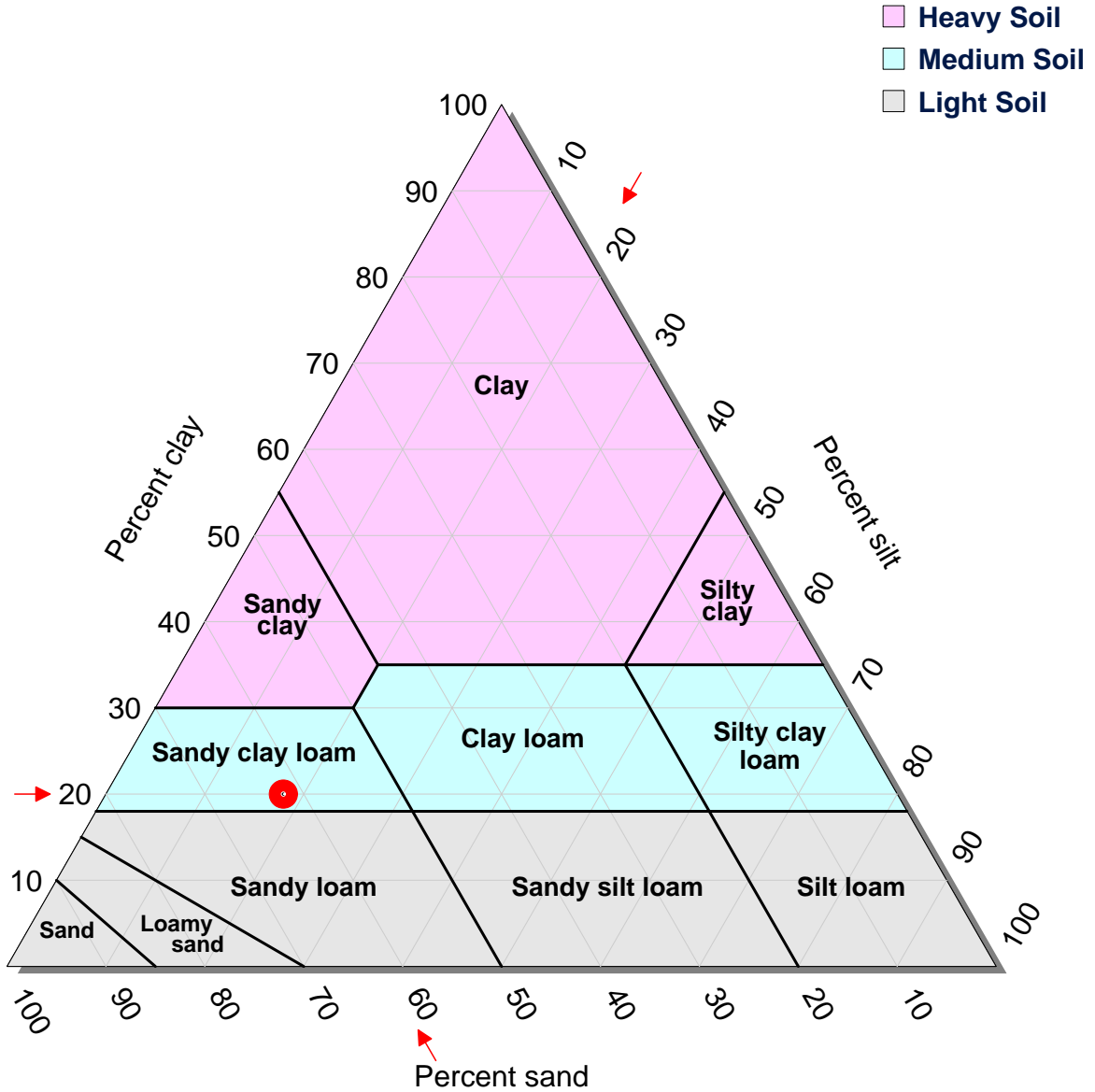


Report Ref: 64372/24

Date Received: 12-Nov-2024

Date Reported: 25-Nov-2024

Soil Textural Classification



Sample ID:	SOIL/722752	Sample Ref:	HA02
Breakdown:	Sand 62%	Silt 18%	Clay 20%
Textural Class:	Sandy Clay Loam		

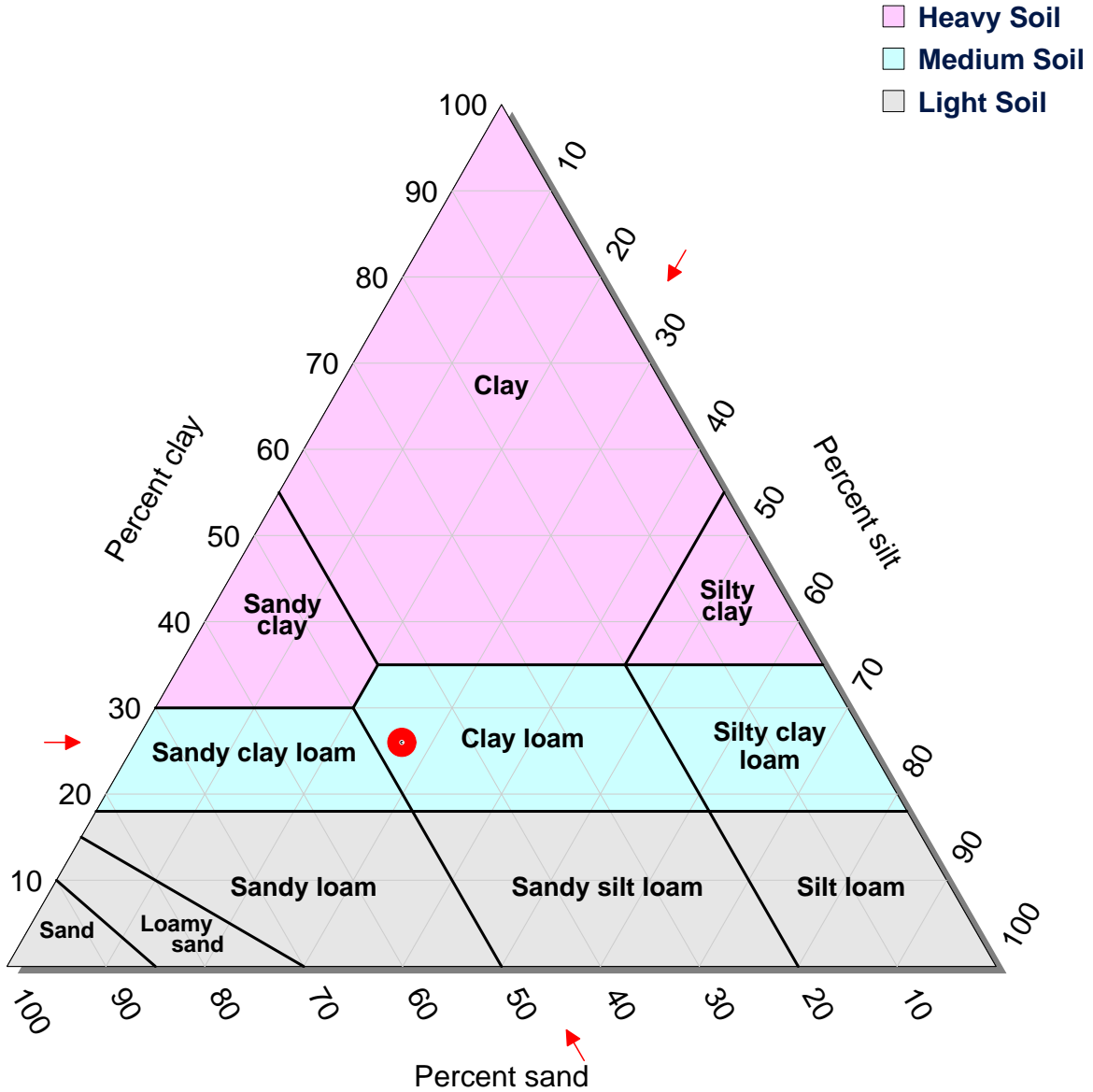


Report Ref: 64372/24

Date Received: 12-Nov-2024

Date Reported: 25-Nov-2024

Soil Textural Classification



Sample ID:	SOIL/722753	Sample Ref:	HA03
Breakdown:	Sand 47%	Silt 27%	Clay 26%
Textural Class:	Clay Loam		

ANALYTICAL REPORT

Report Number	64373-24	H930	SLR CONSULTING LTD	Client	ALAN HUNTRIDGE
Date Received	12-NOV-2024		6 VICTORY HOUSE		SLR CONSULTING
Date Reported	26-NOV-2024		EXETER		EDINBURGH
Project	SOIL		DEVON		
Reference	ALAN HUNTRIDGE		EX2 4AA		
Order Number					

Laboratory Reference		SOIL722754	SOIL722755	SOIL722756						
Sample Reference		HA04	HA05	HA06						
Determinand	Unit	SOIL	SOIL	SOIL						
pH water [1:2.5]		5.1	5.0	5.3						
Available Phosphorus (Index)	mg/l	3.2 (0)	4.4 (0)	4.4 (0)						
Available Potassium (Index)	mg/l	78.9 (1)	89.4 (1)	110 (1)						
Available Magnesium (Index)	mg/l	53.9 (2)	82.2 (2)	99.6 (2)						
Sand 2.00-0.063mm	% w/w	29	45	42						
Silt 0.063-0.002mm	% w/w	28	33	32						
Clay <0.002mm	% w/w	43	22	26						
Organic Matter LOI	% w/w	44.7	15.1	17.3						
Total Nitrogen	% w/w	0.773	0.376	0.564						
Textural Class **		C	MCL	MCL						

Notes

Analysis Notes The sample submitted was of adequate size to complete all analysis requested.
 The results as reported relate only to the item(s) submitted for testing.
 The results are presented on a dry matter basis unless otherwise stipulated.

Document Control **This test report shall not be reproduced, except in full, without the written approval of the laboratory.**

Reported by ***Gabrielle Parkes***
 Natural Resource Management, a trading division of Cawood Scientific Ltd.
 Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS
 Tel: 01344 886338
 Fax: 01344 890972
 email: enquiries@nrm.uk.com

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

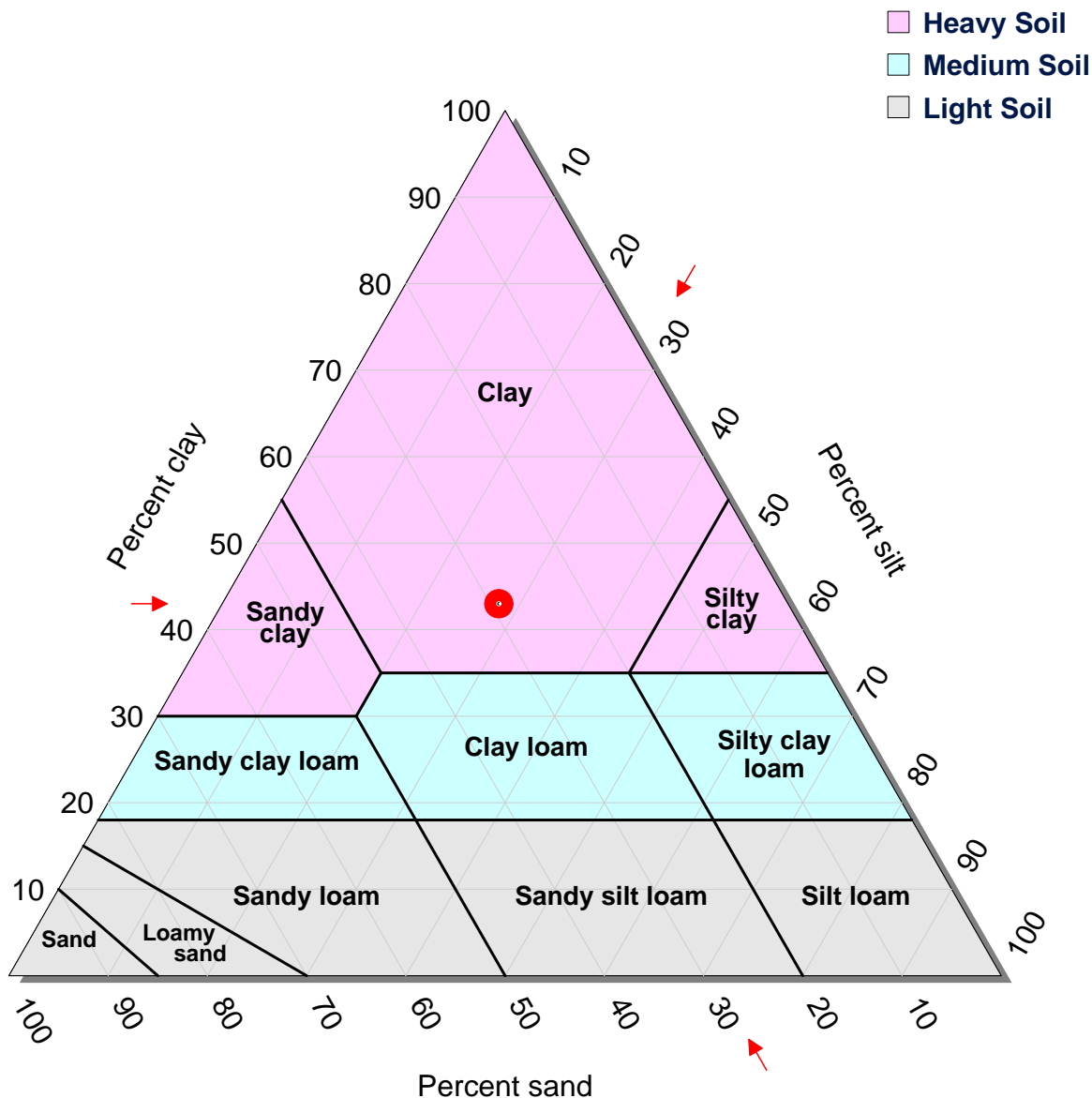


Report Ref: 64373/24

Date Received: 12-Nov-2024

Date Reported: 26-Nov-2024

Soil Textural Classification



Sample ID:	SOIL/722754	Sample Ref:	HA04
Breakdown:	Sand 29%	Silt 28%	Clay 43%
Textural Class:	Clay		



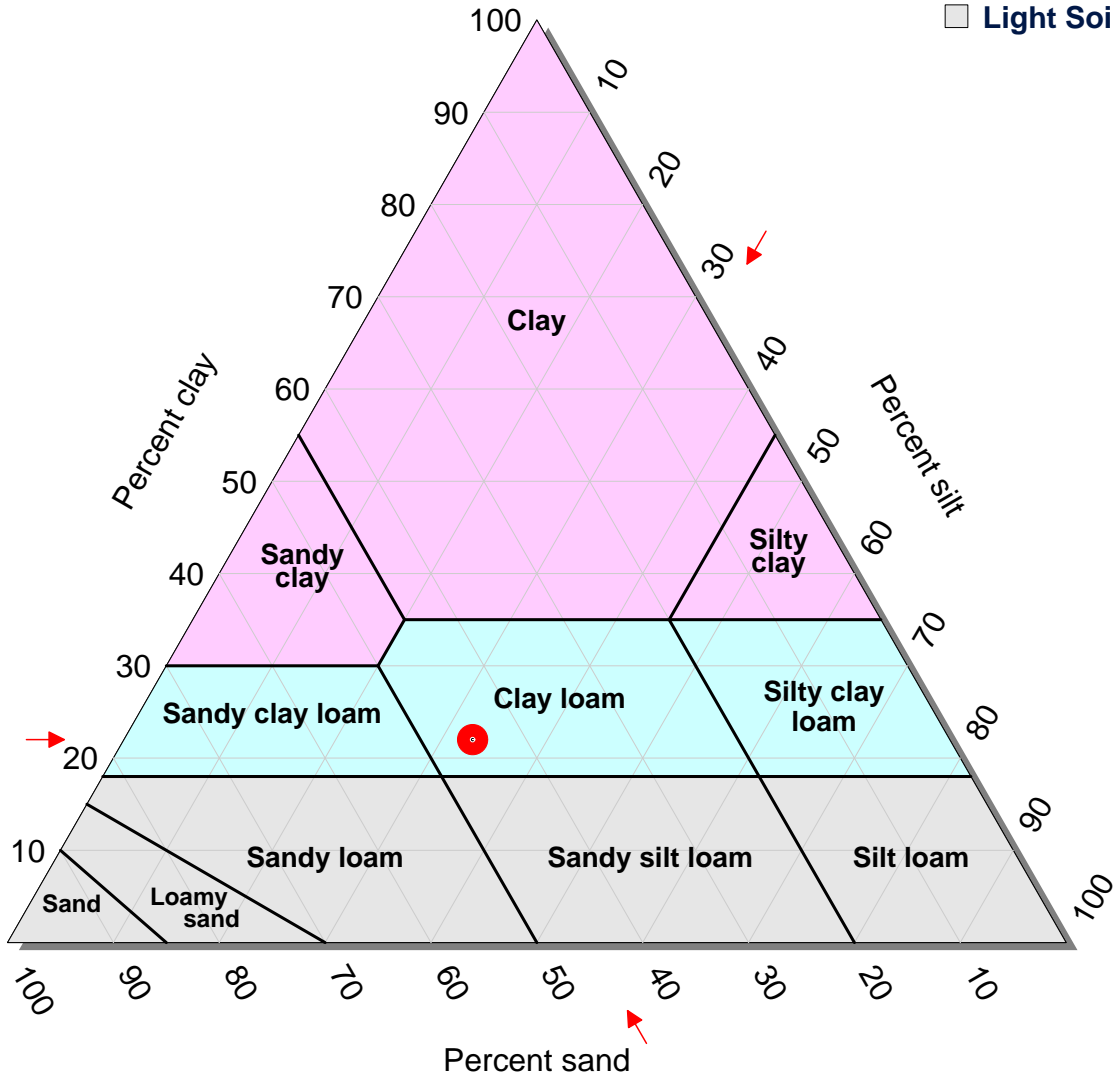
Report Ref: 64373/24

Date Received: 12-Nov-2024

Date Reported: 26-Nov-2024

Soil Textural Classification

- Heavy Soil
- Medium Soil
- Light Soil



Sample ID:	SOIL/722755	Sample Ref:	HA05
Breakdown:	Sand 45%	Silt 33%	Clay 22%
Textural Class:	Clay Loam		

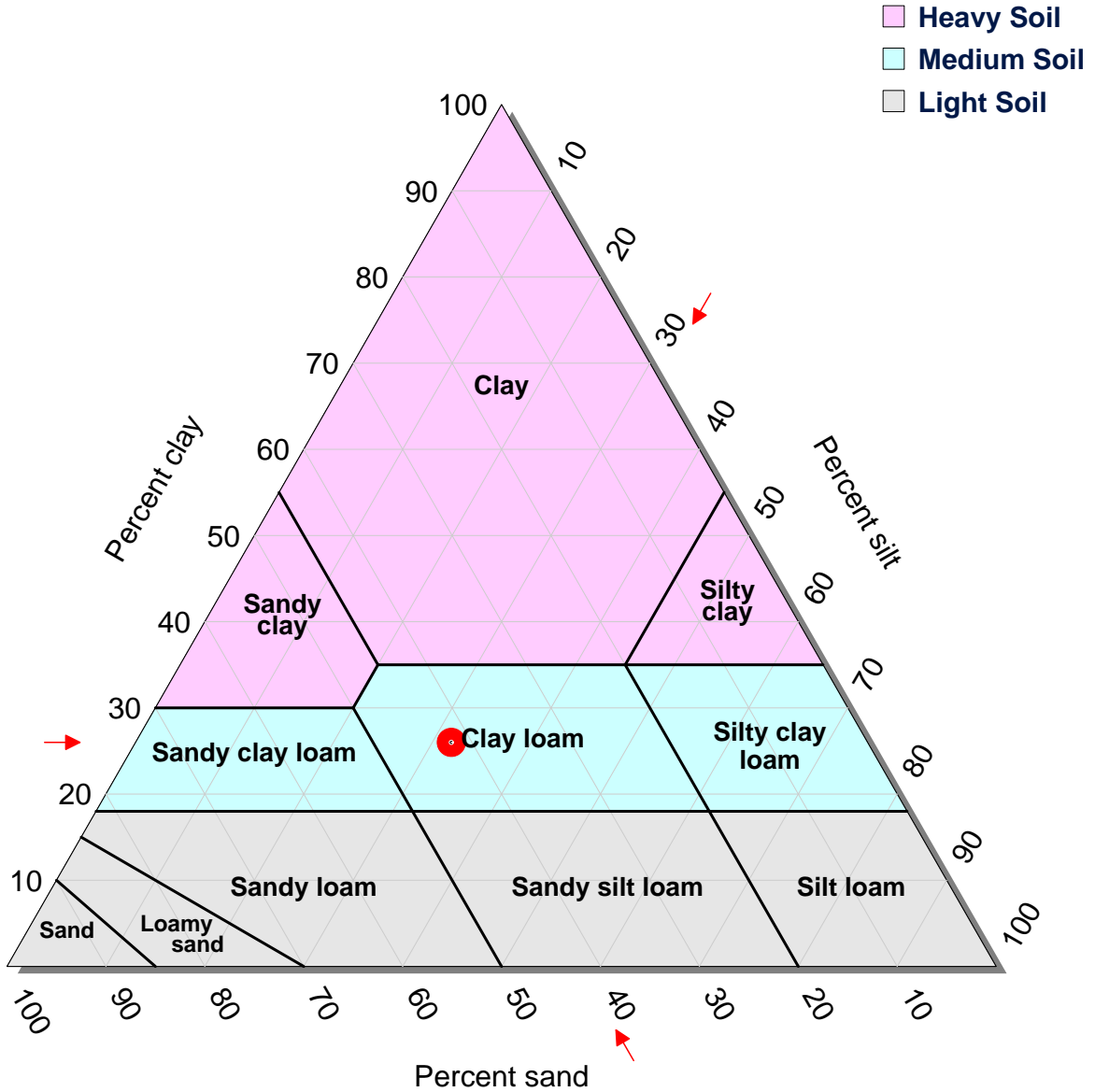


Report Ref: 64373/24

Date Received: 12-Nov-2024

Date Reported: 26-Nov-2024

Soil Textural Classification



Sample ID:	SOIL/722756	Sample Ref:	HA06
Breakdown:	Sand 42%	Silt 32%	Clay 26%
Textural Class:	Clay Loam		

ANALYTICAL REPORT

Report Number	69664-24	H930	SLR CONSULTING LTD	Client KEMP
Date Received	12-DEC-2024		6 VICTORY HOUSE	
Date Reported	20-JAN-2025		EXETER	
Project	428.004707.00032		DEVON	
Reference	KEMP		EX2 4AA	
Order Number	013062-405			

Laboratory Reference		SOIL728419	SOIL728420	SOIL728421	SOIL728422	SOIL728423	SOIL728424	SOIL728425	SOIL728426	SOIL728427	SOIL728428
Sample Reference		HA07	HA08	HA09	HA10	HA11	HA12	HA13	HA14	HA15	HA16
Determinand	Unit	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
pH water [1:2.5]		5.9	5.7	4.7	5.3	5.2	4.5	6.2	4.4	5.2	6.3
Available Phosphorus (Index)	mg/l	2.6 (0)	2.8 (0)	3.2 (0)	<2.5 (0)	4.0 (0)	24.0 (2)	<2.5 (0)	2.6 (0)	2.8 (0)	<2.5 (0)
Available Potassium (Index)	mg/l	78.9 (1)	46.8 (0)	21.0 (0)	26.2 (0)	79.3 (1)	116 (1)	44.3 (0)	47.6 (0)	66.4 (1)	69.3 (1)
Available Magnesium (Index)	mg/l	77.8 (2)	72.8 (2)	33.3 (1)	12.6 (0)	42.8 (1)	31.0 (1)	163 (3)	48.3 (1)	27.8 (1)	131 (3)
Sand 2.00-0.063mm	% w/w	60	49	40	64	52	49	52	79	62	79
Silt 0.063-0.002mm	% w/w	29	37	40	26	28	32	38	13	20	14
Clay <0.002mm	% w/w	11	14	20	10	20	19	10	8	18	7
Available Sodium	mg/l	17.1	12.4	15.4	19.4	12.6	5.9	48.4	28.5	15.3	36.7
Available Calcium	mg/l	437	459	63	<50	84	65	1051	<50	<50	1424
Organic Matter LOI	% w/w	2.3	4.0	12.2	5.7	10.0	9.7	28.6	18.4	20.2	45.7
Total Nitrogen	% w/w	0.137	0.163	0.428	0.263	0.505	0.415	0.847	0.796	0.528	1.29
Textural Class **		SL	SZL	MCL	SL	SCL	MCL	SL	LS	SCL/SL	LS
Estimated CEC	meq/100g	10.0	10.6	11.0	8.4	9.7	12.0	13.9	12.2	9.1	13.6

Notes	
Analysis Notes	The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.
Document Control	This test report shall not be reproduced, except in full, without the written approval of the laboratory.

ANALYTICAL NOTES

Report Number	69664-24	H930	SLR CONSULTING LTD	Client KEMP
Date Received	12-DEC-2024		6 VICTORY HOUSE	
Date Reported	20-JAN-2025		EXETER	
Project	428.004707.00032		DEVON	
Reference	KEMP		EX2 4AA	
Order Number	013062-405			

Notes	
Reported by	<p>** Please see the attached document for the definition of textural classes.</p> <p><i>Myles Nicholson</i> Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 886338 Fax: 01344 890972 email: enquiries@nrm.uk.com</p>

ADAS (UK) Textural Class Abbreviations

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Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

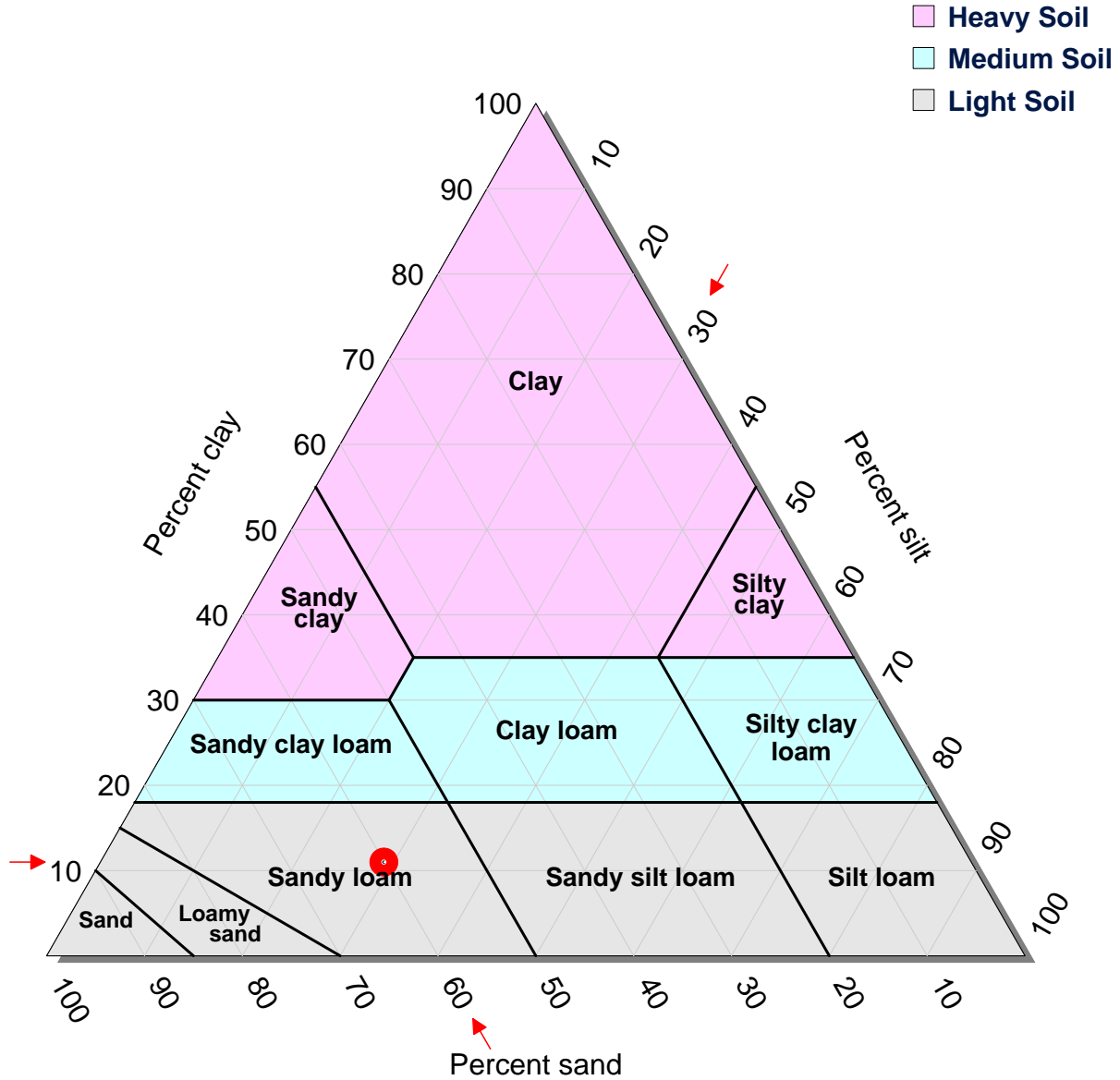


Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728419	Sample Ref:	HA07
Breakdown:	Sand 60%	Silt 29%	Clay 11%
Textural Class:	Sandy Loam		

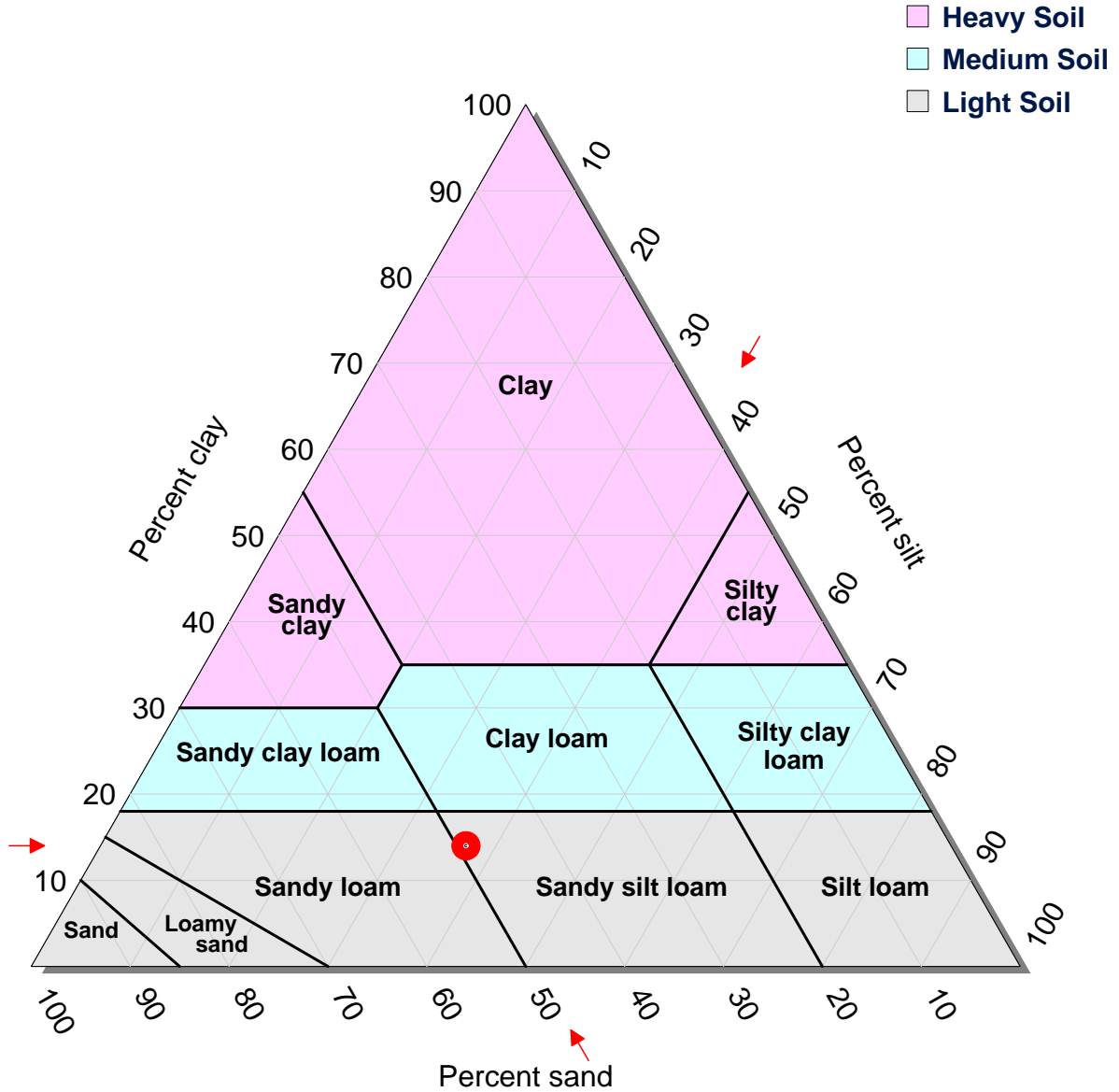


Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728420	Sample Ref:	HA08
Breakdown:	Sand 49%	Silt 37%	Clay 14%
Textural Class:	Sandy Silt Loam		



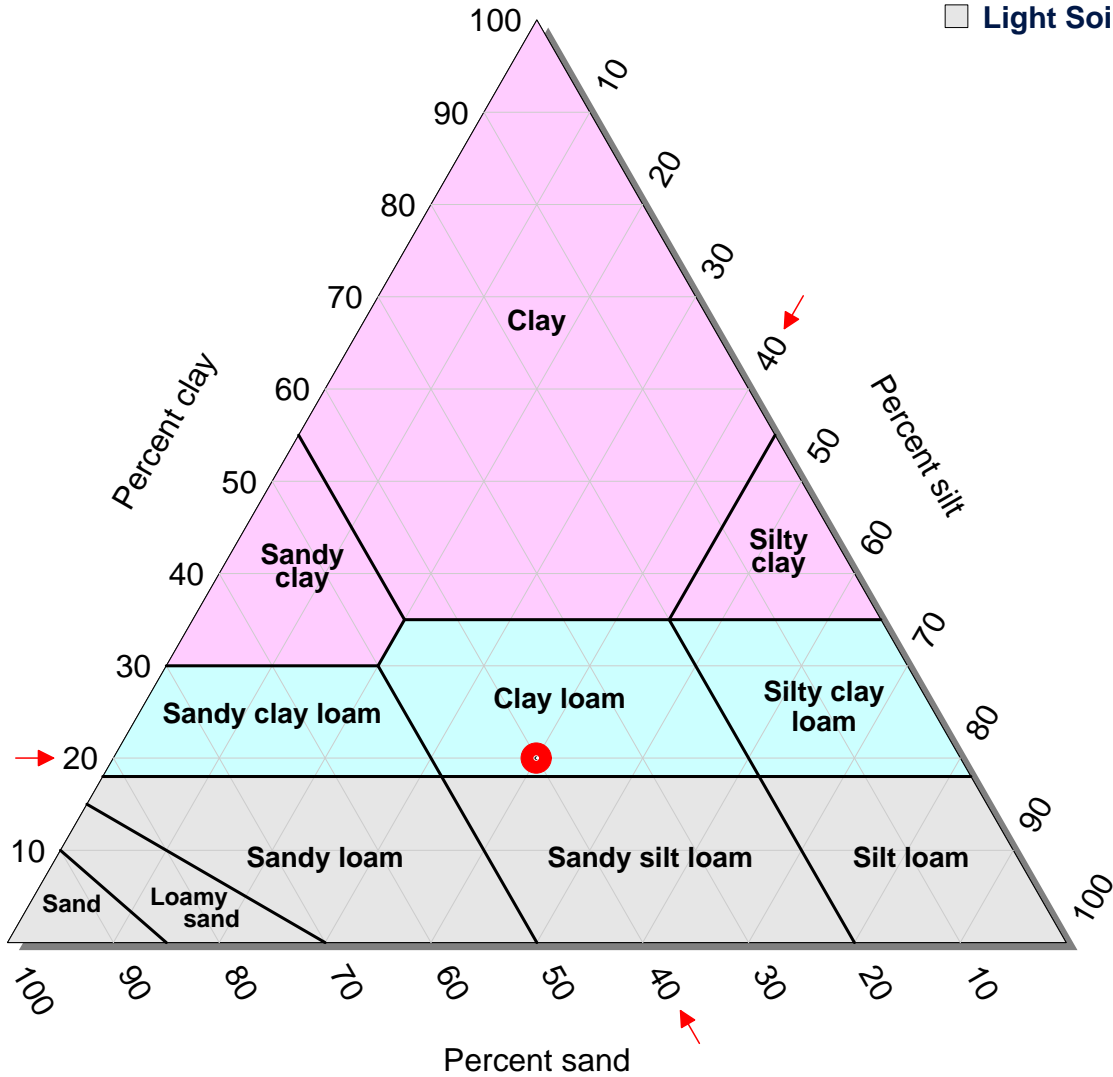
Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification

- Heavy Soil
- Medium Soil
- Light Soil



Sample ID:	SOIL/728421	Sample Ref:	HA09
Breakdown:	Sand 40%	Silt 40%	Clay 20%
Textural Class:	Clay Loam		

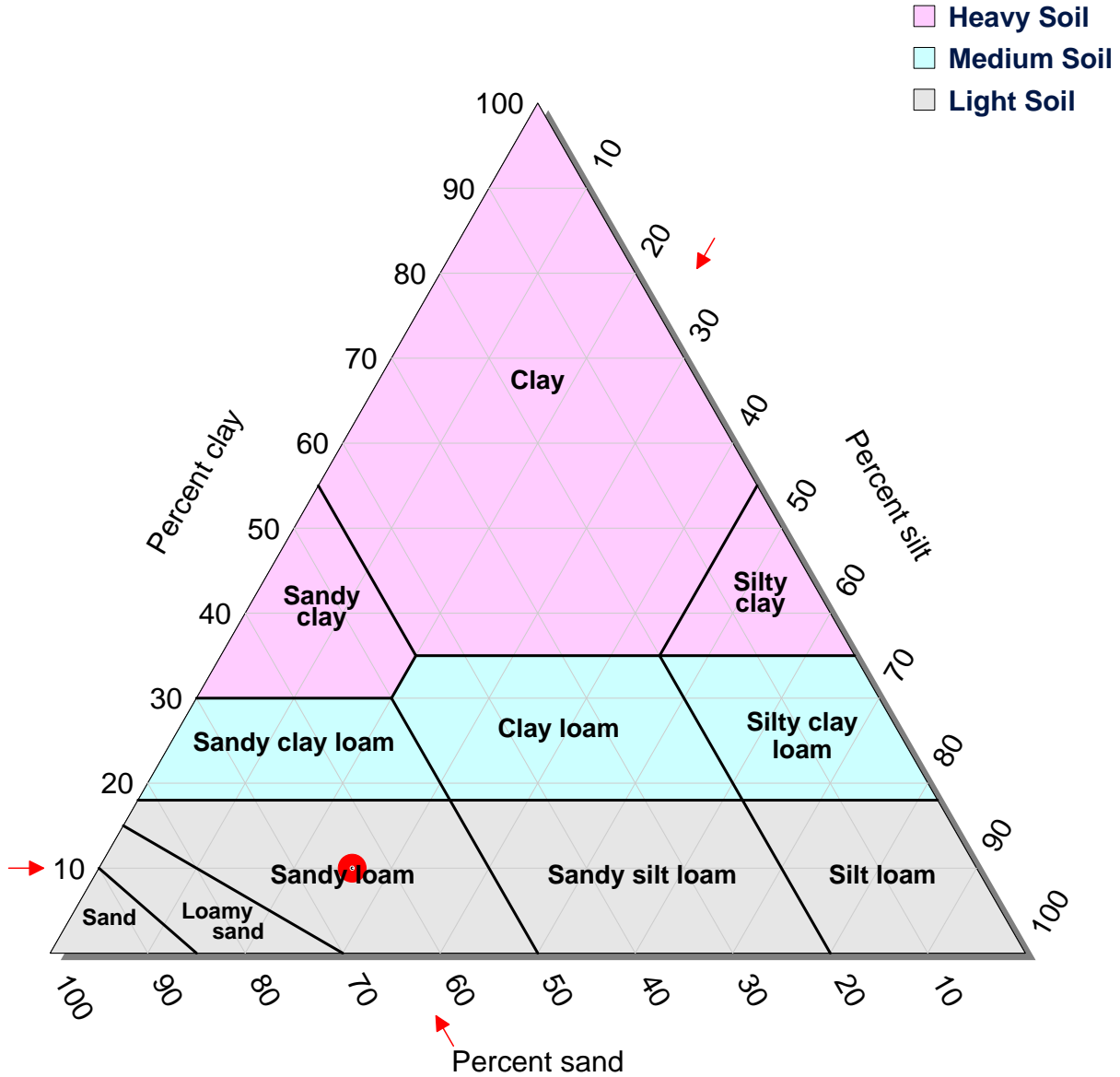


Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728422	Sample Ref:	HA10
Breakdown:	Sand 64%	Silt 26%	Clay 10%
Textural Class:	Sandy Loam		

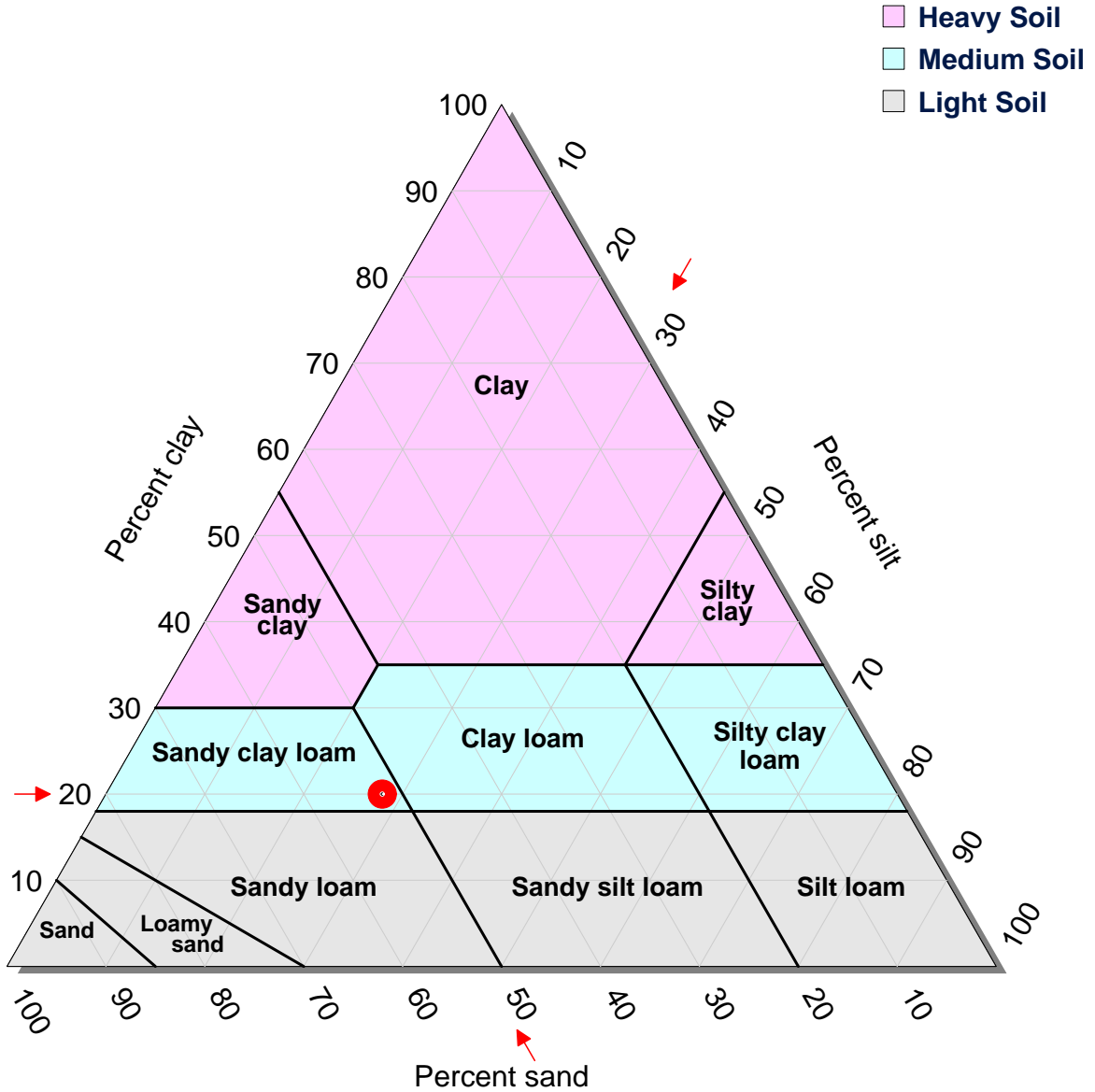


Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728423	Sample Ref:	HA11
Breakdown:	Sand 52%	Silt 28%	Clay 20%
Textural Class:	Sandy Clay Loam		



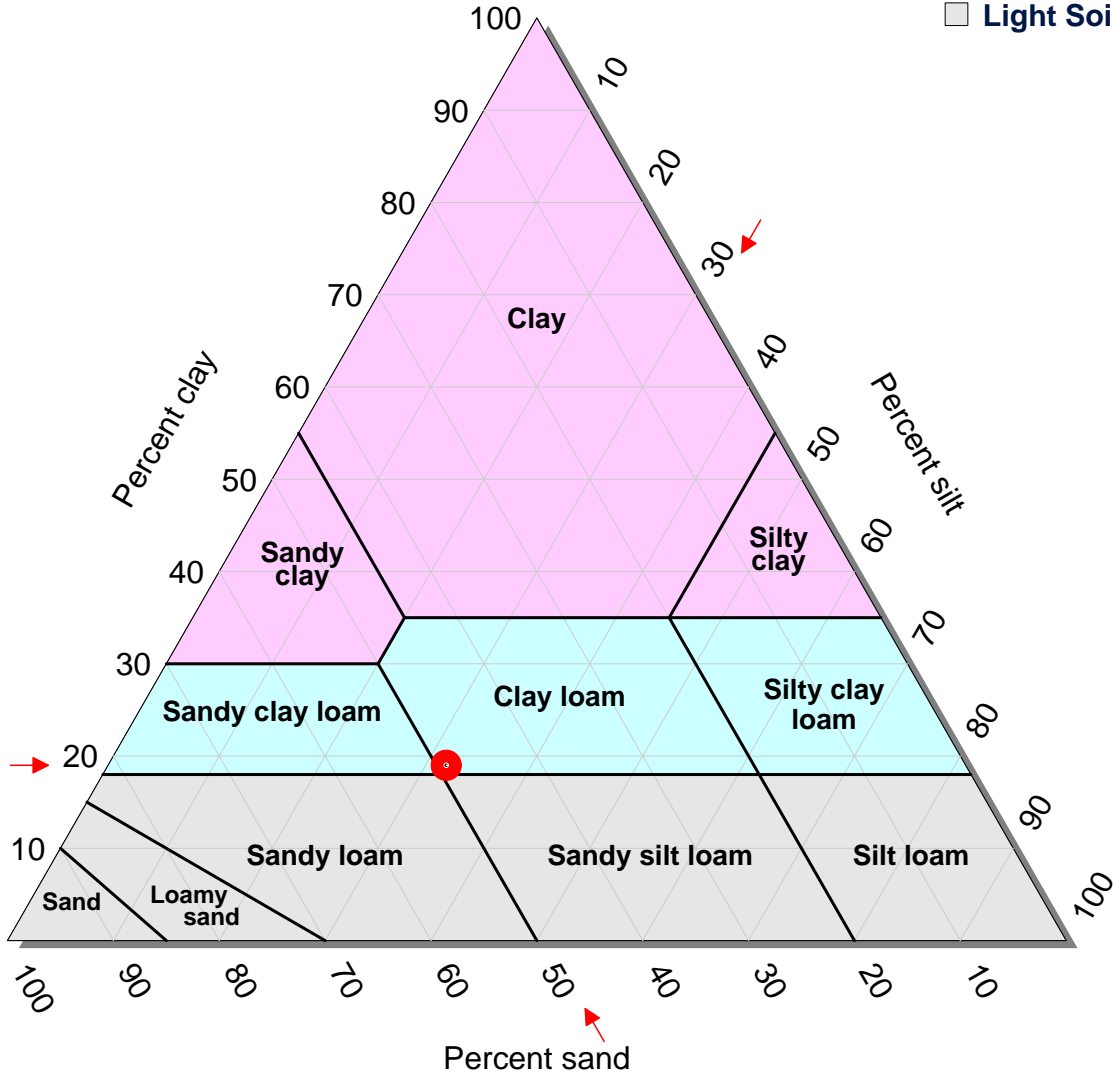
Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification

- Heavy Soil
- Medium Soil
- Light Soil



Sample ID:	SOIL/728424	Sample Ref:	HA12
Breakdown:	Sand 49%	Silt 32%	Clay 19%
Textural Class:	Clay Loam		

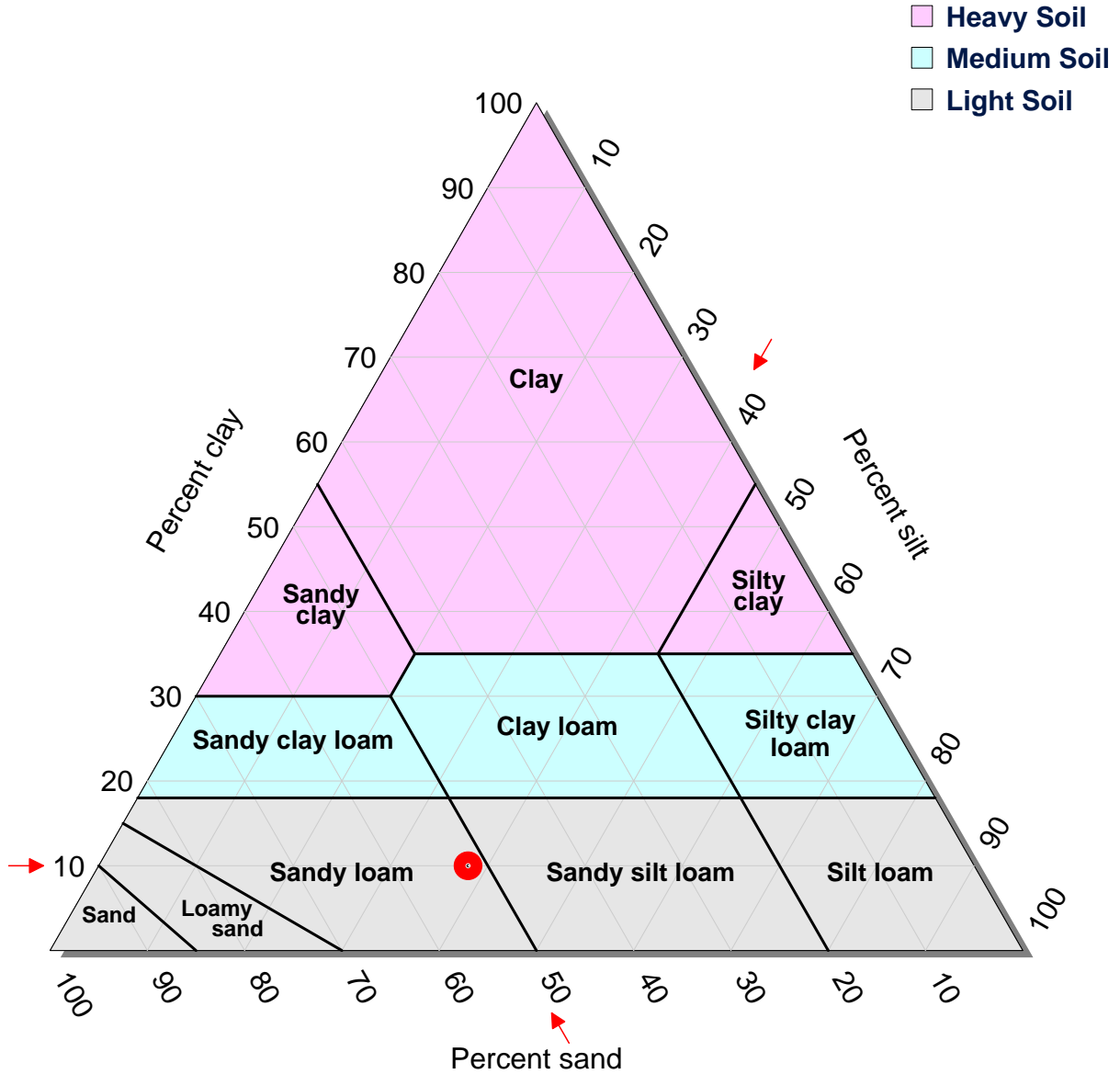


Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728425	Sample Ref:	HA13
Breakdown:	Sand 52%	Silt 38%	Clay 10%
Textural Class:	Sandy Loam		

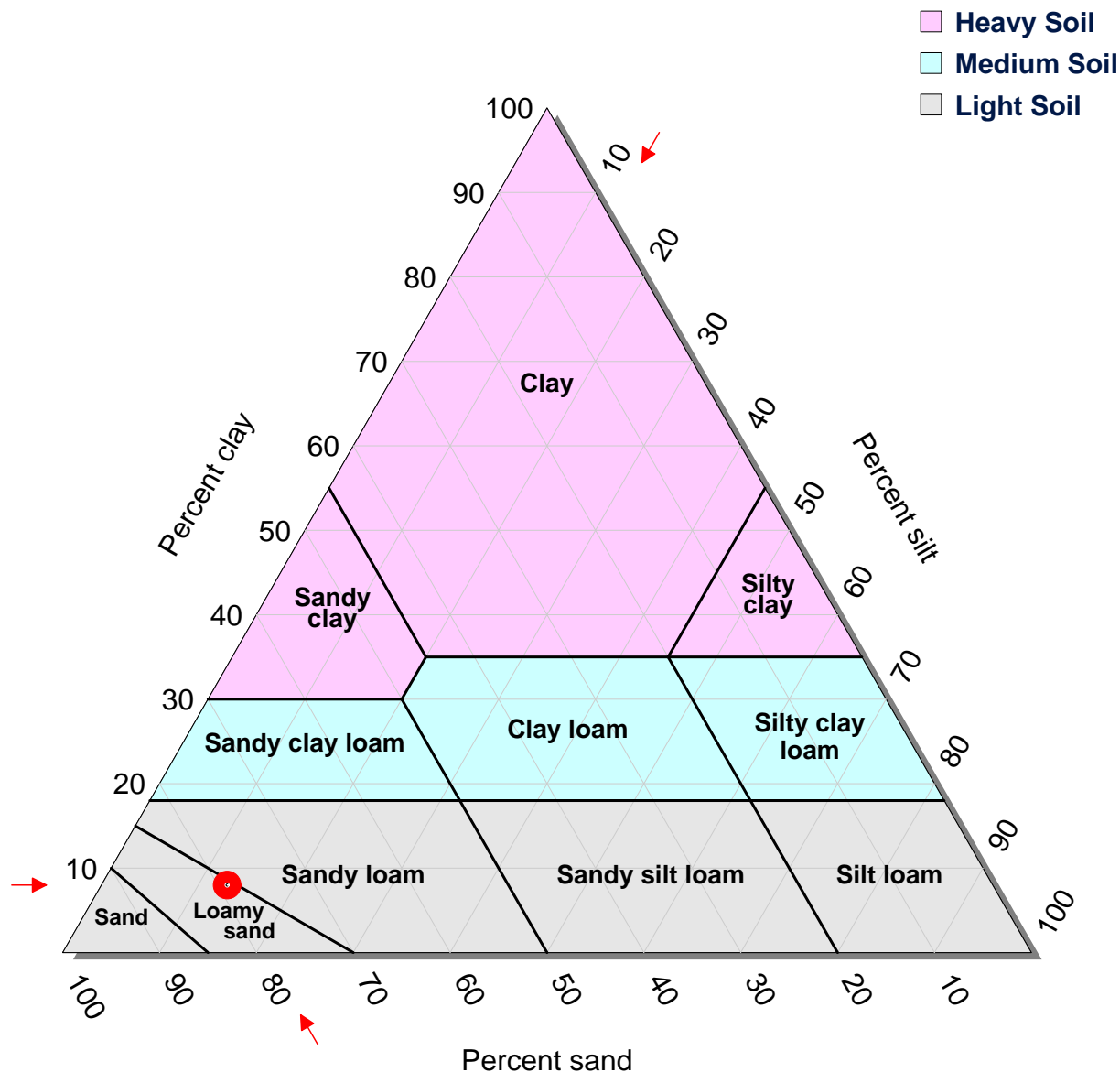


Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728426	Sample Ref:	HA14
Breakdown:	Sand 79%	Silt 13%	Clay 8%
Textural Class:	Loamy Sand		

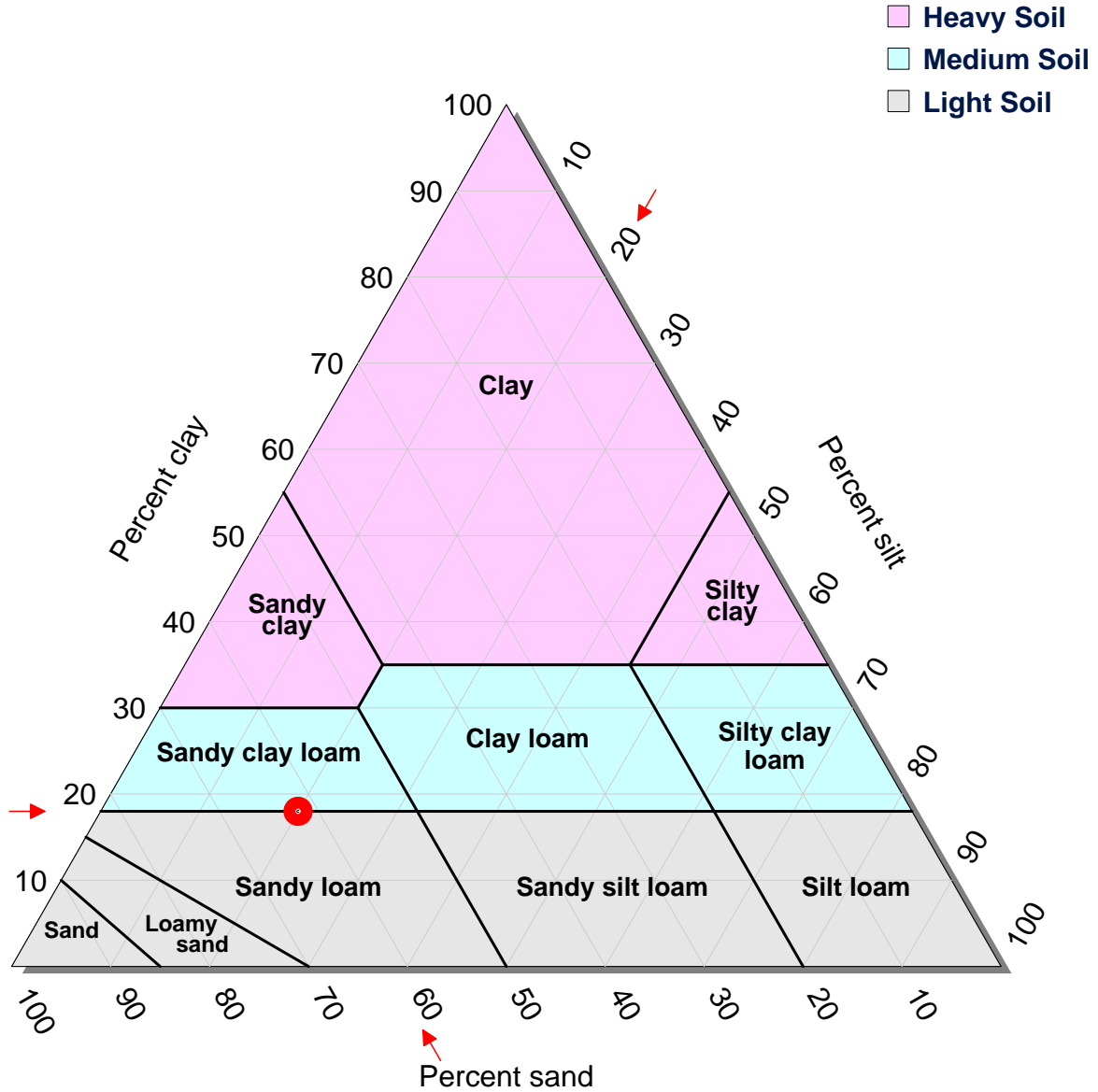


Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728427	Sample Ref:	HA15
Breakdown:	Sand 62%	Silt 20%	Clay 18%
Textural Class:	Sandy Clay Loam/		

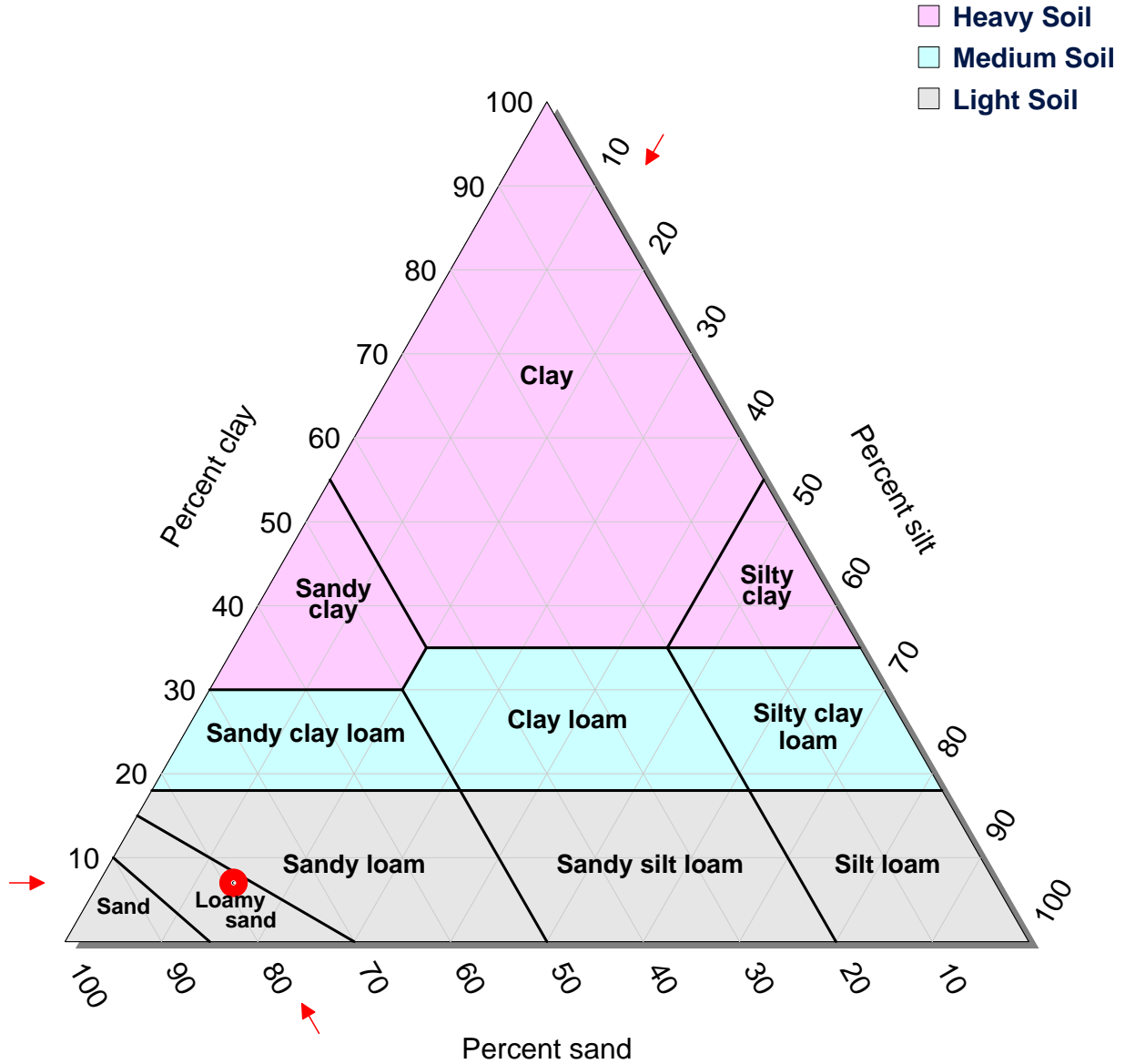


Report Ref: 69664/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728428	Sample Ref:	HA16
Breakdown:	Sand 79%	Silt 14%	Clay 7%
Textural Class:	Loamy Sand		

ANALYTICAL REPORT

Report Number	69665-24	H930	SLR CONSULTING LTD	Client KEMP
Date Received	12-DEC-2024		6 VICTORY HOUSE	
Date Reported	20-JAN-2025		EXETER	
Project	428.004707.00032		DEVON	
Reference	KEMP		EX2 4AA	
Order Number	013062-405			

Laboratory Reference		SOIL728429	SOIL728430							
Sample Reference		HA17	HA18							
Determinand	Unit	SOIL	SOIL							
pH water [1:2.5]		5.7	5.4							
Available Phosphorus (Index)	mg/l	5.4 (0)	<2.5 (0)							
Available Potassium (Index)	mg/l	101 (1)	60.9 (1)							
Available Magnesium (Index)	mg/l	158 (3)	50.0 (1)							
Sand 2.00-0.063mm	% w/w	51	51							
Silt 0.063-0.002mm	% w/w	26	31							
Clay <0.002mm	% w/w	23	18							
Available Sodium	mg/l	31.7	20.9							
Available Calcium	mg/l	591	132							
Organic Matter LOI	% w/w	17.5	13.6							
Total Nitrogen	% w/w	0.715	0.566							
Textural Class **		SCL	SCL/SL							
Estimated CEC	meq/100g	12.7	9.4							

Notes	
Analysis Notes	The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.
Document Control	This test report shall not be reproduced, except in full, without the written approval of the laboratory.

ANALYTICAL NOTES

Report Number	69665-24	H930	SLR CONSULTING LTD	Client KEMP
Date Received	12-DEC-2024		6 VICTORY HOUSE	
Date Reported	20-JAN-2025		EXETER	
Project	428.004707.00032		DEVON	
Reference	KEMP		EX2 4AA	
Order Number	013062-405			

Notes	
Reported by	<p>** Please see the attached document for the definition of textural classes.</p> <p><i>Myles Nicholson</i> Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 886338 Fax: 01344 890972 email: enquiries@nrm.uk.com</p>

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.



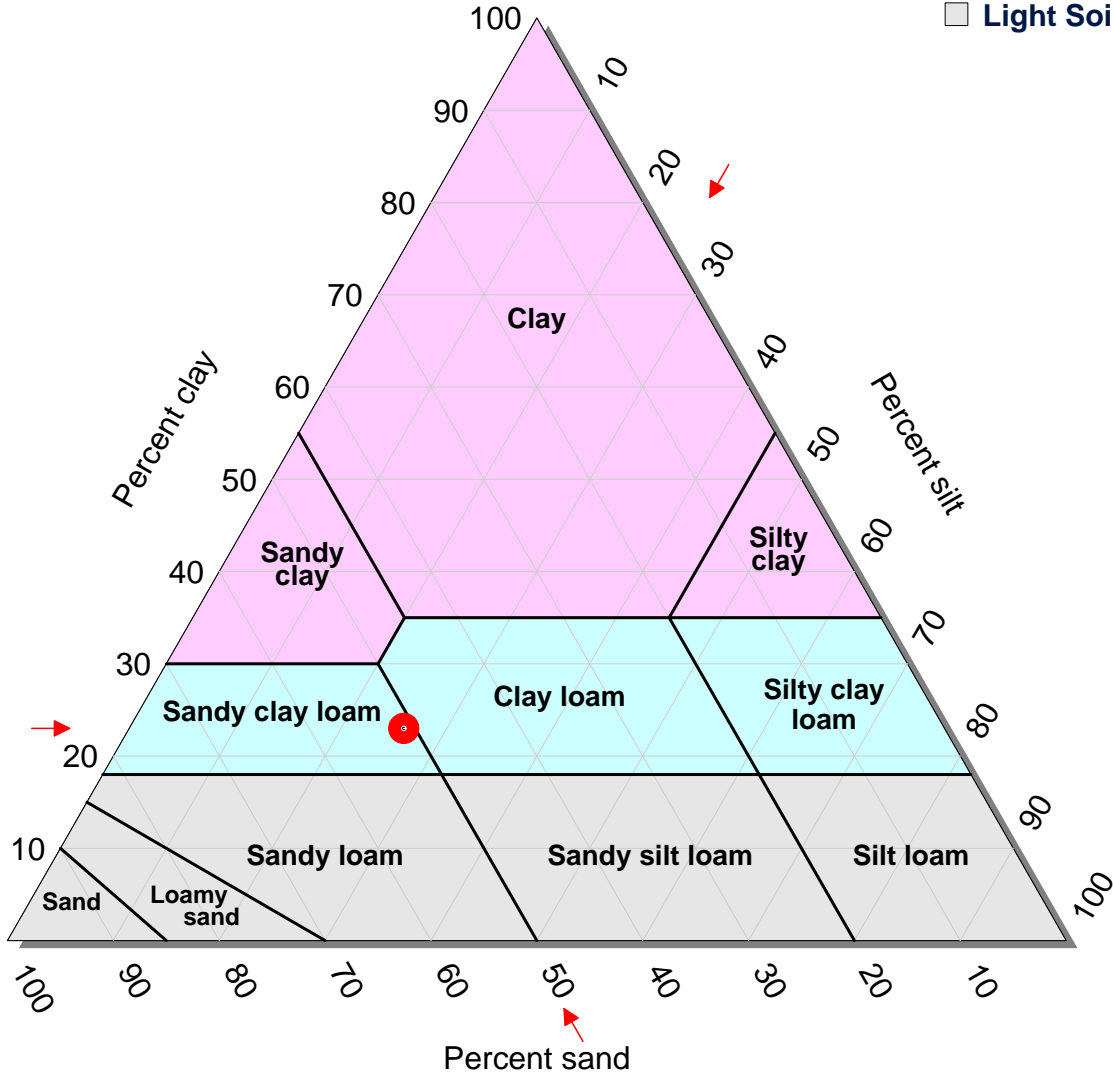
Report Ref: 69665/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification

- Heavy Soil
- Medium Soil
- Light Soil



Sample ID:	SOIL/728429	Sample Ref:	HA17
Breakdown:	Sand 51%	Silt 26%	Clay 23%
Textural Class:	Sandy Clay Loam		

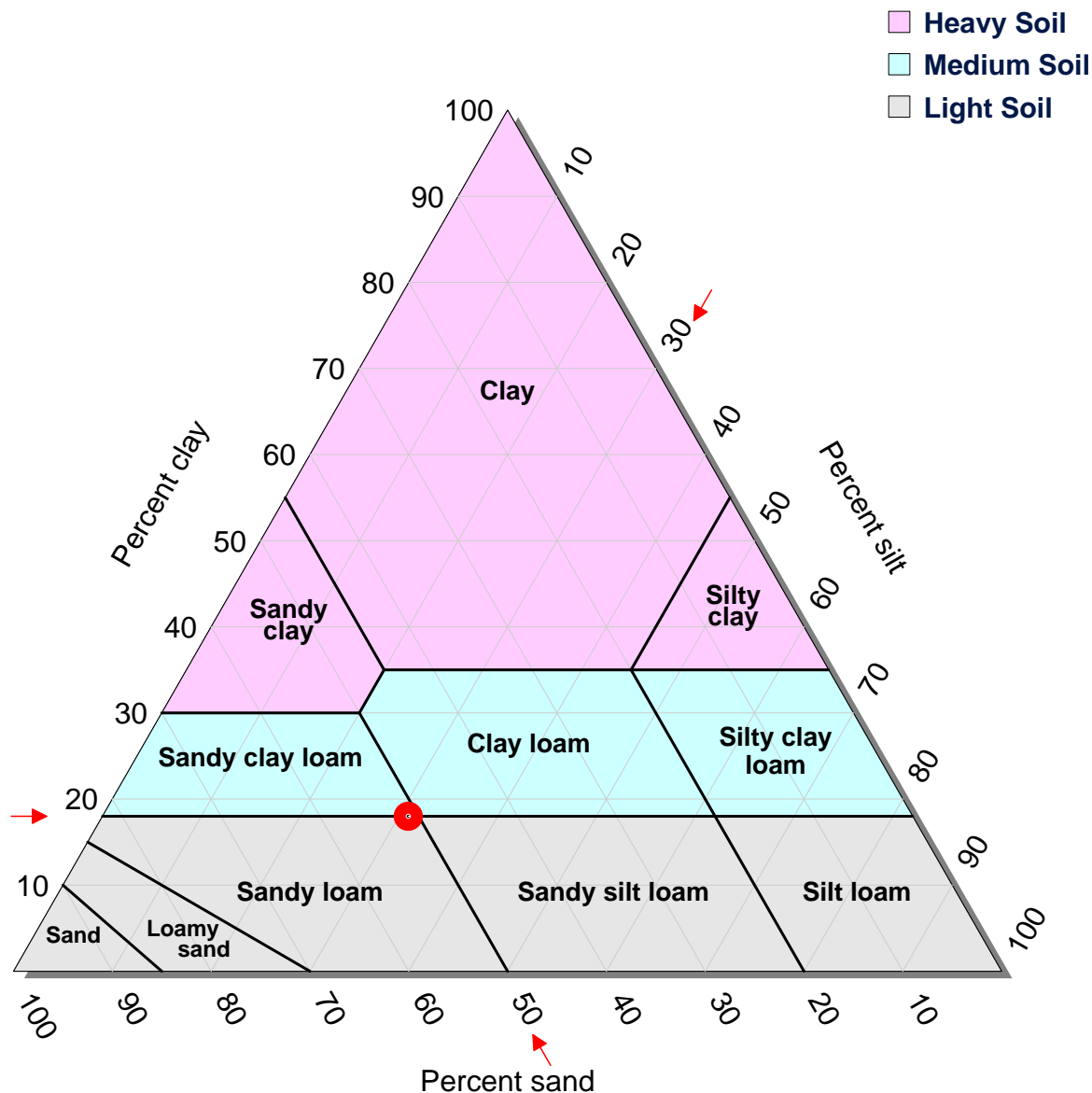


Report Ref: 69665/24

Date Received: 12-Dec-2024

Date Reported: 20-Jan-2025

Soil Textural Classification



Sample ID:	SOIL/728430	Sample Ref:	HA18
Breakdown:	Sand 51%	Silt 31%	Clay 18%
Textural Class:	Sandy Clay Loam/		

