Balliemeanoch Pumped Storage Hydro

Further Environmental Information

ILI (Borders PSH) Ltd

June 2025

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Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
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1. Introduction

1.1 Overview

This submission of Further Environmental Information (FEI) has been prepared by AECOM on behalf of ILI (Borders PSH) Ltd (hereafter referred to as the '**Applicant'**). This contains additional information in relation to the application made to the Scottish Ministers under Section 36 (s36) of the Electricity Act 1989 for the proposed Balliemeanoch Pumped Storage Hydro Scheme, hereby known as the '**Development'**.

1.2 Requirement to Consult and Advertise

During the determination of the s36 application, additional information is being provided due to an update of the Development layout. As this update is considered to be relevant to reaching a reasoned conclusion on the acceptability of the Development, this is considered by the Energy Consents Unit, on behalf of the Scottish Ministers, to constitute additional information (hereafter referred to as '**FEI**') under regulation 19(2) of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ('**the Regs**').

Regulation 20(1) of the Regs requires a notice to be published in the Edinburgh Gazette and in a publication circulating in the locality of the Development following the provision of FEI to the Scottish Ministers. This notice must also be served directly upon relevant parties, including the planning authority (Argyll and Bute Council in this instance) and any other bodies originally consulted during the s36 application consultation process.

The notice will be published in the following publications:

- Dunoon Observer on Friday 27th June 2025
- Oban Times on Thursday 26th June 2025
- Lochaber Times on Thursday 26th June 2025
- Argyllshire Advertiser on Thursday 26th June 2025
- Campbeltown Courier on Thursday 26th June 2025
- Arran Banner on Thursday 26th June 2025
- Edinburgh Gazette on Friday 27th June 2025.

The notice will also be published on the Applicant's website: https://www.balliemeanochpsh.co.uk/

The notice details that the FEI submission will be available for public viewing at the following locations:

- Oban, Lorn and the Isles Argyll & Bute Council Planning Office, Municipal Buildings, Albany Street, Oban PA34 4AW
- Dalmally Community Centre, Dalmally Community Centre, Dalmally, PA33 1AX
- Portsonachan Village Hall, Portsonachan, by Dalmally, Argyll, PA33 1BJ
- West Lochfyneside Parish Church, 3 Main St E, Inveraray PA32 8TP

The FEI will also be available for viewing on the application website at https://www.balliemeanochpsh.co.uk and at www.energyconsents.scot.

1.3 Structure of the Further Environmental Information

The contents of this FEI submission are as follows:

- **Section 2** – Summary of main consultation feedback and design update
- **Section 3** – Design review for the Headpond

- **Section 4** – Update Environmental Impact Assessment

This FEI also contains the following Appendices located at the end of this report:

- **Appendix A –** Revised Layout
- **Appendix B** – Revised oLEMP Figures
- **Appendix C –** Revised Visualisation
- **Appendix D** – Terrestrial Ecology / Geology and Soils
- **Appendix E** – Draft Outline Peat Management Plan
- **Appendix F** – Preliminary Peat Landslide Hazard Risk Assessment
- **Appendix G** – Outline Peatland Restoration Plan
- **Appendix H**– Water Resource and Flood Risk
- **Appendix I** – Framework Construction Traffic Management Plan
- **Appendix** J – Summary EIA Residual Effects with FEI Changes
- **Appendix K** – Updated EIAR Figures

2. Consultation and Design Update Summary

2.1 Introduction

Further to the submission of the s36 application for the Development there were a number of representations received from stakeholders and consultees. The Applicant has, in turn, revised the proposal by significantly reducing the scale of the Development, particularly the upper reservoir, in order to resolve the issues raised.

The common issue raised in post application consultation with the community around Loch Awe was the Development's impact on water levels on the loch. The Applicant has reviewed the design and taken the necessary steps to reduce the volume of water used, the rate of flow of this water, Development operational duration, and the upper and lower limits of that operation. The Applicant has therefore chosen to reduce the storage volume in the Headpond from 51.60 Mm^3 to 14.68 Mm^3, which reduces the volume of water and the length of time that the Development can operate. The installed generation capacity remains as described in the s36 application as "up to 1500 MW", but in order to achieve the above the Applicant has had to reduce that output to a fixed capacity of 900 MW, in line with the grid connection agreement. This reduces the rate of flow, and the rate at which Loch levels will be seen to change. The location of the Headpond is unchanged, although it is reduced in size, and Loch Awe remains the Tailpond for the Development. The loch-side infrastructure on Loch Awe itself also remains unchanged. The revised layout of the Development is shown in **Appendix A**. None of the proposed changes to the layout and design have resulted in worse effects than those reported in the EIAR, with these showing no change or and improvement upon the original s36 submission.

2.2 Summary of Key Development Changes

- The volume of water used has reduced from approximately 52 million cubic meters to approximately 15 million cubic meters.
- The changes in water level on Loch Awe which can result from the operation of this Development has reduced from 1.2 m to 0.4 m.
- The rate at which the loch water levels can change as a result of the operation of this Development has also been reduced to around 28 mm per hour (a little over 1 inch), with the duration of operation reduced from over 30 hours to 15 hours.
- Embankment 1 reduced in height from 95 m to 63 m (above existing ground level). Embankment 2 has reduced in height from 13 m to 9 m.

- The installed generation capacity has been reduced to accommodate the above operational changes, to 900 MW (from 1500 MW).
- Borrow pit (for dam construction material) reduced from 10,678,050 m^3 to 2,432,660 m^3 with much reduced peat excavation from 642,450 m^3 to 140,560 m^3.
- The proposed upper limit at which the project can operate has also been brought down by 470 mm, meaning when the loch is naturally very high and rising because of heavy rain, the project will not add further water back into the loch. Instead, any extracted water will remain in the Headpond under those conditions, thereby reducing the maximum level to which the loch will rise.

3. Design Review for Headpond

3.1 Introduction

The Applicant has received specific comments from a number of consultees regarding water levels and flows within Loch Awe during operation of the Development. This resulted in the design being re-evaluated to manage water levels within a range that is likely to be considered more appropriate.

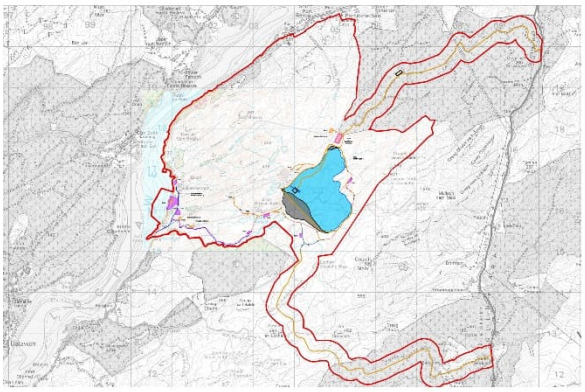
The following sections set out a description of the design changes, which can be seen in **Appendix A**.

3.2 Design Changes

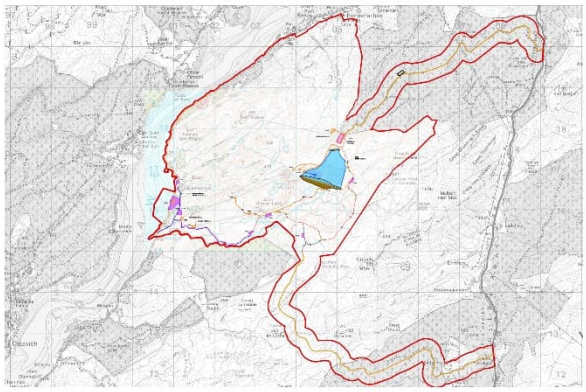
Headpond

As noted within **Section 2.2** above, the Headpond and storage capacity for the Development have been re-evaluated, as set out below in **Table 3-1**. The table demonstrates the beneficial results of reducing the size of the Headpond and installed generation capacity.

The re-evaluated Headpond has been considered with the same Top Water Level (420 mAOD) and Bottom Water Level (384 mAOD) as set out in the original s36 application. Note, all changes to the Headpond are within the footprint / envelope of the original design submitted for s36 consent, and the description and location of the Development have not changed. The below shows the original design and the revised design, with further figures within **Appendix A Revised Layout**.



Original Headpond Arrangement



Revised Headpond Arrangement

Table 3-1 Headpond Design Review

Infrastructure ID	'Original' Design Location (National Grid Reference (NGR))	Re-evaluated Location (NGR)	Details
Embankment 1	NN 04110 16014	NN 04540 16687	Embankment 1 has been relocated and realigned, accounting for the topography of the area. Top water levels within the Headpond have been retained at the levels set out in the s36 application, however, the crest level of the dam has been reduced 2 m, from 425 mAOD to 423 mAOD. Due to the rising topography, the maximum elevation above existing ground reduces the height of the embankment from approximately 95 m to approximately 63 m.
Embankment 2	NN 04929 17519	NN 04939 17478	Embankment 2 has been relocated and realigned to take account of the topography. The crest level of the dam has also been reduced from 425 mAOD to 423 mAOD, in alignment with Embankment 1. Accounting for this new arrangement, the maximum elevation above existing ground level has been reduced from approximately 13 m to approximately 9 m.
Headpond Inlet / Outlet Structure	NN 04099 16477	NN 04429 16877	The Headpond Inlet / Outlet Structure has been relocated to sit within the basin of the re-evaluated Headpond. Due to the topography, an inlet trench is required to house the Headpond Inlet / Outlet Structure. The inlet trench measures approximately 240 m x 60 m and has a maximum cut of

			approximately 49 m. The material from the inlet trench is identified for use in the construction of the embankments.
Borrow Pit (BP) 01	NN 04837 16054	NN 04975 16875	BP01 has been relocated approximately to sit within the basin of the re-evaluated Headpond. Due to a reduced material requirements for the construction of the embankments, BP01 has been resized accordingly. BP01 measures approximately 365 m x 375 m and has a maximum cut of approximately 64 m.
Spillway	NN 03690 16481	NN 04976 16556	The Spillway has been relocated to align with the re-evaluated Headpond. Due to the local topography, the spillway type has been amended from an open channel to an overflow weir, embedded into the outer face of Embankment 1. This will spill into an unnamed tributary of Allt Beochlich should operational conditions necessitate its use.

Non-Headpond Above Ground Infrastructure

The location of some of the surface works has been revised to suit the re-evaluated Headpond layout. The overall length of tracks remains broadly in line with the original submission, with some temporary stretches of track now being reclassified as permanent as a result of the repositioning of certain above ground elements. These changes are set out below in **Table 3-2**.

Table 3-2 Non-Headpond Design Review

Infrastructure ID	'Original' Design Location (National Grid Reference (NGR))	Re-evaluated Location (NGR)	Details
New Access Tracks (Excavated)	-	-	The original s36 submission utilised existing tracks with some new access track proposed. The total length of new access tracks (excavated) has increased by approximately 2,500 m, to a total length of 6,650 m due to the following: • Relocation of PC09 • The re-classification of the proposed access track to the north of the Headpond from temporary to permanent, to provide access to the relocated PC17, PC18 and PC19. Note, access to PC17 – PC19 was previously proposed across the crest of Embankment 1. Due to topographical constraints in the re-evaluated location, this is no longer feasible, hence the re-classification of the temporary access track to permanent.
New Access Tracks (Floating)	-	-	The total length of floating access tracks has increased by approximately 60m from the original s36 submission, to a total length of 3,867 m (+2 %). This is due to the relocation of PC09.
New Access Tracks (Floating Transition)	-	-	The total length of floating transitions has increased by 25m, to a total length of 535 m (+ 5%). This is due to the relocation of PC09.
Temp. Construction Access	-	-	The total length of temporary construction access tracks has reduced by 2,715m to a total length of 2,683 m (- 50.23%). This is largely due to the re-classification of the proposed access track to the north of the Headpond area from temporary to permanent. Overall the total length of tracks (permanent and temporary) is broadly similar to the previous scheme.
Permanent Compound (PC) 09	NN 03816 15871	NN 04655 16526	PC09 has been relocated to align with the re-evaluated Headpond Embankment 1.
PC17	NN 03809 16644	NN 04198 16956	PC17 has been relocated to align with changes to the below ground infrastructure (**Table 3-3**) following re-evaluation of the Headpond. PC17 is the location of the Gate Shaft, and the finished elevation is consistent with the original s36 application.
PC18	NN 03678 16748	NN 04078 16996	PC18 has been relocated to align with changes to the below ground infrastructure (**Table 3-3**) following re-evaluation of the Headpond. PC17 is the location at which the Surge Shaft will sit at surface level The finished elevation is consistent with the original s36 application.
PC19	NN 03646 16875	NN 03936 17009	PC19 has been relocated to align with changes to the below ground infrastructure (**Table 3-3**) following re-evaluation of the Headpond. PC19 is the location of the Ventilation Shaft will sit at surface level The finished elevation is consistent with the original s36 application.

Below Ground Infrastructure

The location of below ground infrastructure, while not a 'visible' change to the Development, has also been revised in order to optimise the hydraulic system and reduce losses through the system. To reduce losses, the Upper Headrace Tunnel (between the Headpond Inlet / Outlet Structure and the vertical pressure shaft) and the Lower Headrace Tunnel (between the bottom of the vertical pressure shaft and the Power Cavern Complex) has been limited in length. The components along this section of waterways have therefore been realigned as part of the re-evaluated design.

The location of the dry tunnel portals has been retained as per the 'original' s36 submission as well as the Tailpond Inlet / Outlet Structure and the revised arrangements will not alter the proposals on Loch Awe. These changes are set out in **Table 3-3**.

Table 3-3 Below Ground Infrastructure Design Review

Infrastructure ID	'Original' s36 submission Location (National Grid Reference (NGR))	Re-evaluated Location (NGR)	Details
Upper Gate Shaft	NN 03809 16644	NN 04198 16956	The Upper Gate Shaft has been relocated, in line with the realigned Headrace Tunnel. The Upper Gate Shaft emerges at surface level at PC17, as set out in **Table 3-2**.
Upper Surge Shaft	NN 03678 16748	NN 04078 16996	The Upper Surge Shaft has been relocated, in line with the realigned Headrace Tunnel. The Upper Surge Shaft emerges at surface level at PC18, as set out in **Table 3-2**.
Upper Ventilation Shaft	NN 03646 16875	NN 03936 17009	The Upper Ventilation Shaft has been relocated, in line with the realigned Headrace Tunnel. The Upper Ventilation Shaft emerges at surface level at PC19, as set out in **Table 3-2**.
Power Cavern Complex	NN 03272 16763	NN 03671 16987	The Power Cavern Complex has been moved to minimise the distance between the re-evaluated location of the Headpond Inlet / Outlet Structure and the cavern.
Lower Surge Tank	NN 03219 16648	NN 03620 16866	The Lower Surge Tank has been moved to minimise the distance to line up with the updated Power Cavern Complex.
Wet Tunnels	-	-	The waterways have been realigned to align with the re-evaluated Headpond design, specifically the location of the Headpond Inlet / Outlet Structure. Largely, the alignment is as per the 'original' s36 submission, however, the Headrace Tunnel has been moved in line with the Power Cavern Complex. The Headrace tunnel has been reduced in length by 96m to 574m (- 14%). Meanwhile, the Tailrace tunnel has been increased by 445m to 2,730m (+ 16%).
Dry Tunnels	-	-	The dry tunnels have been realigned to match up with the realigned Power Cavern Complex. The end location of the dry tunnels is consistent with the 'original' submission, with changes to the lengths as follows: • Construction Tunnel: Increase by 460m (+ 17%). • Access Tunnel: Increase by 595m (+ 20%). • Cable Tunnel: Increase by 545m (+ 14%).

4. Environmental Assessment

The above sections set out the engineering optimisation which has been undertaken to demonstrate the result of reducing the size of the Headpond. The reduced Headpond results in reduced flow rates and changes within Loch Awe as set out above in **Sections 2 and 3**, and shown on associated figures within **Appendix A**. This design change has the potential to remove or reduce the impact of previously reported adverse effects as set out below.

4.1 Landscape and Visual (re: EIAR Chapter 5)

As set out in the s36 application within the Landscape and Visual chapter (**Chapter 5 Landscape and Visual Assessment**), it is acknowledged that there would be certain significant adverse effects arising from the Development during the construction period on a number of both landscape and visual receptors. This is considered to be typical of large-scale energy infrastructure due to the nature of the large-scale works and the sensitivity of receptors within the wider landscape. Such effects have been reduced where possible through the siting and design of the Development. By year 1 of operation, the anticipated significant adverse effects arising from the Development would reduce to none of the landscape designations, two of the Landscape Character Types (LCTs) which host the Development, and eight of the representative viewpoint locations which are typically in close proximity or with panoramic elevated views of the surrounding landscape. By year 15 of operation once reinstatement planting has established, no significant landscape effects are predicted.

Within the s36 application, one significant visual effect remained from Dalavich Jetty (Viewpoint 4) at operation year 15. However, due to the design changes, specifically the reduction in embankment height and alteration in location of the embankment, it is considered that the effects from this viewpoint would reduce to minor adverse at operation year 1 and 15, resulting in no significant adverse effects on landscape or visual receptors at operation year 15 arising from the Development. This is due to the reduced horizontal extent of Embankment 1 in the background of the view. The Embankment would no longer break the skyline, which would remove any effects on the undulating nature of the skyline and would be less noticeable as it would be set against the higher landform beyond rather than the sky. The revised visualisations for Viewpoint 4 can be found within **Appendix C**.

With regard to landscape and visual matters in general, the main design change of relevance is the reduction in size of the Headpond. Despite the entirety of the Headpond waterbody being reduced, the new Headpond Embankment 1 is approximately the same length as set out within the original s36 application and would be at a similar, albeit reduced, height as the previous alignment. The undulating upland landscape in this locality is generally at a similar level, so it not considered that the change in location would have a material change to the landscape and visual effects arising from the Development. For both Embankment 1 and Embankment 2, the maximum elevation above ground has been reduced from the design set out within the original s36 application, therefore this change is likely to result in no change or reduce the original effects as there is likely to be a similar relationship with surrounding landform.

Lochan Airigh would no longer be flooded out to facilitate the Headpond waterbody and the reduced land take would be positive in terms of previously reported effects on landscape character and visual amenity from elevated viewpoints. The proximity of the Headpond waterbody to Lochan Airigh may accentuate the contrast of the straight lines of the embankment and drawdown of the waterbody. However, this would be in a localised area of landscape character and would remain to highly contrast the perception of wildness within the host LCT (LCT 40 Craggy Upland) and would be incongruent within the landscape, as previously reported at operation year 1. It is considered that by operation year 15, the mitigation planting and habitat restoration would continue to help to assimilate the Development into the local landscape setting. This would generally be apparent in a small part of any elevated views such that the contrast would be less noticeable.

4.2 Terrestrial Ecology (re: EIAR Chapter 6)

Only two Significant[1] effects from the Development alone, and before mitigation, were predicted in the EIAR: loss of ancient semi-natural woodland and loss of blanket bog. These are both issues raised by consultees following submission of the s36 application. A discussion of how the revised design of the Development changes the assessment of effects on these features is therefore given below.

[1] 'Significant' effects in Chapter 6: Terrestrial Ecology were considered to be those effects on ecological features which were expected to be of 'Regional' significance of higher, adopting Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines for Ecological Impact Assessment.

4.2.1 Ancient Semi-natural Woodland

Section 6.7.7 of **Chapter 6: Terrestrial Ecology** of the EIAR concluded that construction of the Development could result in the unavoidable loss of a maximum of 0.42 ha of ancient semi-natural woodland, in the area of the proposed Tailpond, adjacent to Loch Awe. All other possible impacts on ancient woodland, including from water level variations in Loch Awe, were assessed as having Negligible effect on this ecological feature. The revised design of the Development will not change the area of ancient woodland that will be lost to construction activities, as this impact will occur at the Tailpond, where there is no change to the design. Given this, and the fact that the original EIAR concluded Negligible effects on ancient woodland from other impact sources, there is no change to the conclusion reached previously, this being that the Development alone will result in Permanent Adverse effect Regional Significance, which is Significant, in the absence of mitigation.

To mitigate for the loss of ancient semi-natural woodland, the Outline Landscape and Ecological Management Plan (oLEMP) submitted with the original s36 application included the following commitments:

- Extensive ecologically-appropriate planting of woodland to expand native woodland beside Loch Awe and nearby, in places also providing visual screening of Tailpond infrastructure;
- Rehabilitation of the caravan zone near the Tailpond by a) removal of caravans, non-native plants, ruderal vegetation and hard-standing; b) planting of appropriate native trees (as standards rather than saplings) to suit and expand the existing thin strip of ancient woodland here; and c) translocation of turves (including deep soil) of ancient woodland ground flora from the Tailpond area to this rehabilitation zone, to replace existing soil/vegetation where currently degraded, under existing trees or planted standards; and
- For retained ancient semi-natural woodland close to works and at possible risk of incursion by works activity, an Ecological Clerk of Works (ECoW) will supervise appropriate demarcation and signposting to exclude plant, vehicles, materials or personnel, and will monitor the exclusion zones to ensure compliance and to take action in the event of non-compliance. This will be additional to standard tree protection measures already included as embedded mitigation.

Following the implementation of mitigation measures summarised above and described in the oLEMP, it was concluded that there would be a residual Permanent Adverse effect of Local Significance, which in the context of the EIAR for the Development was considered to be Not Significant.

An assessment of the cumulative effects of the Development with other developments was carried out and is described in **Section 6.8.1** of **Chapter 6: Terrestrial Ecology**. No schemes were identified at the time of conducting the EIA. However, in subsequent consultation, Argyll and Bute Council advised that Creag Dubh to Dalmally 275 kV overhead line project, located in the same Natural Heritage Zone (NHZ) as the Development will result in the loss of ancient semi-natural woodland. The EIA Report for Creag Dubh to Dalmally was therefore reviewed. It estimates that that project will (in the worst-case) result in a loss of approximately 11.65 ha of ancient semi-natural woodland. The cumulative loss of the Development and the Creag Dubh to Dalmally 275 kV project would therefore equate to approximately 12.07 ha (with both projects committed to planting of native woodland). In the context of the area around Loch Awe only, and not in the wider NHZ 14, the cumulative loss of ancient semi-natural woodland would be approximately 1.8%. This figure would be substantially lower for the whole NHZ. The cumulative losses of ancient semi-natural woodland would therefore be significant at a Local level only, and would not be considered Regionally significant.

4.2.2 Blanket Bog

Section 6.7.9 of **Chapter 6: Terrestrial Ecology** concluded that the loss of blanket bog (approximately 37 ha of which is considered to be degraded, and 50 ha of which is considered to be intact) would result in a Permanent Adverse effect of Regional Significance, and in the context of the EIAR, this is Significant.

The revised design of the Development means that the permanent loss of blanket bog from direct impacts will be approximately 47.7 ha and the temporary loss of blanket bog from direct impacts will be 10.5 ha. The total area of blanket bog loss predicted in the EIAR, for comparison, was approximately 87 ha. Due to the reduction in size of the Headpond, the area of land available for enhancement of bog/heath under the existing Outline Landscape and Ecological Management Plan (oLEMP) would increase to approximately 538 ha (or approximately 5.3 km^2). Revised oLEMP figures can be found within **Appendix B** and the Outline Peatland Restoration Plan in **Appendix G.**

Acknowledging NatureScot's comments to ECU, the applicant understands that to compensate for the loss of 58.2 ha of blanket bog, approximately 582 ha will need to be enhanced (to achieve a ratio of 1:10 for loss: enhanced). Further, to then achieve an overall net gain, and comply with NPF4, an additional 5.82 ha of blanket bog enhancement will be required (equating to 10% of the area to be lost). In total therefore, an area of approximately 587.82 ha (5.87 km^2 requires restoration/enhancement). While some of that can be delivered on the Development Site within the oLEMP area, it may be necessary to identify an off-site location or locations to meet the total area required. The applicant is therefore committed to developing, post-submission and as a condition of consent, a detailed Peatland Restoration Plan which achieves a total area of 590 ha of peatland restoration/enhancement. This would follow NatureScot Peatland ACTION guidance and would not rely on cessation of burning (noting the Peatland ACTION guidance and NatureScot comments on the oLEMP). The detailed Peatland Restoration Plan would be submitted to NatureScot for approval prior to commencement of construction activities for the Development.

Section 6.8.1 considered the cumulative effects of blanket bog loss arising from the Development and other large infrastructure schemes in the surrounding area. It was concluded that there would be no significant cumulative effects from the combined impacts of the identified schemes.

4.3 Aquatic Ecology (re: EIAR Chapter 7)

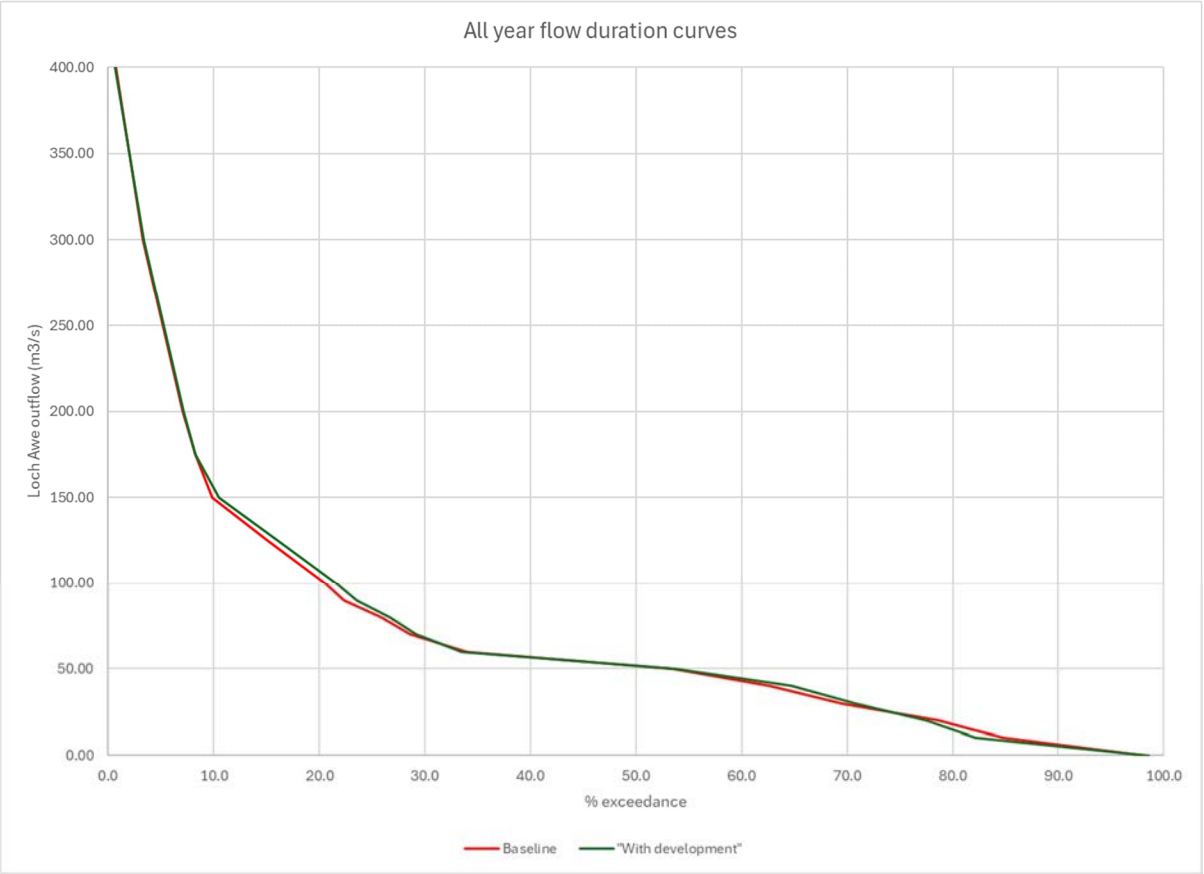
Section 7.11.2.1 of **Chapter 7: Aquatic Ecology** concluded that due to regular generation cycles with water pumped up to the Headpond then returned to the loch, water levels in Loch Awe will fluctuate to a greater extent than in the baseline scenario, and with greater regularity. Due to fluctuating water levels there will be resulting effects on the Loch Awe Barrage, associated fish lift and fish passage. This would result in a moderate effect on migratory fish species in Loch Awe and River Awe, including Atlantic salmon, brown/sea trout, European eel, and lamprey species, and in the context of the EIAR, this is Significant.

The changes in water level that can result from the operation of the Development is being reduced from 1.2 m to 0.4 due to the revised design. Modelling of the outflow at the Awe Barrage with the operation of the revised Development shows that changes in flow will be negligible (<5%) over the course of the year (Figure 4.3.1). The baseline outflow rating at the barrage is estimated based on the change in volume of the loch and the calculated inflow to determine the total outflow from the loch, but it is uncertain what proportion of outflow involves pumping into Cruachan Headpond, abstraction into the Barrage hydro-electric intake, flow through the fish pass or any other compensation flow arrangement. Given the results of the current modelling approach for the revised scheme, the upstream migration of fish from the River Awe into Loch Awe will not be affected.

Given that the magnitude of the changes in water level on Loch Awe are being reduced by two-thirds, and that negligible changes in flows are expected from Loch Awe into the River Awe, the resulting moderate adverse effect on migratory fish species in Loch Awe and River Awe is considered as being mitigated to a minor adverse effect and is Not Significant.

All other residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect such as those described above, the overall conclusions of Chapter 7 in the EIAR still apply.

Figure 4.3.1: Modelled flow duration curve for the River Awe



4.4 Marine Ecology (re: EIAR Chapter 8)

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. This is because the lochside features of the Development are unchanged. Although the changes identified may have some beneficial effect elsewhere, the overall conclusions of Chapter 8 in the EIAR still apply.

4.5 Ornithology (re: EIAR Chapter 9)

The only residual significant effects on an ornithological feature predicted by the EIAR was the permanent loss of habitat for golden eagle and the potential for displacement of foraging golden eagles during the construction phase of the Development. This conclusion was reached partly on the results of Golden Eagle Topographical (GET) modelling carried out to inform the assessment. This estimated a loss of habitat from territorial birds (as presented in **EIAR Volume 6 Confidential Appendices, Confidential Appendix 9.1: Schedule 1 Birds**).

The revised design of the Development has a smaller Headpond area, and the habitat which could be lost to golden eagle during the construction phase will be reduced. Moreover, in their response to ECU, NatureScot advised that they consider that only one pair of golden eagles hold territory over the Development Site, and not two, as was assumed (on a worst-case basis) in the EIAR. The percentage loss of habitat that will occur is therefore likely to be lower in reality than was predicted in the EIAR. For this reason, the conclusions of the assessment are now as follows:

- A Temporary Adverse effect of Regional Significance is predicted from displacement of foraging golden eagles during the construction phase. This is unchanged from the EIAR and is considered to be very precautionary, based on the fact that the level of displacement during construction is likely to be higher than during operation (and this area of habitat effectively lost will be larger). However, the effect of construction phase disturbance would only last for the duration of the construction period.

- A Permanent Adverse effect of Local Significance would occur from habitat loss. This is Not Significant in the context of the EIA.

There is consequently no conflict with the requirements of National Planning Framework 4 (NPF4) in relation to golden eagles. Policy 4f of NPF4 requires that impacts on protected species should be considered as part of the planning process, and this has been done, as described above and in the original EIAR. Disturbance of breeding golden eagles, which would be an offence under relevant legislation, will be avoided, as described in **Confidential Appendix 9.1: Schedule 1 Birds.** Furthermore, Policy 3b of NPF4 requires that major developments will only be supported where the proposals include for biodiversity enhancement. As described above in relation to ancient semi-natural woodland and blanket bog, a range of habitat enhancement measures described in the oLEMP will be implemented, and these are likely to increase live prey availability for golden eagles in the medium-term. This could lead to an increase in the breeding productivity of golden eagle pair(s) in this area, which is currently low. Should this occur, the significance of effect on golden eagle would be further reduced, and may even become Negligible or positive.

4.6 Geology and Soils (re: EIAR Chapter 10)

The re-evaluated design reduces the estimated excavated volume of peat by approximately 63%. Considering the overall reduction in excavation volume, it is no longer proposed that excavated peat will be re-instated in the Headpond Borrow Pit. Rather, peat will be managed and re-instated at surface level in the form of dressing of access track verges, dressing of compound verges, reinstatement of temporary access tracks and potential peatland restoration.

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions of the Chapter 10 in the EIAR still apply. Further details are included in **Appendix D**.

An updated Draft Outline Peat Management Plan (oPMP) has also been produced as a result of the design changes. This can be found within **Appendix E**. This supersedes **Appendix 10.2** within **Volume 5** of the EIAR. The Outline PMP provides details on the anticipated approximate volumes of peat that may be excavated during construction, the characteristics of the peat that would be excavated, and the principles and methods of how and where this excavated peat would be stored, reused and managed. The oPMP will be developed into a final PMP following a detailed ground investigation, including use of peat cores, as well as the detailed design of infrastructure, post-planning consent.

A preliminary Peat Landslide Hazard and Risk Assessment (PLHRA) to confirm the initial infrastructure design phase has been undertaken. This can be found within **Appendix F**. The PLHRA has been undertaken to assess the risk of peat landslides as a result of construction of the Proposed Development. In summary, the majority of the proposed infrastructure is located in areas assessed as having a Hazard Ranking of 'Low', meaning that the project can proceed as long as further investigation to refine the assessment and mitigate the hazard is undertaken. It should be noted that even after this Preliminary PLHRA, the Hazard Ranking is considered to be relatively conservative given the approach undertaken. As such, it is considered that following a quantitative assessment, which incorporates further more detailed ground investigation data and further details on the design and construction, the Hazard Rankings will reduce from that identified within the PLHRA in **Appendix F**.

4.7 Water Environment (re: EIAR Chapter 11)

The reduction in the size of the Headpond is a beneficial change with regards to the water environment and will avoid some impacts and reduce others, whilst introducing relatively few new impacts on minor water features only.

The reduced Headpond avoids the need to inundate Loch Airigh, which is retained as a water feature, and a reach of the Allt Beochlich (LA6), which would have severed the upper catchment. Only the channels of three minor first and second order tributaries to the Allt Beochlich (LA6) will be lost to the Development with the revised Headpond layout. PC09 has also been moved away from the Allt Beochlich (LA6) resulting in another minor adverse effect (not significant) no longer applying.

Flows from the tributaries that remain affected can still be passed forward as water in the Headpond is abstracted from Loch Awe and does not rely on catchment inflows, and although any coarse sediment being transported by them will be intercepted by the Headpond, the volumes of material being moved are unlikely to be significant and should not result in any significant reduction in supply to the Allt Beochlich (LA6) downstream. Therefore, the impact

to the flow regime and sediment transport along Allt Beochlich (LA6) is now predicted to be low adverse from medium adverse, reducing to a minor adverse effect (not significant) from moderate adverse (significant).

The revised design will require less earthworks as the Headpond and Main Embankment Dam have been significantly reduced in area and height. This will reduce the pollution risk to nearby water features, although there does remain a risk during temporary works. The changes to predicted effects during construction are set out below:

- As Loch Airigh is now to be retained it becomes a receptor during construction that will need to be buffered and protected as other water features are being. The mitigation set out in the EIAR previously is consistent with ensuring this and avoiding any significant adverse effects. A negligible adverse impact is predicted (construction site runoff and spillage risk), which on a low importance water feature results in a negligible effect (not significant).
- As the Headpond and Main Embankment Dam have been moved further away from the Allt Beochlich (LA6) and the main stem channel is no longer being directly impacted, the risk of pollution during construction works is reduced. Temporary works to tributaries of the Allt Beochlich (LA6) remain pathways for pollution to indirectly affect the main channel and propagate downstream. The residual impacts stated previously was low adverse resulting in a minor adverse effect (not significant). The impact may be reduced to negligible resulting in a negligible effect, although the overall outcome remains not significant (for both construction site runoff and spillage risk).
- As a result of the relocation of the Headpond, PC17, PC18 and PC19 have been slightly relocated. However, the new positions are generally further away from surface water features and thus the risk of pollution during construction works is further reduced. There was either no risk of an impact or the effect was previously negligible, and so this remains the same.
- PC9 has also been relocated away from the Allt Beochlich (LA6), although this has resulted in the need for an additional two crossings over minor watercourses. These watercourses are considered to be of low importance and a temporary, short term negligible adverse impact is predicted during construction of the crossings, resulting in a negligible adverse effect (not significant) with the embedded and standard mitigation applied.
- There are no other changes to the sediment runoff and hydromorphological effects predicted in the EIAR, which other than Loch Awe were all considered to be negligible (not significant).

During operation, the impact on water quality in Loch Awe from changes in water level of up to 1.2 m was previously predicted to be negligible, resulting in a minor adverse effect (not significant). Due to the reduced storage volume of the Headpond water levels in Loch Awe are now predicted to vary by no more than 0.4 m. This will further reduce the risk of changes occurring in water quality, although as the original impact was negligible there are no changes to the predicted outcome of a minor adverse effect (not significant).

Although a smaller water body that previously proposed, the Headpond is to be constructed with relatively steep slopes and will generally be around 46 m deep when filled to the top water level (i.e. 420 m AOD). Following generation, the water level will be drawn down to a bottom level of 374 m AOD. This will expose much of the bed of the Headpond other than in the inlet/outlet trench. In strong sunlight these surfaces may be heated and this could lead to a transfer of energy to the water after refilling resulting in a slight increase in temperature. However, regular operation is likely to ensure that water temperatures in the Headpond remain similar to those in the surface layers of Loch Awe from where the water is initially abstracted. In addition, when full the Headpond is deep enough that it may also stratify in the summer, although this is unlikely due to the regular operation of the system. Overall, no change to the negligible impact is proposed, and a minor adverse effect (not significant) on Loch Awe is predicted following the changes to the Development as it was originally reported in the EIAR.

The location, size and overall form of the Lower Control Works to Loch Awe are not changing and so the predicted physical impacts to this water body remain as set out in the EIAR. However, the volume of the Headpond will decrease from 51.6 Mm^3 to just 13.5 Mm^3, meaning that the volume of water that would be circulated with Loch Awe during a full generation cycle will significantly reduce. This will lower the risk of adverse impacts to water quality and seasonal natural stratification of the water column. A precautionary assessment was presented in the EIAR due to a lack of baseline data and the complexity of the processes that control seasonal stratification of the loch, and the implications for water quality and phytoplankton populations (including the occurrence of Harmful Algal Blooms). Although the risk of adverse impacts will be reduced, the assessment remains uncertain. Therefore, the impact magnitude and overall effect on water quality, thermal stratification, and the risk of increasing the frequency of algal blooms remains unchanged, and the mitigation proposed previously will still be required. This

includes baseline monitoring of Loch Awe such as temperature profiling down through the water column, water quality sampling and analysis of chlorophyll-a and algal populations.

Although there are some minor changes to the location of various shafts and the Power Cavern, as well as the route and length of dry and wet tunnels, these are not considered to be material in relation to groundwater receptors and PWS. Therefore, the impacts predicted in the EIAR and proposed mitigation remain unchanged i.e. not significant.

- Finally, there are no changes to the assessment of surface water runoff during the long-term operation of the Development and the effects predicted in the EIAR, which other than Loch Awe were all considered to be negligible (not significant), are unchanged.

4.8 Water Resource & Flood Risk (re: EIAR Chapter 12)

The Applicant has significantly reduced the size of the Development, with the installed capacity reduced from 1500 MW to 900 MW, and storage volume reduced from 51.6 Mm³ to 14.68 Mm³ - reducing the possible change in loch levels. The operating regime has also been revised with a reduced upper “hands off” threshold of 37.2 mAOD, 470mm lower than originally submitted.

The reduction in the size of the Headpond is a beneficial change with regards to the water resources and will reduce impacts compared to the original scheme. Proposed Development would introduce the ability to transfer large volumes of water between the Headpond and Loch Awe. The Headpond operating volume is 14.68 Mm^3 and the generation and pump flow rates are 301 and 301 m^3/s respectively.

The impact on Loch Awe levels due to the Development has been assessed based on proposed upper and lower “hands off” thresholds. These thresholds have been set based on the results of modelling a number of variations in threshold levels in order to balance minimising any detrimental impact during flood and drought events with reducing the curtailment of the Development.

The analysis has been conducted using a behaviour analysis model, based on the principle of water balance. The analysis concludes the following:

- The impact of the Development on water levels in the is to slightly reduce the mean or average loch level 36.36 to 36.33 mAOD. Lower loch levels are more affected, with a 150mm reduction in the loch level exceeded 90% of the time from 35.98 to 35.83mAOD.
- The Development does not exacerbate existing flood impacts and may provide a slight flood reduction benefit for some events. This is because during flood events the last operation prior to the flood event will be pumping, which lowers water levels below the baseline and also because the operation of the Development creates different starting water levels before flood events occur. As such the proposals comply with bullet point 2 in Policy 22 of NPF4.
- With the Development in operation, the frequency of barrage operation is essentially unchanged
- The Development does not exacerbate loch levels during drought events and may provide a benefit. This is because the last operation prior to the drought event will be generation, not pumping, which raises water levels above the baseline. The Development therefore provides a benefit in terms of maintaining compensatory and freshet releases during low flow periods.
- The rate of change of loch level during both pumping and generation is 28 mm/hr. This rate of change in loch level lies within the range currently experienced.
- The overall change in level based on a typical daily generation of 10 hours would be 280mm. This is increased to 400mm based on a full generation cycle using the full volume. Such an event would be infrequent and is a significant reduction form the original arrangement where the full range was 1.2m

The construction of the Headpond will result in the impoundment of the tributary of the tributary of Buinne Dhubh. To compensate for the impact of such impoundment on flows in the downstream channel a compensatory flow regie is proposed based on the provision of a seasonally varying flow. The impounded catchment is reduced significantly from the original design resulting in a reduced compensation flow. The principle of the compensation flow requirements however is not changed.

The compensatory flow arrangement would be based on a variable flow and head arrangement to take account of the continuous fluctuation in water levels in the Headpond and the seasonal variation in flows in the watercourse. A submerged discharge valve arrangement would provide the range of flows as calculated in the low flow assessment and for the range of water levels.

The seasonal variation would be based on the average monthly flows for each calendar month. The overall monthly volume of discharge would be maintained at the existing volume. In addition to the compensatory flow occasional higher flow would be released as part of the scour valve operation.

The assessment has been based on calculated flow parameters based on Low Flows, software widely used in the industry and by regulators. In line with good practice, flow monitoring would be undertaken over a number of years to confirm the monthly flow duration curves.

The provision of the proposed compensatory flow regime would mitigate the impact of the proposed development on flows in the downstream watercourse. Whilst current assessment are based on Low Flow numerical analysis a detailed hydrometric survey will be undertaken based on a minimum of 12 months of flow gauging to confirm the baseline flow conditions in the watercourse. The final compensation flow provision will be based on the gauged data in line with the principle established based on the Low Flow analysis.

With 2 impounding structures flood waters could be released in several different directions. In the event of the Main Dam being breached flood water would travel west down the catchment of Allt Beochlich and enter Loch Awe. The area is sparsely populated with a small number of properties and the B840. The saddle dam would result in flood water heading north and down the catchment of Allt na Cuile Riabhaichie and to Loch Awe. Again, this is a sparsely populated area with limited number of receptors.

The likelihood of such an event is extremely remote, significantly beyond those considered under NPF4. This is reduced further based on the Headpond not being full most of the time. Fewer than 100 people would be affected with a very small increase in risk based on the very remote likelihood of such an event occurring. Based on these parameters the scale of the effect on human safety is regarded as being Very Small. The volume of impoundment and therefore breach volume is significantly reduced over the original arrangement. However, based on the very small scale of the risk the magnitude of risk is not changed.

Detailed hydraulic modelling demonstrates that the revised Development would not increase flood risk to properties around Loch Awe, or downstream of Awe Barrage. In fact, during several historical flood events, the Development would provide slight reductions in peak water levels. The modelled results show that the proposed scheme does not have a detrimental impact on flood risk, and in most cases would have resulted in reduced peak flood levels. This is because during flood events the Development would stop generating and so is not actively adding water, and may only extract water, but also because the operation of the Development creates different starting water levels before flood events occur. The Development, therefore, does not exacerbate existing flood impacts, and may provide a slight flood reduction benefit for some events. As such the proposal complies with Policy 22 of NPF4.

Furthermore, with the Development in operation, the frequency of barrage operation is essentially unchanged. The maximum rate of change in loch level was also analysed for the baseline and for the ‘With Development’ scenarios and found increase slightly from 0.13 m/hr to 0.14 m/hr. This is not considered significant. Peak rises in loch level occur due to severe natural floods in the catchment and the Development has a very small and not significant impact on these rates.

Analysis of the revised Development on two of the most severe historic droughts indicated that the number of days that the loch level is at or below 35.5mAOD during these drought events is reduced in comparison to the baseline. This is because the last operation prior to the drought event will be generation, not pumping, which raises water levels above the baseline. The Development therefore provides a benefit terms of maintaining compensatory and freshet releases.

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions of the chapter in the EIAR still apply. Further details are included in **Appendix H.**

4.9 Cultural Heritage (re: EIAR Chapter 13)

The residual effects (pre-construction, construction, and operation) have been reduced as the alterations will result in all previously recorded assets will now be avoided due to the proposed reduction in Headpond size and associated infrastructure changes. As a result, the only Significant residual effect reported within Chapter 13 of the EIAR is now Not Significant.

4.10 Access, Traffic and Transport (re: EIAR Chapter 14)

4.10.1 Measures to discourage use of B840

A Framework Construction Traffic Management Plan (CTMP) is provided that clearly sets out the B840 will not be used by any Development construction traffic. This applies to car and light goods vehicle traffic, as well as heavy goods vehicle traffic. The Framework CTMP is attached within **Appendix I**. A detailed CTMP is expected to be Conditioned. The road geometry and character of the B840, and especially the settlements of Ford and Cladich, do not support any use by Development construction traffic. No Development site access will be provided or permitted from the B840 so there is no rationale for construction traffic to use the B840. The CTMP will provide comprehensive signage at both the B816 and B819 clearly prohibiting construction traffic from using the B840. CTMP monitoring and enforcement measures will be in place for the Development construction programme. These will ensure all construction traffic follows the approved A819 site access route, and appropriate enforcement measures will ensure the CTMP is adhered to by all construction traffic.

4.10.2 Use of B840 during construction of the lower control works on Loch Awe

The B840 will not be used by any Development construction traffic. This applies to construction of the Lower Control Works in the environs of the B840. All Lower Control Works construction traffic will route via the A819 site access, and travel through the site to reach the Lower Control Works. This access regime will also include all construction traffic associated with temporarily diverting the route of the B840 in the environs of Balliemeanoch Farm during construction of the Lower Control Works. The settlements of Ford and Cladich on the B840 are not suitable for the routing of any construction traffic and the CTMP will deliver routing, monitoring and enforcement measures to ensure no Balliemeanoch construction traffic uses the B840.

4.10.3 Funding contributions to road improvements in light of potential 50-60% increase in traffic on A819

EIAR **Volume 2: Main Report Chapter 14: Access, Traffic and Transport** at **Table 14.8** shows the Development construction traffic would temporarily increase A819 traffic by circa 37%-38%. Bearing in mind 2023 traffic surveys showed the A819 is carrying less than 1,800 vehicles per day, there is unlikely to be any requirement or justification for road improvements to the A819 to increase vehicle capacity in order to address capacity issues created by the Development construction traffic. It may be that any Section 96 Agreement required by Argyll and Bute Council relating to the condition of the A819 before, during and at the end of the Development construction would cover road improvements in response to any road damage attributable to the Development construction traffic.

4.10.4 Width of A819 to bring AILs from the pier

EIAR **Volume 5: Appendices, Appendix 14.1 Transport Assessment Report** contains construction vehicle swept-path analyses (SPA) for abnormal indivisible loads (AIL) travelling from the temporary pier proposed on Loch Fyne up the A819 to the site access.

SPA are provided for the largest AIL going to site via the A819. These AIL are large transformers which will be moved up the A819 by transport vehicles up to 86.8m in length. The bogies carrying the AIL load on these vehicles have all-wheel steering making them very manoeuvrable despite their length. SPA is undertaken on Ordnance Survey MasterMap base mapping for the A819 corridor. This OS mapping is not as detailed as a bespoke topographic survey of the A819 corridor, but it provides a robust indication of vehicle swept-path overrun (wheels) or oversail (bodywork or loads) along the route.

For the largest AIL the SPA shows that the 86.8m long transport vehicle will be able to keep its wheels on the A819 carriageway with only limited oversail of bodywork or load beyond the edge of the vehicle carriageway. This means no load bearing carriageway widening would be required to the A819 route used by AIL. Axle loads and ground block loading should be limited to circa 16T per axle and 3.5T per square-metre respectively on public road carriageways. As such, carriageway or road structure failures should not be an issue for a road designed to A-road standards.

SPA indicates there is one left-hand bend on the A819 where potential oversail (bodywork and load) may require a very limited improvement to a high verge / embankment on the inside of the bend. An online land registry search indicates this area is either part of the public road corridor or within the ownership of Argyll Estates. Also, at the proposed site access junction where AIL will leave the A819 and access the site, the existing junction will require improvements to accommodate AIL turning left from the A819 into the site access.

Typically, Planning Conditions would require a heavy haulage contractor, once appointed, to undertake a detailed assessment of the A819 corridor to ensure it is suitable for AIL transport.

A change in the location of the National Speed Limit boundary on the A819 north of Inveraray is requested. This request in made in response to concerns raised by the occupiers of Electric Cottage which fronts the A819. The occupiers currently must reverse onto the A819 and are concerned there may be road safety implications for this manoeuvre should A819 traffic temporarily increase during construction of the Development. A temporary relocation of the National Speed Limit 580m of its current position on the A819 is requested.

4.10.5 Movement of materials and potential impacts on traffic volumes

There will be no public road double-handling of on-site construction materials. No materials will be removed from site by road for temporary storage and subsequent rerun to site by road. Any site-won materials requiring temporary storage will be retained on site and will not be transported on public roads.

Consideration will be given to using local quarries for imported materials. There are nearby quarries on the A83 at Clachan and Furnace (both some 16 miles from the A819 site entrance). There will be no requirement to rely on materials from quarries such as Barachander which is accessed via the narrow B845, or Banavie which is 70 miles distant at Fort Wiliam.

The revision to the Development means there may be a reduction in construction traffic volumes routing to the site. The construction traffic forecast has not been changed to reflect revisions to the Development. This means the adopted construction traffic forecast, and associated environmental assessment of traffic and movement, accords strongly with ‘Rochdale Envelope’ principles. The adopted construction traffic forecast provides a maximum extent for the Development, and the revised scheme now proposed should be the same or lower than the maximum extent. Therefore, the residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions of Chapter 14 in the EIAR still apply.

4.11 Noise and Vibration (re: EIAR Chapter 15)

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions in Chapter 15 of the EIAR still apply.

4.12 Socio-economics and Tourism (re: EIAR Chapter 16)

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions in Chapter 16 of the EIAR still apply.

4.13 Climate (re: EIAR Chapter 17)

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions in Chapter 17 the EIAR still apply.

4.14 Marine Physical Environment and Coastal Processes (re: EIAR Chapter 18)

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions in Chapter 18 of the EIAR still apply.

4.15 Shipping and Navigation (re: EIAR Chapter 19)

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions in Chapter 19 of the EIAR still apply.

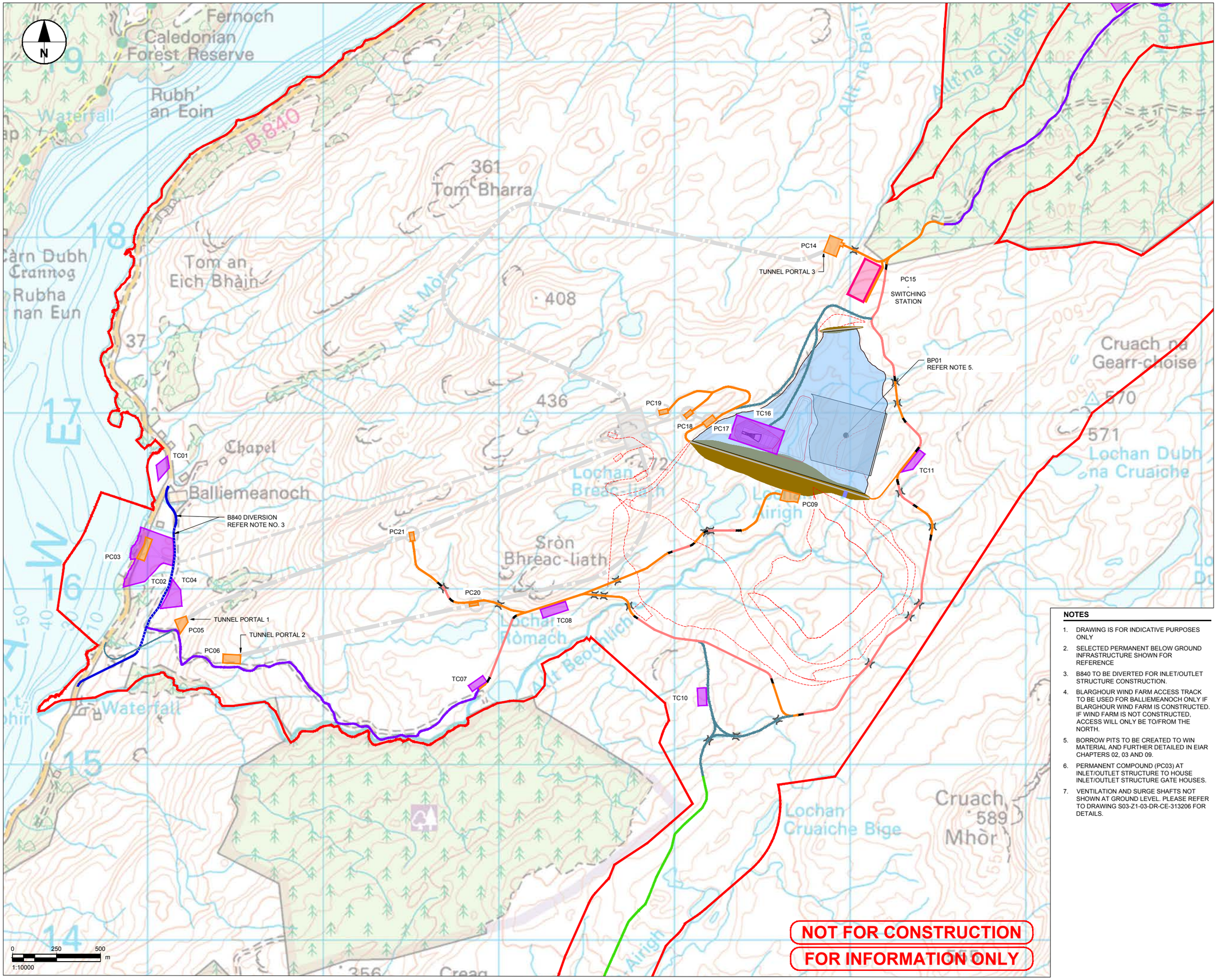
4.16 Commercial Fisheries (re: EIAR Chapter 20)

The residual effects (pre-construction, construction, and operation) are unaffected by the proposed reduction in Headpond size and associated infrastructure changes. Although the changes identified may have some beneficial effect, the overall conclusions in Chapter 20 of the EIAR still apply.

4.17 Summary

Each technical chapter of the EIAR provided summary tables of residual effects as part of the impact assessment. These have been included within **Appendix J**, with any amends to the significance of the effects detailed in column '**FEI Update**' and highlighted in red.

Appendix A Revised Layout



NOTES

1. DRAWING IS FOR INDICATIVE PURPOSES ONLY
2. SELECTED PERMANENT BELOW GROUND INFRASTRUCTURE SHOWN FOR REFERENCE
3. B840 TO BE DIVERTED FOR INLET/OUTLET STRUCTURE CONSTRUCTION.
4. BLARGHOUR WIND FARM ACCESS TRACK TO BE USED FOR BALLIEMEANOCH ONLY IF BLARGHOUR WIND FARM IS CONSTRUCTED. IF WIND FARM IS NOT CONSTRUCTED, ACCESS WILL ONLY BE TO/FROM THE NORTH.
5. BORROW PITS TO BE CREATED TO WIN MATERIAL AND FURTHER DETAILED IN EIAR CHAPTERS 02, 03 AND 09.
6. PERMANENT COMPOUND (PC03) AT INLET/OUTLET STRUCTURE TO HOUSE INLET/OUTLET STRUCTURE GATE HOUSES.
7. VENTILATION AND SURGE SHAFTS NOT SHOWN AT GROUND LEVEL. PLEASE REFER TO DRAWING S03-Z1-03-DR-CE-313206 FOR DETAILS.

LEGEND

- ORIGINAL SUBMISSION
- RED LINE BOUNDARY
- EXISTING ACCESS TRACK TO BE UPGRADED
- BLARGHOUR WIND FARM ACCESS TRACK
- NEW ACCESS TRACK (EXCAVATED)
- NEW ACCESS TRACK (FLOATING)
- NEW ACCESS TRACK (FLOATING TRANSITION)
- TEMP. CONSTRUCTION ACCESS TRACK
- HEADPOND WATER
- HEADPOND EMBANKMENT
- TEMPORARY (TC) COMPOUND
- PERMANENT (PC) COMPOUND
- SWITCHING STATION
- CULVERT / BRIDGE
- SPILLWAY

AECOM

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A	AC	DL	JIG
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ISSUE/REVISION

A	10.04.2025	DESIGN REVISION POST SUBMISSION
I/R	DATE	DESCRIPTION

SHEET TITLE

BALLIEMEANOCH PSH
ZONE 1 REVISED GA
2 of 2

SHEET NUMBER

S03-Z1-00-DR-CE-310102

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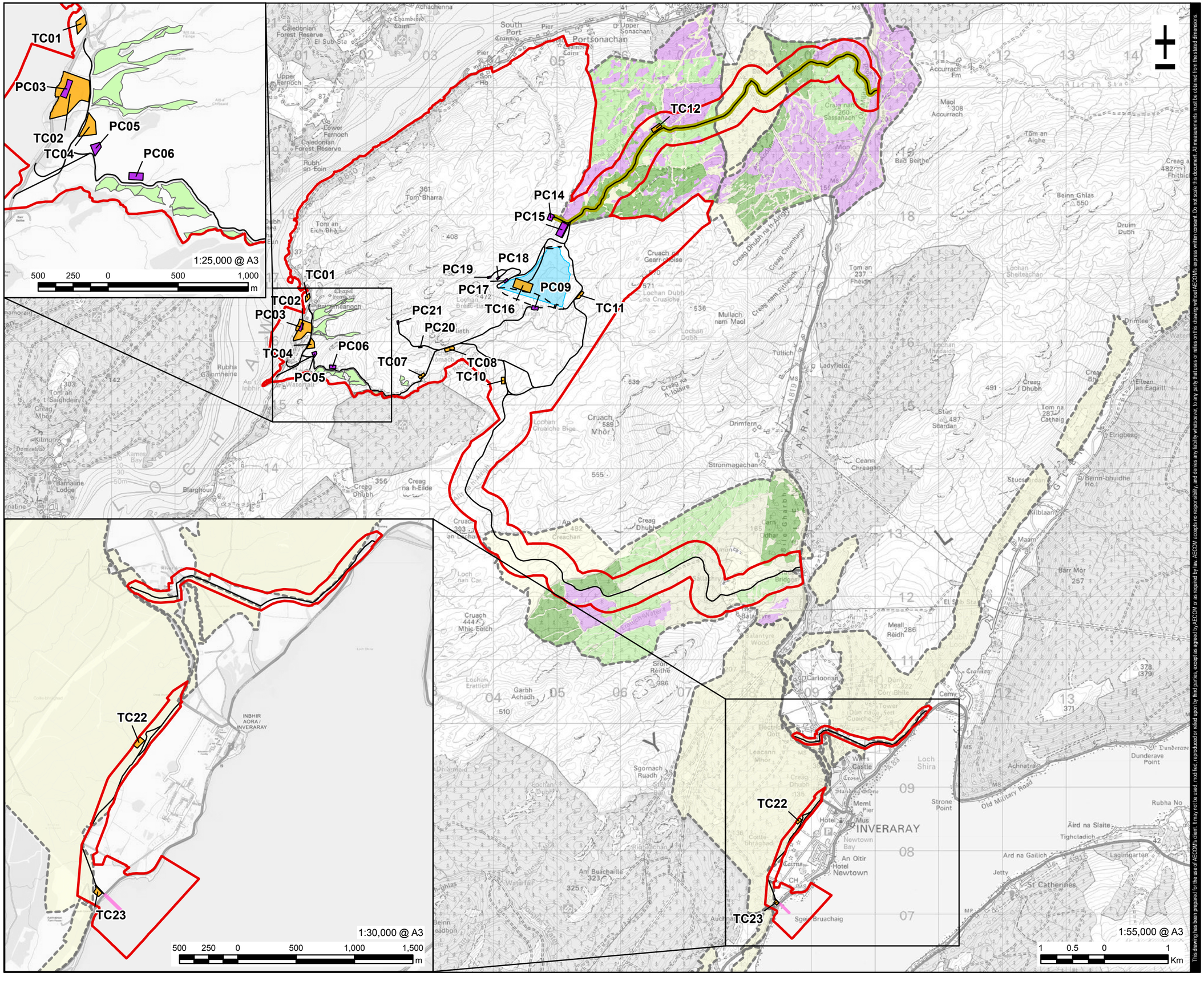
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Appendix B Revised oLEMP Figures

Revision: 0 Drawn: BM Checked: CC Approved: RH Date: 2025-05-13

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LEGEND

- Development Boundary
- Headpond Top Water Level
- Headpond Embankment

Above Ground Infrastructure

- Tracks
- Temporary Compound
- Permanent Compound
- Marine Facility

Intervention

- Advanced Planting
- Required buffer (5m) from tracks for construction vehicles

Felling Phases

- Felled Pre Construction
- Felled Construction Period
- Felled post-construction
- No felling data available
- Felling estate boundary

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Landscape and Habitat Restoration Plan – Construction

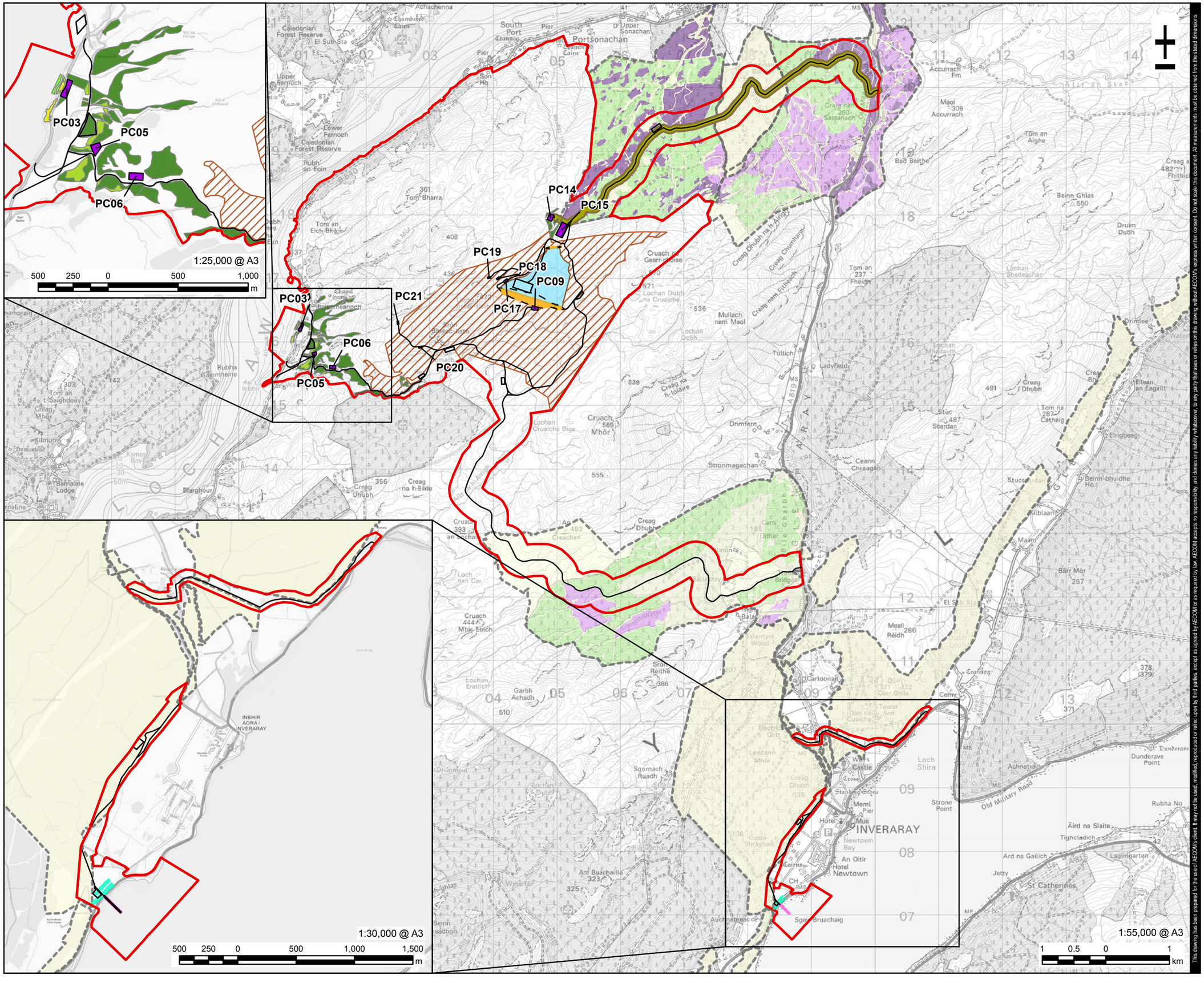
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AECOM

PROJECT

BALLIEMEANOCH PUMPED STORAGE HYDRO

CLIENT

ILI (Borders PSH) Ltd.

CONSULTANT

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

LEGEND

- Development Boundary
- Headpond Top Water Level
- Headpond Embankments

Above Ground Infrastructure

- Tracks
- Permanent Compound
- Temporary Compound Reinstatement (see drawing for land use)
- Marine Facility

Intervention

- Bog/upland rehabilitation
- Heatherland sowing
- Loch Fyne coastal grassland reinstatement
- Tree planting with ground flora translocation
- Native woodland planting
- Meadow grassland
- Wet woodland planting
- Opportunity for native woodland planting dependent on forestry compensation
- Required buffer (2.5m) from tracks for maintanence vehicles

Felling Phases

- Felled before Operational Year 1
- Felled between Operational Year 1 and 15
- Felled from Operational Year 15 onwards
- No felling data available
- Felling estate boundary

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Landscape and Habitat Restoration Plan – Operational Year 1

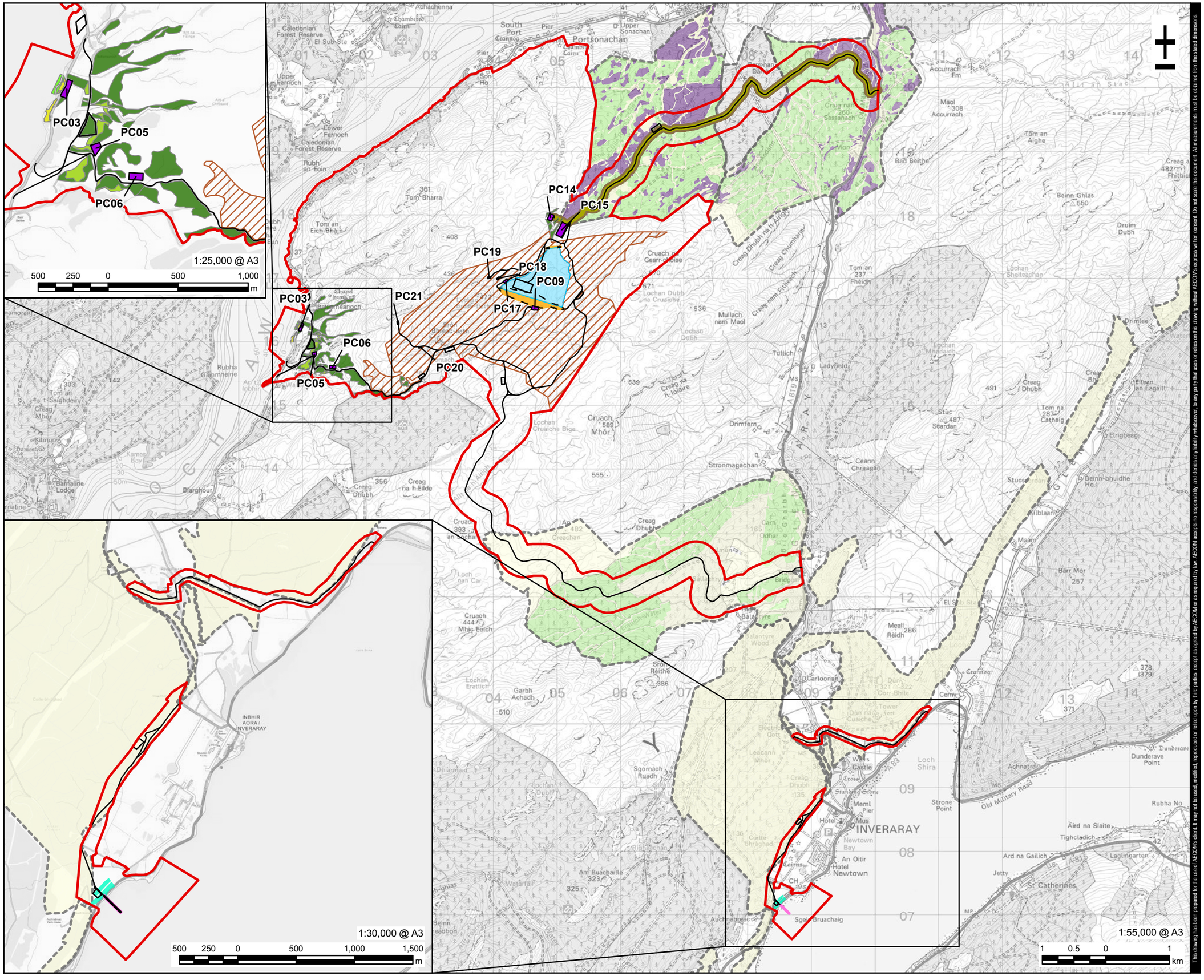
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AECOM

PROJECT

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CONSULTANT

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177 Bothwell Street
Glasgow G2 7ER
www.aecom.com

LEGEND

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- Headpone Embankments

Above Ground Infrastructure

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- Native woodland planting
- Meadow grassland
- Wet woodland planting
- Opportunity for native woodland planting dependent on forestry compensation
- Required buffer (2.5m) from tracks for maintanence vehicles

Felling Phases

- Felled before Operational Year 15
- Felled from Operational Year 15 onwards
- No felling data available
- Felling estate boundary

NOTES

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ISSUE PURPOSE

DRAFT

PROJECT NUMBER

60570241

FIGURE TITLE

Landscape and Habitat Restoration Plan – Operational Year 15

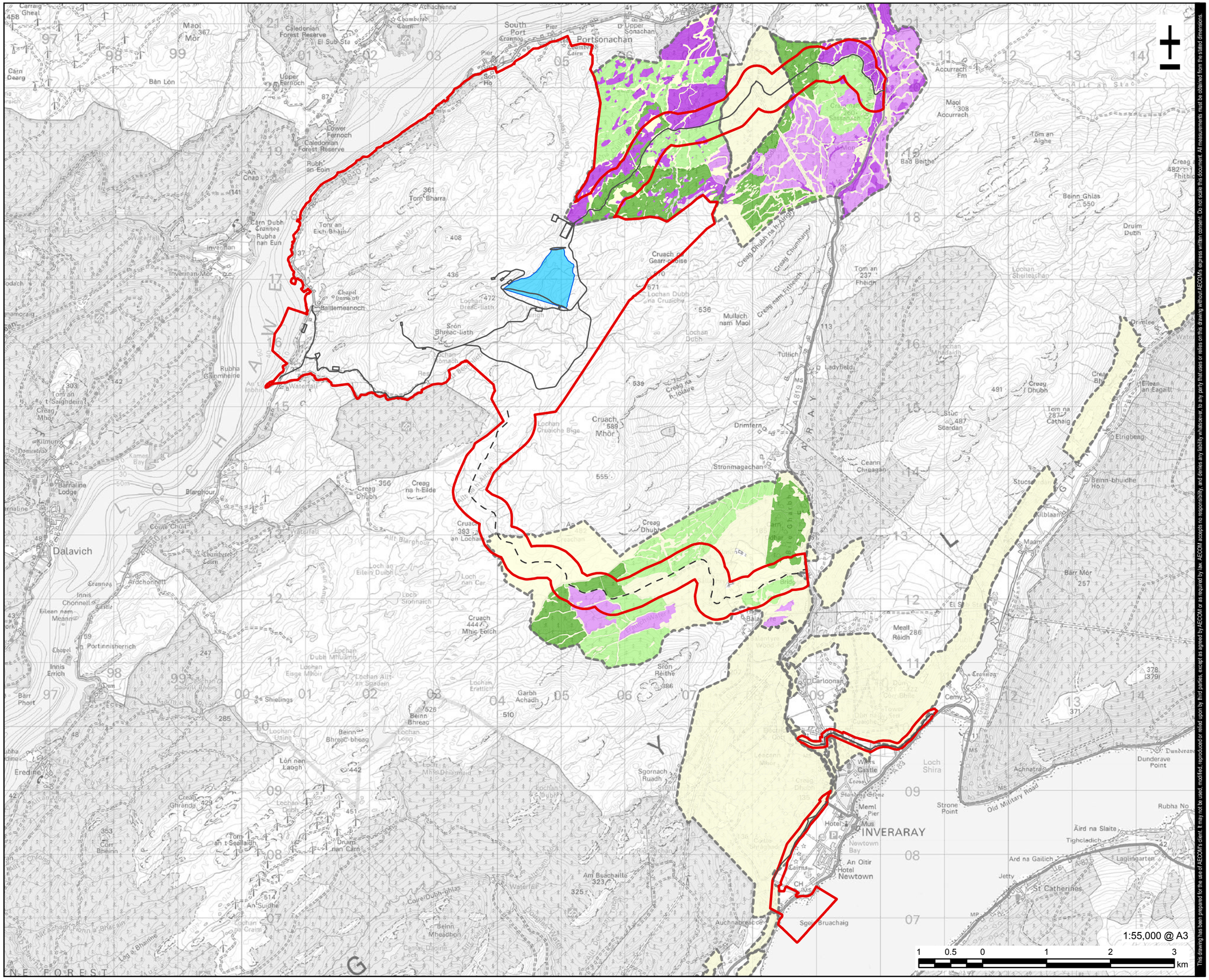
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Figure 5.4.3

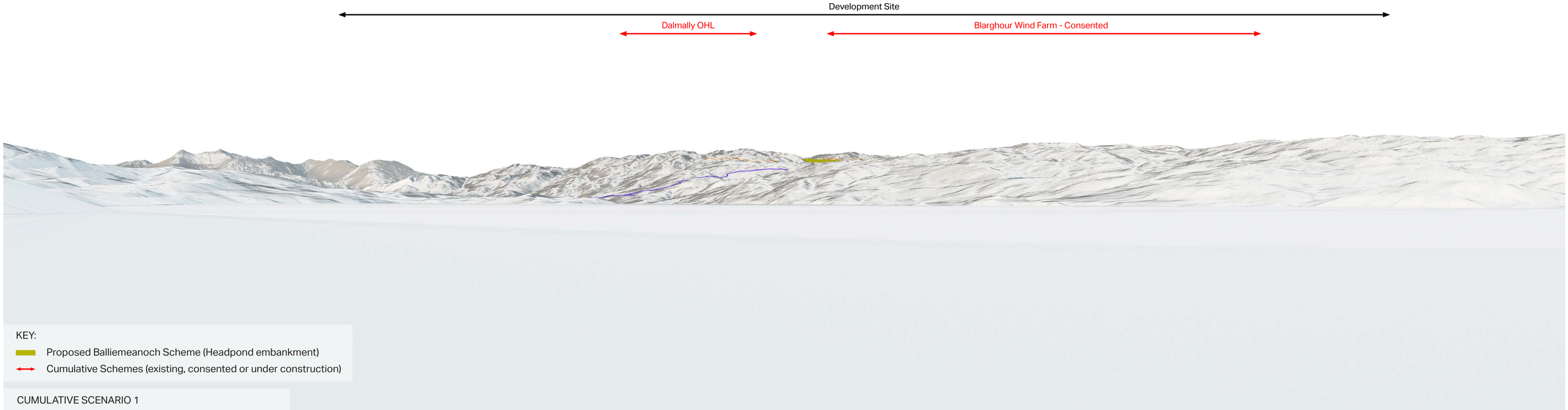
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Portsonachan
Balliemeanoch
Inverinan
Inverinan Mor
Tom Bharra
Cruach nan Gearr-sloise
Lochan Dubh na Cruaiche
Mullach nam Maol
Creag Dhubh na h-Airigh
Creag Chumhainn
Creag nam Fitheach
Tom an Fheidh
Accurrach Fm
Maol Accurrach
Tom an Aighe
Bad Beithe
Beinn Ghlas
Druim Dubh
Lochan Sheileachan
Drimlee
Creag Bhlàr
Eilean an Eagailt
Creag Mhòr
Tom an t-Saighdeir
Rubha Gainmheine
Lochan Dreasc-liath
Srón Bhreac-liath
Lochan Tomaich
Cruach Mhòr
Lochan Gruaiche Bige
Creag na h-Iolaire
Tuttich
Ladyfield
Drimfern
Stronmagachan
Ceann Chreagan
Stuc Scardan
Creag Dhubh
Tom na Cathaig
Elrigbeag
Kilbaan
Maam
Barr Mòr
Meall Reidh
Sron Reithe
Garbh Achadh
Beinn Bhreac
Beinn Bhreac-bheag
Lochan Long
Lochan Dubh Mhuilinn
Lochan Eisge Mhòir
Lochan Allt an Spadain
Lochan Eraticlich
Lochan Dubh Mhic Dharmaid
Sgornach Ruadh
Lón nan Laogh
Creag Ghranda
Tom an t-Seallaidh
Druim nan Carn
Corr Bheinn
Am Buachaille
Coire Dubh-ghlas
Beinn Mheadhon
Auchnabreac
Sgor Bruachaig
Creag Dhubh
Cruach Mhic Eoich
Cruach
Creag na h-Eilde
Creag Dhubh
Loch an Eilein Duibh
Loch nan Car
Loch Sionnach
Allt Bhlarghour
Blarghour
Coillt Chuil
Dalavich
Barnaline Lodge
Ardchonnell
Innis Chonnell
Eilean nam Meann
Portinnisherrich
Innis Errich
Barr Phort
Eredine
Shielings
Kames Bay
Kilmun
Homestead
Carn Dearg
Bàn Lòn
Maol Mor
Caledonian Forest Reserve
El Sub Sta
Upper Fernoch
Lower Fernoch
Rubh' an Eoin
An Cnap
Carn Dubh
Crannog
Rubha nan Eun
Toru an Eich Bhàin
Chapel (remains of)
Achachenna
Chambered Cairn
South Port
Pier
Son Ho
Upper Sonachan
Allt na Staoile
Bad Beithe
Tom an Aighe
Beinn Ghlas
Creag Fhithich
Lochan Sheileachan
Drimlee
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Tom an Aighe
Bad Beithe
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Creag Fhithich
Druim Dubh

Appendix C Revised Visualisation



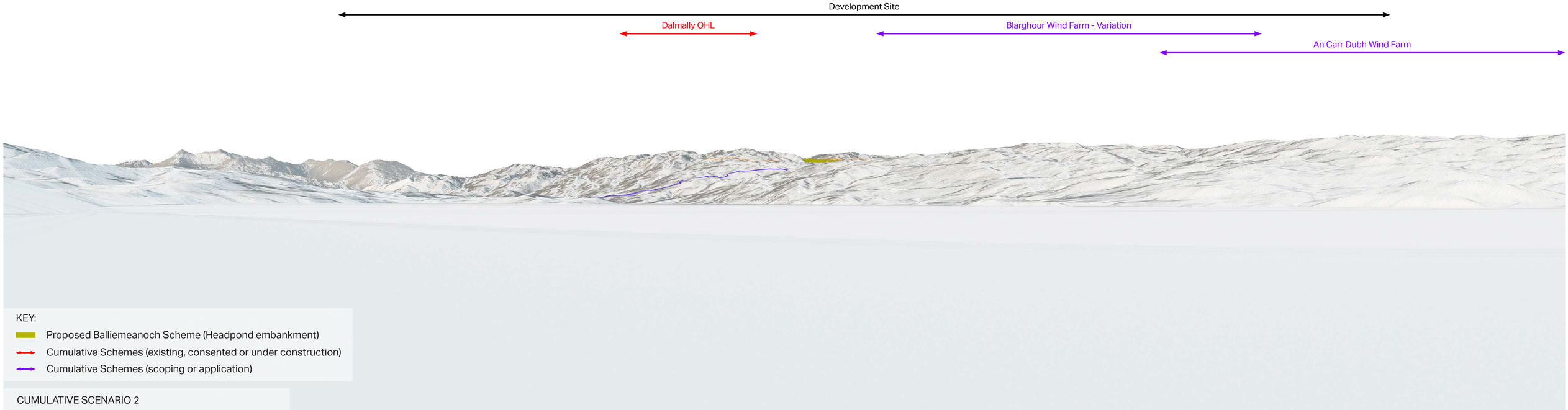
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Enlargement Factor:	96%	Horizontal Field of View:	90°				
Paper Size:	841mm x 297mm	Direction of View:	North East				
Date / Time:	21/04/2022, 17:56	Location:	E197049 N712740				

Balliemeanoch Pumped Storage Hydro

Viewpoint 4: Dalavich Jetty

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Paper Size:	841mm x 297mm	Direction of View:	North East				
Date / Time:	21/04/2022, 17:56	Location:	E197049 N712740				

Balliemeanoch Pumped Storage Hydro

Viewpoint 4: Dalavich Jetty

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HEADPOND EMBANKMENT
STRUCTURE AND BUILDING
PERMANENT COMPOUND
NEW ACCESS TRACK
EXISTING ACCESS TRACK TO BE UPGRADED
TEMP. CONSTRUCTION ACCESS TRACK



WIRELINE

Extent of 50mm single frame image

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

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Visualisation Type:	3	Camera:	SONY ILCE-7RM3	Eye level:	36.6m	**Note:**	
Projection:	Cylindrical	Lens:	DT 50mm F1.2 SAM	Height of Camera:	1.6m	Images to be viewed at a comfortable arm's length.	
Enlargement Factor:	96%	Horizontal Field of View:	90°				
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Date / Time:	21/04/2022, 17:56	Location:	E197049 N712740				

Balliemeanoch Pumped Storage Hydro

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Extent of 50mm single frame image

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Visualisation Type:	3	Camera:	SONY ILCE-7RM3	Eye level:	36.6m	**Note:**	
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Paper Size:	841mm x 297mm	Direction of View:	North East				
Date / Time:	21/04/2022, 17:56	Location:	E197049 N712740				

Balliemeanoch Pumped Storage Hydro

Viewpoint 4: Dalavich Jetty

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Extent of 50mm single frame image

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

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Visualisation Type:	3	Camera:	SONY ILCE-7RM3	Eye level:	36.6m		
Projection:	Cylindrical	Lens:	DT 50mm F1.2 SAM	Height of Camera:	1.6m		
Enlargement Factor:	96%	Horizontal Field of View:	90°				
Paper Size:	841mm x 297mm	Direction of View:	North East				
Date / Time:	21/04/2022, 17:56	Location:	E197049 N712740				

Note: Images to be viewed at a comfortable arm's length.
Growth rates have been estimated using median values for UK forestry general yield class data from the Forestry Commission.
The following assumptions have been made:
Native woodland: Year 15 heights varying generally between 5-10m with outliers at 3m (holly) and 16.5m (poplar).
Wet woodland: Year 15 height of willow at 5.5m with occasional alder at 10m.

Balliemeanoch Pumped Storage Hydro

Viewpoint 4: Dalavich Jetty

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Appendix D Terrestrial Ecology / Geology and Soils

As set out in Section 3, the design of the scheme has been re-evaluated largely in response to a number of consultee responses regarding water levels and flows within Loch Awe during the operation of the Development. The design changes include re-sizing of the Headpond and associated civil works. Due to these design changes, the initial peat balance presented as part of the s36 application has been re-evaluated, with the relevant peat excavation and comparative assessment set out below.

Table E1. Peat Excavation Comparative Assessment

Infrastructure Type	S36 Application			Re-Evaluated Design			Peat Volume Difference (m^3)	Peat Volume Difference (%)
	Surface Area (m^2)	Average Peat Depth (m)	Peat Volume (m^3) *	Surface Area (m^2)	Average Peat Depth (m)	Peat Volume (m^3) *		
Embankment 1	366,265	1.14	372,338	147,187	1.21	123,900	- 248,438	- 67 %
Embankment 2	14,032	1.22	15,733	7,900	0.85	4,487	- 11,246	- 71 %
Inlet Trench	-	-	-	69,820	0.75	37,301	+ 37,301	-
Borrow Pit 1 (BP01)	508,629	1.43	642,456	141,597	1.42	140,563	- 501,893	- 78 %
New Access Tracks (Excavated)	25,312	0.63	13,556	48,999	0.99	35,494	+ 21,938	+ 162%
New Access Tracks (Floating Transitions)	3,9320	0.95	3,954	5,057	0.89	4,550	+ 596	+ 15%
Switching Station	22,500	1.16	24,105	22,500	1.16	24,105	-	-
Compounds	61,011	0.73	34,866	61,011	0.73	34,866	-	-
Total			**1,107,008**			**405,266**	**- 701,742**	**- 63%**

* Total Peat Volume (m^3) is calculated digitally (ArcGIS or similar) using the actual interpolated depth at each point as opposed to Average Peat Depth (m) x Surface Area (m^2). i.e. Total Peat Volume (m^3) ≠ Average Peat Depth (m) x Surface Area (m^2).

As shown in Table E1, the re-evaluated design reduces the estimated excavated volume of peat by approximately 63%. Considering the overall reduction in excavation volume, it is no longer proposed that excavated peat will be re-instated in the Headpond Borrow Pit. Rather, peat will be managed and re-instated at surface level in the form of dressing of access track verges, dressing of compound verges, reinstatement of temporary access tracks and potential peatland restoration.

The methodology with respect to handling, management and storage of peat remains consistent with the details set out in the Preliminary Peat Management Plan that was submitted as part of the s36 application. A Final Peat Management Plan will be produced and agreed with SEPA ahead of construction.

Appendix E Draft Outline Peat Management Plan

Balliemeanoch Pumped Storage Hydro

Further Environmental Information Appendix E: Draft Outline Peat Management Plan (PMP)

June 2025

Delivering a better world

Quality information

Prepared by	Checked by	Verified by	Approved by
Jean Roi	Aaron Cleghorn	Ian Gillies	David Lee
Civil Engineer	Civil Engineer	Renewables & Energy Transitions Practice Lead	Technical Director – Renewable Energy

Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	July 2024	Submission	DL	David Lee	Technical Director
2	June 2025	Revised design	DL	David Lee	Technical Director

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Figure 10.2.1 Peat Excavation

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1. Introduction

As part of the assessment of the effects on geology and ground conditions, an Draft Outline Peat Management Plan (oPMP) has been prepared to set out the principles to be adhered to during design, construction operation and decommissioning of the Development in relation to peat management.

This oPMP should be read in conjunction with **Chapter 10 Geology and Soils (Volume 2)** of the EIAR, which outlines the effects, mitigation and significance of peatlands due to the construction of the Development. Most of the mitigation for reducing the impact on peatlands is embedded into the design of the scheme, however, the excavation of peat is unavoidable for the Development. As such, it is understood that peat will be excavated for the construction of the Development and this oPMP outlines how it will be managed.

The oPMP seeks to avoid waste peat by applying the waste hierarchy of The Waste Management Licensing (Scotland) Amendment Regulations 2016, which is defined as follows:

- Prevention
- Preparing for reuse
- Recycling
- Other recovery e.g. energy recovery
- Disposal

This Outline PMP provides details on the anticipated approximate volumes of peat that may be excavated during construction, the characteristics of the peat that would be excavated, and the principles and methods of how and where this excavated peat would be stored, reused and managed.

This Outline PMP will be further developed and agreed subsequent to the Development receiving consent. Further details and specific plans would be determined during the detailed design process and once further pre-construction ground investigation (GI) have been undertaken. These details would then be included in a detailed final PMP, which it is assumed will be agreed with ABC as a condition of the S36 consent.

Policy and Guidance for Peat Management

The significance of peatlands is most evident in their protection by various legislation, policy and local, national or international initiatives including, but not limited to; the United Kingdom Biodiversity Action Plan (UKBAP) , Scotland's National Peatland Plan (SNH, 2015) , European Council Habitats Directive 92/43/EEC (Council of the European Communities, 1992) , the Scottish Biodiversity List (SBL) (Scottish Government, 2013), the European Council Water Framework Directive 2000/60/EC (Council of the European Communities, 2000) , Scottish Government discussion paper on the Management of Carbon-Rich Soils (Scottish Government, 2010) , Scottish Soil Framework (Scottish Government, 2009), the Climate Change Plan (2017-2032) (Scottish Government, 2017) and Advising on peatland, carbon-rich soils and priority peatland habitats in development management (NatureScot, 2023).

Scottish Environmental Protection Agency (SEPA) has a statutory and legislative duty to ensure that where peat spoil is generated during construction; that it is stored, re-used, treated or disposed of correctly; which may require authorisation or permits.

As such, this Outline PMP has been prepared in accordance with the following policy and best practise guidance:

- Guidance on Developments on Peatland: Site Surveys (Scottish Government, NatureScot and SEPA, 2017);
- SEPA Regulatory Position Statement – Developments on Peat (SEPA, 2010);
- Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste (Scottish Renewables and SEPA, 2012); and
- Developments on Peat and Off-Site Uses of Waste Peat (SEPA, 2017).

- Good Practice during Windfarm Construction (Scottish Renewables, SNH, SEPA & Forestry Comission Scotland, 2019);

Additionally, the publication of the NPF4 (Scottish Government, 2023) has illustrated the importance of more considered practices within peatlands. Policy 5 of NPF4 states:

> *c) Development proposals on peatland, carbon-rich soils and priority peatland habitat will only be supported for: i) Essential infrastructure and there is a specific locational need and no other suitable site; ii) The generation of energy from renewable sources that optimises the contribution of the area to greenhouse gas emissions reductions targets; iv) Restoration of peatland habitats.*
>
> *d) Where development on peatland, carbon-rich soils or priority peatland habitat is proposed, a detailed site specific assessment will be required to identify: i) the baseline depth, habitat condition, quality and stability of carbon rich soils; ii) the likely effect of the development on peatland, including on soil disturbance; iii) the likely net effect of the development on climate emissions and loss of carbon.*

As such, the details provided in NPF4 have been considered in this Outline PMP along with Chapter 10: Geology and Soils (EIAR Volume 2).

Definition of Peat – Acrotelmic and Catotelmic Layers

Peat is defined as ‘an organic soil which contains more than 60% of organic matter and exceeds 50 cm in thickness’ (NatureScot, 2023). Scotland’s National Peatland Plan also encompasses organic soil less than 50 cm, which can support typical peatland vegetation. Organic deposits less than 50 cm in thickness are therefore considered in this and related aspects of the DMRB Stage 3 EIA as ‘peaty soils’. Joint Nature Conservation Committee (JNCC, 2011) and Scottish Government guidance on peat surveys also follows this peaty soil definition. ‘Deep peat’ is considered to be a peat soil with a surface organic layer greater than 1.0 m thickness (Bruneau & Johnson, 2014)

Peatland survey: Guidance on Developments on Peatland states that the acrotelmic layer (the surface layer) of peatland within which all living vegetation exists, is usually less than 300 millimetres (mm) thick but may be up to 500 mm.

SEPA’s guidance on the development on peat and off-site uses of waste peat described the two peat layers as follows:

- Acrotelmic – quite fibrous and contains plant roots etc. acrotelmic peat is relatively dry and has some tensile strength; and,
- Catotelmic – highly amorphous, with very high water content and tend to have very low tensile strength. The structure of catotelmic peat tends to disrupt completely on excavation and handling.

Therefore, in the absence of detailed peat characteristics within the Development Site (as no GI has been completed), it has been assumed that the acrotelmic layer is 500 mm thick with the remaining peat below this depth being catotelmic.

2. Peat Conditions

Peat Survey

As described in Chapter 10: Geology and Ground Conditions (EIAR Volume 2) two peat probing surveys have been completed for the Development and these are described below.

Northern Access Route Peat Probing – August 2021

An initial Peat Probing Survey of the Northern Access in Keppochan and Upper Sonachan Forest was undertaken in August 2021 by AECOM. Two areas of proposed access tracks were surveyed at 50 m centres with 10 m perpendicular offsets.

In total, 50 probes were taken, with a range of depths between 0 m – 3.2 m. Where 0 m depth was recorded, it is assumed that rock is at or near surface level.

Main Site Peat Probing

The Peat Probing Survey was undertaken in September 2023 by AECOM. Prior to commencing the survey, a desk-based assessment was undertaken to assess the estimated presence of peat across the Development Site. A review of the BGS Onshore GeoIndex indicated that no peat or peaty soils were present across the site. Further investigation through the National soil map of Scotland indicated that a large, isolated outcrop of peaty podzols and peaty gleys was present around the proposed Headpond area.

Following consultation with SEPA on the proposed peat probing plan, the following approach was adopted for the peat survey:

- 100 m x 100 m grid across Headpond;
- 10 m offsets at 50 m centres along existing Access Tracks; and,
- Check probes in areas of deeper peat across the survey area.

766 probes were taken during the Phase I Survey, with a range of peat depths between 0 m – 7.3 m.

Peat Probing Summary

In total, 816 probes have been taken for the Development, as summarised in Table 1 and shown on *Figure 10.4 – Peat Probe Results (Volume 3 Figures*).

Table 1. Peat Probing Summary

Peat Probing Exercise	No. of Probes	Maximum Depth Recorded (m)	Average Depth (m)
August 2021	50	3.2	0.84
September 2023	766	7.3	1.10
Total	**816**		

The results of the peat probing were used to create an interpolated peat surface to determine the peat depths across the development – as detailed in *Figure 10.5 – Peat Surface (Volume 3 Figures)* of the EIAR.

Site Observations

While undertaking the peatland survey, additional features were noted, as follows:

- Access to the northern areas of the site was via the existing forestry tracks within the Keppochan and Upper Sonachan Forest. The forestry tracks were accessible via vehicle up to 1.5 km from the western edge of the forest at which access was made via foot. The remaining 1.5 km to the edge of the forest was along a severely overgrown access track. A hard subbase could be felt underfoot whilst walking on the overgrown track but years of organic deposit and tree growth made it difficult to traverse on foot.
- The southern Access Track went through farmland, the track was in good condition, but it was steep in some sections and a 4x4 vehicle was necessary to drive up. The areas to the side of the track were mostly shallow peat (between 0 m and 0.5 m) though when coming closer to the proposed location for Temporary Compound 07 some areas of very deep peat (between 3 m and 5 m) were recorded to the west of the track.

- The eastern area of the site generally showed evidence of deeper peat and regularly displayed peaty hollows and peat bogs. The presence of peat in these areas is likely due to the topography, evidenced by small rolling hills which creates dips and pockets that promote the creation of peat as organic material and water is contained in these hollows.
- The western area of the site was notably less peaty. This is likely due in part to the natural topography and lack of conditions for peat development.
- There were many watercourses on site which ranged from many small brooks through peat and grass caused by heavy rainfall, feeding into larger streams going across most of the site and further into the Beochlich Hydro Electric Site.
- The site has regular changes in topography, mainly sloping down from the outer edges of the site to the area where Lochan Airigh is currently located, and further to the reservoir of Beochlich hydro.
- Around the Tailpond Inlet / Outlet structure, working farmland was present. As such, no peatlands were observed and omitted from the assessment.
- Generally, the ground conditions were wet underfoot, with heavy precipitation across the survey week. This is consistent with the long-term surveys undertaken as part of the ecology suite of surveys.

3. Peat Excavation

The approach set out in this Outline PMP follows the mitigation hierarchy listed below:

- Prevent the creation of waste peat by avoiding execution of peat;
- Minimisation through reuse on site to support construction;
- Minimisation through use on site or off-site for peatland restoration (is applicable);
- Recycling / recovery for agricultural benefit or recycled through blending with other materials to form a soil substitute or used in other relevant works (is applicable); and
- Disposal, only after all other options have been explored and discounted.

Measures to Minimise Peat Excavation

NPF4 has been carefully considered throughout the design process of the Development. The infrastructure has been specifically designed throughout the iterative EIA process to minimise the impacts on peat by reducing the volume of peat excavated.

From the scoping stage to the final design for planning, a number of changes in the proposed layout have been made to avoid deeper peat and are detailed below:

1. Access tracks have been realigned / altered to avoid areas of deep peat (> 1.0 m depth);
2. Where realignment was not possible, floating access tracks have been identified in all areas of deep peat (> 1.0 m depth); and,
3. Temporary and permanent construction compounds have been resized and relocated to avoid deep peat (> 1.0 m).
4. Peat located within the Headpond, outside of permanent infrastructure, will not be excavated and left in-situ.
5. Temporary access tracks will not be excavated during the construction phase. Alternative methods of establishment such as floating tracks, use of suitable low-ground bearing pressure plant or load spreading track lay will be specified in these areas.

Floating and Use of Existing Access Tracks

A total of 23.25km of access tracks are needed for the construction and operation of the Development.

Floating access tracks, where tracks are constructed directly on the top surface of soft ground, are specified for approximately 4.7 km (20 %) of the 21.25 km total track length to minimise peat excavation.

Floating access tracks have been specified in areas of deep peat (> 1.0 m) to minimise peat excavation - in line with current SEPA guidance.

The floating tracks will be designed and constructed with best practice guidance set out in Floating Roads on Peat (Forestry Civil Engineering & NatureScot, 2010).

Existing access tracks are to be used where feasible and are specified for approximately 12 km (52 %) of the total track length to minimise peat excavation.

Peat Excavation Volumes

Table 2. Peat Excavation Volumes

Table 2 details the construction activities that will generate the peat excavation and the approximate associated (maximum) volumes based on the assumed worst-case scenario. These details are also presented in Annex B as *Figure 10.2.1 – Peat Excavation* at the end of this report.

The volumes detailed in Table 2. Peat Excavation Volumes are outputs from the peat excavation assessment undertaken using GIS and are based on the results of the peat probing surveys.

Table 2. Peat Excavation Volumes

Infrastructure Type	Surface Area (m^2)	Average Peat Depth (m)	Estimated Acrotelm Volume (m^3)	Estimated Catotelm Volume (m^3)
Embankment 1	127,413	1.01	60,096	61,297
Embankment 2	5,222	0.84	2,646	1,800
Borrow Pit	141,598	1.09	64,722	76,373
Headpond Inlet / Outlet Structure	26,192	0.47	12,368	-
Access Track – New (Excavated)	50,712	0.77	22,373	12,081
Access Track – New (Floating Transition)	8,442	0.84	4,255	2,894
Temporary Compounds	21,892	0.70	10,369	4,147
Permanent Compounds	27,343	1.21	8,322	11,818
Switching Station	22,500	0.97	10,347	9,727
Total (m^3)			195,498	180,137

It is estimated that over 375,600 m^3 of peat will be excavated, of which 195,498 m^3 would be acrotelm and 180,137 m^3 would be catotelm.

4. Peat Reuse

This section sets out the measures to reuse peat and the expected peat reuse volumes. Where possible, peat will be re-used adjacent to where it has been excavated to avoid excessive handling. Details of the re-used volumes and supporting details are shown in Table 3. Peat Re-use Volumes, which has been determined in accordance with Scottish Government Guidance.

For the purpose of this oPMP, the locations of peat reuse are largely based on the guidance referenced throughout this appendix. However, it is acknowledged that post consent a ground investigation will be undertaken. At this stage, and in line with the completion of detailed design, the final PMP will be prepared for

approval. At this stage, the areas for peat reuse will be reviewed and updated to ensure that the most appropriate approach is used.

Table 3. Peat Re-use Volumes

Location	Length (m)	Width of Peat (m)	Depth of Peat (m)	Cross-sectional Area of Peat (m^2)	Plan Area of Peat (m^2)	Volume of Acrotelmic Peat Re-used (m^3)	Volume of Catotelmic Peat Re-used (m^3)	Reason for Re-use
Access Track - New (Excavated) - Track Verges	10,861	4.75	0.50	2.38	-	25,795	-	Length includes both sides of all tracks in this category. Required throughout the site on both sides of the track and typing the access track into the landscape.
Access Track - New (Floating) - Track Verges	9,490	4.75	0.50	2.38	-	22,539	-	Length includes both sides of all tracks in this category. Required throughout the site on both sides of the track and typing the access track into the landscape.
Access Track - New (Floating Transition) - Track Verges	1,292	4.75	0.50	2.38	-	3,069	-	Length includes both sides of all tracks in this category. Required throughout the site on both sides of the track and typing the access track into the landscape.
Access Track - Existing (Inc. Forestry Track) - Track Verges	21,659	4.75	0.50	2.38	102,880	51,440	-	Length includes both sides of all tracks in this category. Required throughout the site on both sides of the track and typing the access track into the landscape.
Temporary Compound - Verges	1,389	4.75	0.50	2.38	6,598	3,299	-	Length around 'free' sides of temporary compounds. Temporary (during construction) dressing of construction compound verges. Required to tie the compounds back into the landscape ahead of full restoration.
Permanent Compound - Verges	1,679	4.75	0.50	2.38	31,500	3,988	-	Length around 'free' sides of permanent compounds. Permanent dressing of construction compound verges. Required to tie the compounds back into the landscape.
Permanent Compound - Verges	1,679	4.75	0.90	4.28	31,500	-	28,350	Length around 'free' sides of permanent compounds. Permanent dressing of construction compound verges. Required to tie the compounds back into the landscape.
Access Track Reinstatement (10m to 5m)	23,907	5.00	0.50	2.50	119,536	59,768	-	Reinstatement of permanent access tracks from 10m to 5m. Running surface stripped to max 1.3m depth and reinstated with excavated peat (temporarily stored on site). Catotlemic peat laid first followed by final layer of acrotelmic.
Access Track Reinstatement (10m to 5m)	23,907	5.00	0.94	4.70	119,536	-	112,364	
Temporary Compound Reinstatement	-	-	0.50	-	42,435	21,218	-	Reinstatement of temporary compounds. Running surface stripped to max 1.5m depth and reinstated with excavated peat (temporarily stored on site). Catotlemic peat laid first followed by final layer of acrotelmic.
Temporary Compound Reinstatement	-	-	0.94	-	42,435	-	39,889	

Location	Length (m)	Width of Peat (m)	Depth of Peat (m)	Cross-sectional Area of Peat (m^2)	Plan Area of Peat (m^2)	Volume of Acrotelmic Peat Re-used (m^3)	Volume of Catotelmic Peat Re-used (m^3)	Reason for Re-use
Embankment 1	970	10.00	0.50	5.00	9,700	4,850	-	Peat placed on the downstream toe of Embankment 1.
					Total	**195,966**	**180,603**	

Notes / Assumptions

- Cross-sectional area is rectangular in nature and does not consider outer slope of the bund. Final cross-sectional area of peat to be restored to be refined as part of the final PMP, based on full access track design.
- Volume of peat to be reinstated at compounds is outline in nature and does not consider the reinstatement of earthworks required to establish the compounds. Total volume of peat reinstated to be refined as part of the final PMP, post-consent.
- Reinstatement of existing borrow pit / TC22 at National Grid Reference (NGR) NN 08795 08477 excluded from PMP. This is to reduce any unwarranted traffic and transportation impacts. Should reinstatement of the borrow pit be preferrable, this will be considered in the final PMP.

5. Peat Balance

Table 4. Peat Re-use Volumes Summary shows the peat balance for the Development. It is anticipated that 376,568 m³ of peat can be re-used within the Development Site, with a waste of -934 m³ (- 0.25 %).

Where a negative surplus is shown i.e., excavated volume is less than the used volume, the reuse volume depth will be reduced accordingly, in line with the volume of available material.

Table 4. Peat Re-use Volumes Summary

Infrastructure Type	Volume of Acrotelmic Peat (m³)	Volume of Catotelmic Peat (m³)	Total (m³)
Excavated	195,498	180,137	375,635
Re-Used	195,966	180,603	376,569
Waste	-468	-466	-934

Peat Reuse with Peatland Restoration

While on site for the Phase I Peat Probing survey, a number of eroded peat gullies were identified across the Development. Whilst not included in the calculations above, peatland restoration could be considered as a method for peat reuse on site within these gullies.

The suitability of using excavated peat to support peatland restoration in these areas will depend on a number of factors, including presence of vegetation and quality of bog, but primarily the timing and extent of any proposed peatland restoration in relation to the timing of peat being excavated.

Annex A of this report details the potential areas identified for peatland restoration and a general methodology for the Development.

Peat Handling Method Statement

It will be necessary for the final PMP to detail precise methods and timing involved in handling, storing, and reusing excavated peat materials. The final method statement will follow the principles detailed below, in accordance with the best practice guidance.

- The surface layer of peat and vegetation (Acrotelm) will be stripped separately from the Catotelmic peat.
- Acrotelmic material will be stored separately from Catotelmic material.
- Careful handling is essential to retain any existing structure and integrity of the excavated materials and thereby maximise the potential for excavated material to be reused.
- Less humified Catotelmic peat (consolidated peat), which maintains its structure upon excavation, will be kept separate from highly humified amorphous peat.
- Acrotelmic material will be replaced as intact as possible once construction is complete.

To minimise handling and transportation of peat, Acrotelmic and Catotelmic peat will be replaced, as far as is reasonably practicable, in the location from which it was removed. Acrotelmic material must always be placed on the surface.

During peat handling, efforts will be made to prevent unnecessary trafficking over peat. Appropriate scale plant (including low pressure equipment) will be used, double handling will be avoided, and a monitoring programme will be installed to ensure mixing of peat and mineral soil is avoided.

Temporary Peat Storage

It will be necessary for the final PMP to detail precise methods and timing involved in temporary storage, should this be required, the preference being that peat is placed at its end use location directly from it being excavated.

The final method statement will follow the principles detailed below, in accordance with the best practice guidance.

- Temporary storage of peat will be minimised. Excavated soils would be stored at no greater than 3 m in height, directly adjacent to, or near the tracks on ground appropriate for storage of materials i.e., relatively dry, and flat ground, a minimum of 50 m away from any watercourses. Wherever possible, reinstatement will be carried out as track construction progresses.
- Suitable storage areas will be sited in areas avoiding watercourses, stability risk, groundwater dependent terrestrial ecosystems or other sensitive areas.
- Reinstatement will, in all instances, be undertaken at the earliest opportunity to minimise storage of turves and other materials.
- Timing the construction work, as much as possible, to avoid periods when peat materials are likely to be wetter.
- Where sustained snowfall and freezing conditions occur, peat excavation will also be halted. The decision to restart work will be based on the thawing condition of the site and general meteorological conditions.
- Temporary storage and replacement of peat excavated from borrow pits will occur within the 'source' pit.
- Transport of peat on site from excavation to temporary storage and restoration site will be minimised.

Consistent inspection of peat conditions during construction and restoration will be undertaken by the Ecological Clerk of Works (ECoW), and in line with the CEMP, as follows;

- Temporary stockpiles will be inspected weekly. If non-compliance is noted, corrective actions must be taken; and
- Restored peat conditions will be inspected during and immediately after restoration to ensure that best practice is followed.

6. Conclusion

It is estimated that all 375,635 m³ of excavated peat will be reused within the Development.

Policy 5 of NPF4 looks to prevent developments on peatland, carbon rich soils and priority habitats. As detailed in this Outline PMP, the Proposed Varied Development will require development on and excavation of these soils. However, Policy 5 does confirm that developments will be supported if they are for the "*…the generation of energy from renewable sources that optimises the contribution of the area to greenhouse gas emissions reductions target*."

The oPMP will be developed into a final PMP following a detailed ground investigation, including use of peat cores, as well as the detailed design of infrastructure, post-planning consent.

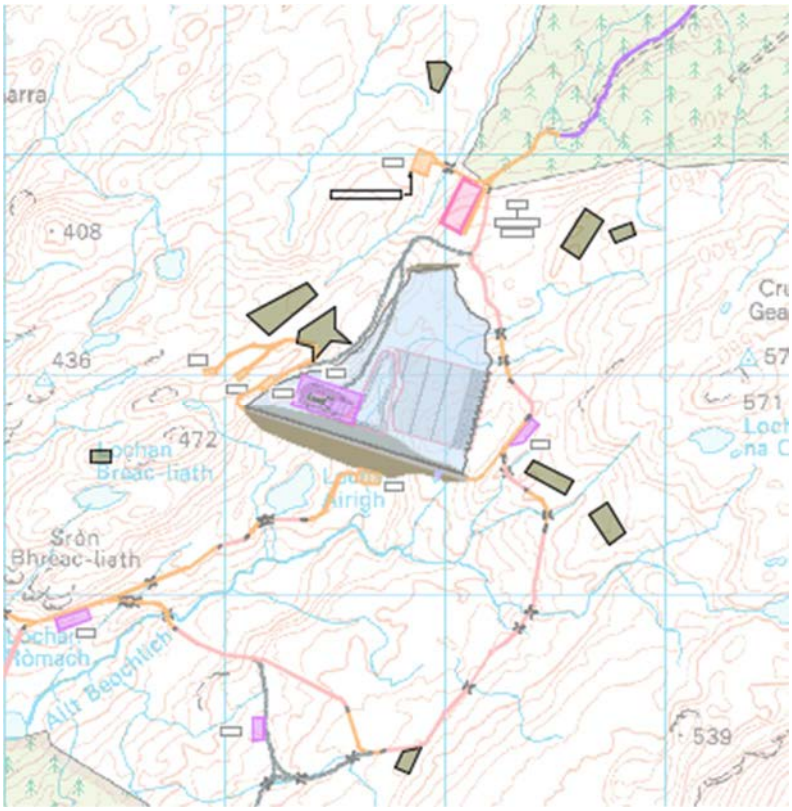
Annex A - Potential Peatland Restoration

As detailed in Section 5.1, while on site for the Phase I Peat Probing survey, a number of eroded peat gullies were identified across the Development – as exemplified by the photographs below in Insert 1.



Insert 1 Eroded Peat Gullies

From a review of aerial imagery and on-site observations, these features are present across the Development – largely to the northeast and south of the Headpond, respectively. Insert 2, below, shows locations earmarked for peatland restoration based on the following methodology.



Insert 2 Proposed Peatland Restoration Zones (Green)

Peatland Restoration Methodology

The methods summarised below will be considered to restore peatlands within the eroded peat gullies across the Development Site.

1. Grip Blocking
2. Gully Management
3. Bare peat restoration

Initially, reprofiling of the eroded banks will be undertaken to lower the bank gradient. Slopes would then be revegetated with previously undermined vegetation with turves used to fill small gaps. Once completed, excavated peat will be used to reprofile the gullies – promoting regeneration of the peatland.

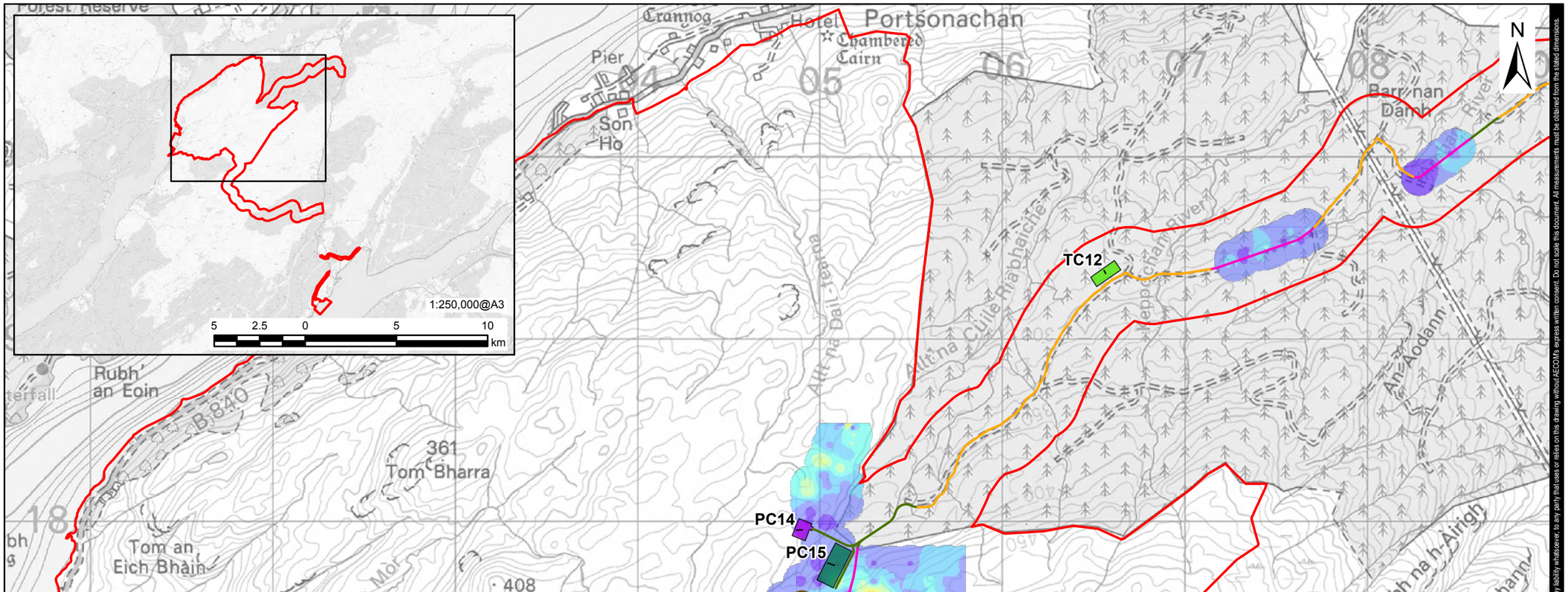
For the purpose of the peat excavation in Table 10.3, the peatland restoration has been omitted as the volume of peat that could be used in the abovementioned peatland restoration is not possible to estimate at this stage. As such, further investigation post consent will be required to confirm the suitability of these areas.

During the moving and handling of peat, efforts will be made to prevent unnecessary trafficking over undisturbed peat, ensure the use of appropriately scaled plant (including low pressure equipment) and to prevent peat from drying out (spraying with water).

Annex B - Figures

Revision: 0 Drawn: FM Checked: BM Approved: AR Date: 2025-06-16

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Infrastructure Type	Total Area (m2)	Average Peat Depth (m)	Total Peat Volume (m3)
Embankment 1	127,413	1.01	121,393
Embankment 2	5,222	0.84	4,446
Borrow Pit	141,598	1.09	141,095
Headpond Inlet / Outlet Structure	26,192	0.47	12,368
Access Tracks New	50,712	0.77	34,454
Access Tracks New - Floating Transitions	8,442	0.84	7,149
Temporary Compounds	21,892	0.69	14,516
Permanent Compounds	27,343	1.21	20,140
Switching Station	22,500	0.97	20,074

AECOM

PROJECT

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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments

Above Ground Infrastructure

- B840 Diversion - Permanent, New, Excavated
- B840 Diversion - Permanent, Upgrade, Excavated
- Spillway
- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Proposed Blarghour wind farm access track
- Headpond Inlet / Outlet Structure
- Basin
- Borrow Area
- Switching Station
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House
- Lower Gate House
- Marine Facility

Peat Depth Interpolation (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01 +

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Peat Excavation

FIGURE NUMBER

Figure 10.2.1

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Appendix F Preliminary Peat Landslide Hazard Risk Assessment

Balliemeanoch Pumped Storage Hydro

Further Environmental Information
Appendix F: Preliminary Peat Landslide Hazard and Risk Assessment (PLHRA)

June 2025

Delivering a better world

Quality information

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Revision History

Issue	Revision date	Details	Authorized	Name	Position
1	June 2025	FEI Submission	DL	David Lee	Project Manager

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Figure 15.3.11 Access Track Sections

1. Introduction

General

1.1.1 ILI (Borders PSH) Ltd. (the 'Applicant') is proposing to construct a Pumped Storage Hydro (PSH) scheme with a Headpond located near Lochan Airigh, which sits in the valley between Cruach na Gearr-Choise to the east and an unnamed summit to the west (the Development). The Development will abstract and discharge water via an inlet / outlet structure into Loch Awe, located south of Balliemeanoch farm. The Development will have a storage capacity of approximately 13,500 megawatt hours (MWh) with approximately 900 MW installed electrical generation capacity.

1.1.2 AECOM Ltd (AECOM) has been commissioned to carry out a Preliminary Peat Landslide Hazard and Risk Assessment (PLHRA) to confirm the initial infrastructure design phase. This Preliminary PLHRA has been undertaken to assess the risk of peat landslides as a result of construction of the Development. This Preliminary PLHRA should be read in conjunction with **Chapter 15 Geology and Ground Conditions (Volume 2: Main Report)** of the EIAR and **Appendix E Draft Outline Peat Management Plan** of the FEI. Additionally, this appendix is supported by the following figures found within **Annex A Figures** at the end of this report:

- Figure 10.3.1 Scheme Location
- Figure 10.3.2 Scheme Layout Plan
- Figure 10.3.3 Site Walkover Features
- Figure 10.3.4 Topography
- Figure 10.3.5 Superficial Geology
- Figure 10.3.6 Bedrock Geology
- Figure 10.3.7 Hydrology
- Figure 10.3.8 Peat Probe Survey Results
- Figure 10.3.9 Peat Depth Interpolation Plan
- Figure 10.3.10 Peat Slide Assessed Hazard
- Figure 10.3.11 Access Track Sections

Assessment Team

1.1.3 The assessment works were undertaken by a team of civil engineers, engineering geologists and geotechnical engineers all of whom have previous experience in undertaking peat assessments.

1.1.4 The team was led by a Chartered Engineering Geologist with over 28 years industry experience and in particular within the renewables energy sector. He has managed and assessed geotechnical risks and undertaken geohazard assessments within peatland environments and with a previous employer (Halcrow Group Ltd) also undertook the checkers role on many PLHRA reports on behalf of the Energy Consents Unit (ECU).

1.1.5 The site walkovers and site works (i.e. peat probing) have been undertaken by various teams and personnel including engineering geologists, geotechnical engineers and civil engineers, all of which have experience in working and assessing peatland environments.

Site Location and Description

1.1.6 The Development is located at central national grid reference (NGR) NN 03615 17578 approximately 4.4 km south of the village of Portsonachan and 9 km northwest of Inveraray in Argyll and Bute, as shown on **Figure 10.3.1: Scheme Location (Annex A Figures)**. The Development Site is generally characterised by upland moorland plateau grazing land. The Headpond (upper reservoir) located near

Lochan Airigh sits at approximately 360 m above ordnance datum (AOD) and 3 km east of the Balliemeanoch farm steading. A new temporary Marine Facility, comprising a temporary jetty to aid construction of the Development, is to be located south of Inveraray off the A83.

1.1.7 The topography around the Headpond area is generally flat and slopes up at approximately 12% and 9% from the centre of the basin to the northwest and the southeast, respectively.

1.1.8 The Tailpond inlet / outlet is located on Loch Awe, south of Balliemeanoch Farm. The top level of the structure is at an elevation of 38.6 m AOD and extends approximately 50 m into Loch Awe. The existing ground slopes steeply to the southeast at a gradient of approximately 14% to the existing track, where it levels out and slopes steadily upwards to the proposed Headpond location in the east. The Balliemeanoch farmhouse is located approximately 400 m away from the proposed Tailpond inlet / outlet location. **Figure 10.3.4 Topography (Annex A Figures)** shows the topography of the Development Site based upon a 5 m digital terrain model (DTM).

Assessed Areas

1.1.9 The study area is defined in Section X of Chapter 10 Geology and Soils (Volume 2) of the EIAR.

1.1.10 The Development will comprise of the infrastructure set out in **Table 2.2. Description of Development Component Parts** of **Chapter 2 Project and Site Description (Volume 2: Main Report)** and can be viewed in **Figure 15.3.2 Scheme Layout Plans (Annex A Figures)**, of the EIAR.

1.1.11 For the purposes of this Preliminary PLHRA only the above ground infrastructure has been assessed. The below ground infrastructure such as tunnels, shafts and the Power Cavern Complex have not been assessed as they are considered to be located at suitable depths below ground such that there are no affects to the stability of the peat. The locations where these underground structures interact with the ground surface (Tunnel Portals) have been assessed, as these may affect the stability of any surrounding peat. It should be noted that blasting may be undertaken to form the Borrow Pit Search Areas (BP Search Areas), Headpond and Tailpond Inlet / Outlet Structures and the Tunnel Portal structures for Tunnels. All underground infrastructure is likely to be constructed using drill and blast methodology.

1.1.12 Peat management and reuse within the Proposed Development Site are covered in **Appendix E Draft Outline Peat Management Plan** of the **FEI**.

1.1.13 As highlighted within the Draft Outline PMP, the proposed peat reuse as part of the Development is limited to reinstatement of temporary infrastructure (e.g. Access Tracks and Temporary Construction Compounds) and to create verges along Permanent Access Tracks and Permanent Construction Compounds. In relation to the peat reuse for the verges, given the minimal height and widths proposed it is not expected that these will cause significant instability or exposure issues and as such the reuse of peat in this manner is not considered any further as part of this Preliminary PLHRA. In relation to the reuse of peat to reinstate temporary infrastructure, it is acknowledged that the process of distributing and then reusing the peat will weaken its structure and therefore its stability. However, given the limited depth of reinstatement and by following the guidance for the handling and temporary storage of peat as presented in the Draft Outline PMP, it is considered this effect will be minimised. For the purposes of this Preliminary PLHRA, the assessed peat slide hazard is therefore considered to be similar to that of the natural in-situ peat prior to removal as assessed on the relevant peat landslide hazard figure discussed later in this report.

1.1.14 Peat restoration areas are proposed as part of the Development, however, details on these are still in development and subject to change and as such are not assessed as part of the Preliminary PLHRA. The peat reuse and restoration areas relating to the Proposed Development Site will be revisited as part of the Final PLHRA to be undertaken post-consent, considering the final design of the Development and considering any new information which becomes available (e.g. Ground Investigation (GI) data).

Scope of Report

1.1.15 The scope of this report comprises a summary of the methodology used for the Preliminary PLHRA; a review and assessment of the baseline conditions emanating from available geological, hydrogeological and topographic information for the Development; an estimate of the geotechnical hazards and risks associated with peat slides during and post construction; a qualitative risk assessment in relation to the

peat encountered; a summary and discussion of potential mitigation and control measures to reduce the risk caused by the presence of peat; and present any conclusions and recommendations which can be drawn from the information and assessments undertaken as part of this Preliminary PLHRA.

1.1.16 This assessment was conducted in general accordance with the guidance provided in Peat Landslide Hazard and Risk Assessments – Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, 2017) – hereafter referred to as PLHRA: BPG. The guidance suggests a staged approach methodology in relation to the peat stability risk as follows:

- Preliminary Assessment;
- Hazard and Risk Rating;
- Stability Analysis (if required); and
- Detailed Quantitative Risk Assessment (if required).

1.1.17 A qualitative hazard and risk ranking review was undertaken in accordance with the published guidance.

1.1.18 At present, the Development is still in the initial design stage with only the outline scheme developed. As such, initial intrusive investigations have been undertaken with peat depths estimated through widespread peatland surveys. A quantitative slope stability analysis to estimate factors of safety and a quantitative hazard and risk assessment have therefore not been undertaken at this stage. To allow finalisation of the design for the Development, further surveys and investigative works (including peat probing and exploratory holes) are to be undertaken.

1.1.19 Further development of this assessment will be undertaken post-consent considering the final design of the Development (inclusive of the peat reuse areas) and considering any new further information (e.g. investigation data) becoming available. This PLHRA is therefore preliminary.

Limitations

1.1.20 AECOM does not warrant or guarantee to any party in any way the completeness or accuracy of the documentary information submitted by third parties during the course of this study. Any assessment(s), interpretation(s), conclusion(s) or opinion(s) contained herein is or are made by AECOM in good faith based on information available at the time of compilation of the report and are made for the sole and exclusive use of the Applicant.

1.1.21 AECOM accepts no liability towards third parties for decisions made by any such based on information or statements contained herein. Third parties making use of any information or statement of any kind whatsoever presented or contained within this report or attachments hereto do so at their own risk.

1.1.22 Where peat depth has been determined through peat probing, it should be noted that due to the nature of the probing and as no sample is recovered during the advancement of the probe, the peat depth recorded is only an estimate based on the judgement of the probe operator. More intrusive GI techniques, where samples are recovered, is required to more accurately determine the peat depth.

1.1.23 Peat probing has been undertaken across much of the Proposed Development Site to cover the proposed infrastructure. The whole Proposed Development Site had not been probed on writing this report and there were areas which could not be probed due to steep slopes. Where the peat probe data has been interpolated out to the site boundary from points which are not within 10 m of the boundary, this was undertaken using estimation and judgement. There is therefore the potential for the peat to be different in thickness than predicted, which may increase or decrease the predicted peat slide assessed hazard. More probing and investigation is proposed as part of the Proposed Development and as such data gaps are anticipated to be filled as a result. Where data gaps remain these shall be discussed and assessed further as part of the Final PLHRA undertaken post-consent and following design maturity.

1.1.24 Ground surveys indicate likely conditions but investigate only a relatively small volume of the ground in relation to the size of the Proposed Development Site and can only provide a general indication of site conditions. The comments made and recommendations given in this report are based on AECOMs understanding of the ground conditions at the time of the preparation of this report. There may be exceptional ground conditions on the Proposed Development Site which have not been disclosed and which have therefore not been taken into account in this report.

2. Methodology

Desk Based Assessment (DBA)

2.1.1 An initial DBA review was undertaken comprising the review and analysis of available information from sources as detailed below:

- British Geological Survey (BGS) Onshore GeoIndex;
- NatureScot's Carbon and Peatland map 2016;
- Centre for Ecology and Hydrology (CEH), National River Flow Archive (NRFA) (www.ceh.ac.uk/data/nrfa) for flows and rainfall;
- Scottish Environmental Protection Agency (SEPA) (www.sepa.org.uk) for river basin management plans, groundwater classification, groundwater vulnerability, water quality and hydrogeology;
- Aerial Photography;
- Ordnance Survey maps and 5m DTM for topography; and
- Coal Authority Interactive Map Viewer.

Assessment Approach

2.1.2 A single stage assessment of the peat slide Hazard Ranking has been completed for the Proposed Development. The Hazard Ranking is based on the output from Geographic Information Systems (GIS) software using a multi-criteria analysis. The outputs generated from the GIS assessment can be overly conservative in areas and therefore a review of the Hazard Rankings is also undertaken. This review considers the factors contributing to the peat landslide hazard in more detail and rationalises whether the Hazard Ranking can be reduced. The assessment of the Hazard Rankings inclusive of the review and any reduction considered appropriate is presented in **Section 6: Peat Stability** of this PLHRA.

2.1.3 The outputs from the assessment of the Hazard Rankings form the basis of the overall PLHRA outcome and inform whether any mitigation measures are required.

Additional Relevant Guidance

2.1.4 The following additional good practice guidance was used to inform this assessment:

- SEPA Regulatory Guidance – Developments on Peat and Off-site Uses of Peat [SEPA, 2017];
- Floating Roads on Peat [SNH & FCS, 2010];
- Constructed Track in the Scottish Uplands [SNH, 2015];
- Good Practice during Wind Farm Construction [SR, et al., 2019];
- Guidance on Developments on Peatland, Peatland Survey [Scottish Government, SNH & SEPA, 2017]; and
- Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste [SR & SEPA, 2012].

2.1.5 The 'Good Practice during Wind Farm Construction' document was produced for wind farm developments, however, principles discussed can be considered as good practice for other similar scale developments in areas with similar infrastructure (Access Tracks) and typical ground conditions seen on wind farms, particularly peat and around the water environment.

3. Baseline Environment

Topography and Slope Analysis

3.1.1 The main Development Site slopes from the summit of Cruach na Gearr-choise (571 m above ordnance datum (AOD)), along the eastern boundary of the Development Site, towards Loch Awe in the west.

3.1.2 The proposed Headpond is located near Lochan Airigh (360 m AOD) which sits in the valley between Cruach na Gearr-Choise (c. 571 m above ordnance survey datum; AOD) to the east and an unnamed summit (c. 470 m AOD) to the west.

3.1.3 The Tailpond Inlet / Outlet Structure is located on Loch Awe, south of Balliemeanoch. The top level of the structure is at an elevation of 38.6 m AOD and extends approximately 50 m into Loch Awe. The existing ground slopes steeply to the south-east at a gradient of approximately 14% to the existing farm track, where it levels out and slopes steadily upwards to the proposed Headpond location in the east.

3.1.4 **Figure 10.3.4 Topography (Annex A Figures)** shows the topography of the study area based upon a 5 m DTM.

Historic OS Mapping and Aerial Photography Review

3.1.5 A review of available historic OS Six Inch maps on the National Library of Scotland has been undertaken with **Table 1. Summary of Historical OS Maps within Site** providing a summary of the onsite findings. The summary has been supplemented by the information provided in the small scale (1:10,000 and 1:10,560) and large scale (1:1250 and the 1:2,500) OS maps.

Table 1. Summary of Historical OS Maps within Site

Map Date	On-site Summary
1843-1882	• The Proposed Headpond development site is undeveloped open moorland. Some areas of forestry/woodland predominantly closer to Loch Awe • There are dwellings located close to the banks of Loch Awe, specifically 'Balliemeanoch Sheepfold', Barr-Beithe, several smaller dwellings, a Sawmill. • An un-named track exists in the location of the current B840, as well as several smaller tracks parallel to the banks of Loch Awe.
1856-1891	• No significant changes at the headpond area. • Balliemeanoch farm and Barr-Beithe still marked as settlements. A couple other dwellings shown just North of Allt Beochlich. • Extent of woodland areas unchanged.
1885-1900	• No significant changes at the headpond area. • Less dwellings/buildings marked on the map, • The road alongside Loch Awe is marked as an *unfenced, second class metalled road*.
1921-1930	• No significant changes at the headpond area. • There is a bridge marked on the road going over Allt Beochlich • Less dwellings/buildings marked on the map, Barr Beithe is no longer marked. • The road alongside Loch Awe is marked as an *unfenced motor road* and as a *footpath* in some sections.
1945-1947	• No significant changes.
1985 (aerial imagery)	• No significant changes.
2004 (aerial imagery)	• Beochlich Small Scale Hydro is built with a road going up to it • A caravan park is open on the banks of Loch Awe • Several new dwellings built close to Loch Awe

3.1.6 No obvious evidence of peat instability features was noted from review of the available historic and current OS mapping or aerial photography.

Current Land Use

3.1.7 The current land use of the Development Site was assessed based on recent ordnance survey mapping and aerial imagery available through Bing Maps [Microsoft, 2025] and through consultations with the Applicant.

3.1.8 The land use within the Development Site comprises a mixture of lowland grazing fields and commercial coniferous plantation. Forestry operations including felling are commonplace within the Study Area. Inveraray is the most notable settlement within the Study Area. The only other relevant small settlement within the Study Area is Balliemeanoch. In addition, there are numerous farmsteads and standalone residential properties scattered throughout the landscape, which are accessed from a network of minor roads.

3.1.9 The Development Site is predominantly comprised of upland moorland where vegetation cover is dominated by bog. Occasional linear belts of broadleaf woodland and clusters of established trees are concentrated on the lower slopes of glens and watercourses. The Development Site includes more substantial linear belts of woodland glens which rise from the loch shore, the condition of which is established and includes ancient woodland. The Development Site also contains pockets of plantation forest. Plantation forest is at various stages of maturity and subject to woodland management plans. The felling plans are as follows:

- Three Bridges – which comprises the area of plantation forest where the southern Access Track to the Headpond passes through to the northwest of Inveraray and west of the A819.
- Upper Sonachan, Keppochan, and Claddich – which comprises several areas of plantation to the northeast of the Headpond, which the northern Access Track to the Headpond passes through, this includes Keppochan, Upper Sonachan and Keppochan East & Tullich.
- Argyll Estates – which comprises the area of forestry plantation surrounding Inveraray and where the two inland Access Tracks near to the Marine Facility.

3.1.10 The existing Access Track which serves the site is through a dedicated forestry plantation (coniferous wood) which has not had any felling or planting activity recently. The Headpond area of the Proposed Development Site is unoccupied moorland and does not show any recent activity.

3.1.11 The Beochlich hydroelectric project is located within the Development Site on the Allt Beochlich stream. It is a small scall hydroelectric dam built in 1998 with a 1MW capacity.

Geology and Soils

Bedrock Geology

3.1.12 As shown on **Figure 10.3.6 Bedrock Geology (Annex A Figures)**, the bedrock geology at the main Development Site is dominated by Metabasaltic rock of the Tayvallich Volcanic formation. The Tayvallich Volcanic formation is of the Tayvallich Subgroup which is defined on the British Geological Survey (BGS) as: “Dominated by calcitic limestone, in part slumped, resedimented; however, east of mid-Deeside the limestone is replaced by psammite and quartzite with thin beds of calcsilicate rock; lavas, hyaloclastites and graphitic pelites present in Tayvallich area; Banffshire Coast - thick semipelite and calc sequence in upper part.”

3.1.13 This formation covers the majority of the proposed Headpond and the sloping ground to the west, towards Loch Awe.

3.1.14 At the Tailpond inlet / outlet structure (Loch Awe), the bedrock geology is shown to be psammitic in nature of the Loch Avich Grit Formation. The Loch Avich Grit Formation is of the Southern Highland Group, which is defined on the BGS as: “A thick pile of psammitic and pelitic greywackes and associated rocks, some volcanic.”

3.1.15 The bedrock geology is made up of Tayvallich Volcanic Formation – Metalava and Metatuff and the Tayvallich Slate and Limestone Formation – Pelite, Graphitic to the north and south of the Headpond, respectively. Both of these formations are of the Tayvallich Subgroup, described above.

Superficial Geology

3.1.16 As shown on **Figure 10.3.5 Superficial Geology (Annex A Figures)**, no superficial deposits are identified across the majority of the main Development Site. This is an indication that bedrock is at or near ground surface. Where superficial deposits are identified, they are generally till, deposits of alluvium and peat.

3.1.17 However, a review of the Carbon and Peatland 2016 map on Scotland's Soils online map viewer (Scottish Government, 2016) shows the area surrounding the Headpond consisting of a variety of peat soils, mostly peaty gleys with semi-confined peat, peaty gleyed pozdols with peaty gleys with distrophic semi-confined peat and peaty gleys with peaty rankers. The areas along the banks of Loch Awe and going up the slope to the East towards the Headpond is described as brown earths with humic gleys.

Faults

3.1.18 A review of the BGS Faults (1:625,000 scale) layer showed the presence of a fault trending south-west – north-east through the proposed Embankment 1, terminating to the east of the Headpond. The BGS indicates that the fault is at rockhead, however, no further information is available. A number of inferred faults are also present around the study area, however, they are out with any proposed infrastructure.

Mining and Quarrying

Coal Mining (Historic and Current)

3.1.19 The Coal Authority Interactive Map Viewer indicates that the Proposed Development Site is not within a coal mining reporting area.

3.1.20 Additionally, the available historical maps record no coal mining related features or underground workings within the Proposed Development Site.

3.1.21 There is therefore no evidence of any current coal mining recorded within the Proposed Development Site.

Quarrying (Historic and Current)

3.1.22 No historic quarrying activities within the Proposed Development Site were identified from the historical mapping.

3.1.23 The available information from the 'Mines and Quarries' Layer on the BGS GeoIndex record no information for the proposed development site.

3.1.24 There is therefore no evidence of any past or current quarrying or mining recorded within the Proposed Development Site.

Hydrogeology

3.1.25 The bedrock hydrogeological information is relatively limited. The available information indicates that the Dalradian rocks are generally without groundwater except at shallow depths. MacDonald (2005) lists the bedrock aquifer productivity of Dalradian rocks as being in the low category (in some cases very low category). For these categories, low is defined as 0.1 to 1 l/s and very low as <0.1 l/s. These quantities would only be suitable for supplying private resources and even then, resources may tend to be variable. The presence of fracture zones in a locality may enhance the yields from any wells, but locating these zones can be difficult. Although hydraulic property information is very difficult to obtain in these areas, it can be assumed that the permeabilities of the bedrock are likely to be low.

3.1.26 The superficial deposits (although limited in extent) and peat are likely to contain groundwater at shallow depths. Flow would likely follow the topography of the surface and underlying bedrock. It is likely that this shallow groundwater is supporting GWDTEs including local watercourses, and maybe in hydrological connectivity with still water features (e.g. Lochan Airigh).

3.1.27 Ecology surveys have identified a number of terrestrial ecosystems which have the potential to be dependent on groundwater (*See Chapter 7: Aquatic Ecology (Volume 2: Main Report*) for further detail). For this assessment, any habitat that may be dependent on upwelling groundwater, groundwater flow, or a constant or seasonally high groundwater table (including perched) will be considered. *Chapter 6:*

Terrestrial Ecology (Volume 2: Main Report) identifies areas as having values of Moderate, High or Moderate to High GWDTE potential. In summary the following areas have been identified as having potential GWDTEs:

- **The Headpond and Embankment** have a mixture of moderate (part only), moderate to high, high (part only) and high classified GWDTE. The majority of these are situated to the northwestern edge of the Headpond and Embankment. There are also a number of High classified GWDTEs along Allt Beochlich and tributaries.
- **Track from Loch Awe to Headpond** has a mixture of moderate, moderate to high and high potential GWDTE. The High potential GWDTE are mostly situated along Allt Beochlich and tributaries. There is also of high (part only) GWDTE situated along the bank of Loch Awe (NN 00870 15815).
- **Blarghour Wind Farm Access Track** has a number of high classified GWDTEs situated around the entrance from A819 (NN 08826 12453) as well as some isolated patches of GWDTEs along the track.
- **Inveraray** has an area of high, moderate to high and moderate GWDTE just south of the Upper Avenue (NN 08711 07960). There is also a moderate (part only) GWDTE situated along Loch Fyne (NN 08895 07433).The majority of these GWDTE are situated around the northwest side of the proposed Headpond area (NN 03256 16310) and have been classed as High or Moderate. There are also a number of GWDTE located around Allt Beochlich (NN 01895 15524) which have been classed as Moderate, High or Moderate to High. However, as discussed within Chapter 7: Aquatic Ecology (Volume 2: Figures), it is likely that the majority of these GWDTE are ombrogenous (rain-fed) especially within the areas of blanket bog.

3.1.28 The whole study area is underlain by the Oban and Kintyre Watercourse Framework Directive (WFD) groundwater body designated under the River Basin Management Plan (RBMP) for Scotland. This WFD groundwater body covers an area of approximately 2,663 km^2 and is currently classed as Good.

Hydrology

3.1.29 Surface water features (and their attributes) within the study area and extending to Loch Awe and Loch Fyne are described in this section. Under the WFD, 'water bodies' are the basic management units, defined as all or part of a river system or aquifer. Water bodies form part of larger 'river basin districts' (RBD), for which RBMPs are used to summarise baseline conditions and set broad improvement objectives. This baseline is presented by each water body, noting that some features are present within the catchments of designated WFD water bodies rather than being designated as a WFD water body in their own right. The baseline is also organised first by those water features and WFD water bodies that are within the Loch Awe catchment, before those that are in the Loch Fyne catchment.

Loch Awe Catchment

3.1.30 Within the study area and the Loch Awe catchment there are the following water features. For smaller features we have given them a unique project specific reference (see in brackets below) which are present on Figure 11.2a Surface Water and Groundwater Receptors and Attributes – Headpond Study Area and Figure 11.3a Surface Water and Groundwater Receptors and Attributes – Headpond Study Area in (Volume 3: Figures).

Table 2. Summary of Catchment

Sub Catchment	Water Features
Loch Awe	Allt na Cuile Riabhaiche and tributaries (LA2)
	Allt a Chrosaid and small (unnamed) lochan (LA5)
	Allt na Dail Ferna (LA11)
	Allt na Fainge (LA12)
	Allt a' Ghreataidh (LA13)
	Allt Blarghour and tributaries (LA16)
Allt Beochlich and tributaries (LA6)	Loch Breac-liath (LA1)
	Lochan Airigh (LA7)

	Beochlich Lochan (LA8)
	Lochan Dubh (LA9)
	Lochan Romach (LA10)
Alt Mor and tributaries (LA14)	Unnamed Lochs (LA15)
Cladich River (LA17)	Keppochan River and tributaries (LA3)
	Archan River and tributaries (LA4)

Climate

3.1.31 According to SEPA guidance, rainfall intensity is projected to increase by up to 46% until 2080 due to climate change. The minimum lifetime of the Development is believed to be 100 years; the drainage infrastructure provisions put in place therefore must have an applied rainfall intensity of 46% to reduce the risk of surface water flooding over the development's lifetime. The mitigation measures within the Mitigation and Monitoring section are based on the levels within Loch Awe, with accurate modelling climate change parameters included. These estimates are based on UK Climate Impacts Programme (UKCIP) 2018 which produces rainfall intensity data through a collaboration between Department for Environment, Food & Rural Affairs (DEFRA), the MET Office, and the Environment Agency (EA).

3.1.32 SEPA guidance Table 1 (Ref 20) splits Scotland within twelve river basins to determine the peak river flow allowances for each river basin. As the site sits within Argyll and Bute, the Argyll River basin climate change uplift to the year 2100 was utilised within the fluvial modelling (Appendix 12.2 Flood Risk Assessment (Volume 5: Appendices)) with a value of 59%. This information is additionally based on the UKCIP2018 data to guarantee accuracy of the estimate.

4. Site Surveys

Peatland Surveys

4.1.1 As per the requirements set out in NPF4 and relevant best practice guidance, due to the presence of peat across the Proposed Development Site, peatland surveys were undertaken to quantify the extent of peatlands within the Proposed Development Site. To capture the extent of peat across the site, the following peat probing surveys were undertaken:

- Peat probing along Northern Access Route – August 2021
- Phase I Peatland survey – September 2023

4.1.2 The probes used consisted of lightweight non-conductive fibreglass rods and handles which are nominally 0.9 m in length with threaded joints allowing extension of the probe as required. The probe was manually pushed through the peat at each location until one of the following occurred:

- Refusal of the peat probe.
- Recognisable change in the stiffness in the ground; or,
- Regular granular material could be felt scrapping along the probe.

4.1.3 Due to the nature of peat probing and as no sample is recovered during the advancement of the probe, the peat depth determined is only an estimate based on the judgment of the probe operator. More intrusive investigation techniques would be required to determine the depth of peat more accurately.

Northern Access Route Peat Probing – August 2021

4.1.4 The northern access of the Development is located within the Keppochan and Upper Sonachan Forest and it is proposed that access will be made using existing forestry tracks (to be upgraded) and new Access Tracks.

4.1.5 Two areas of new Access Tracks were surveyed at 50 m centres with 10 m perpendicular offsets. In total, 50 probes were taken, with the majority (54%) of probes having peat depths < 0.5 m depth (assumed topsoil). Shallow peat was measured at 18% of the locations while deep peat was identified in 28% of the probed locations. The deepest peat measured was 3.2 m deep.

Phase I Peat Probing – September 2023

4.1.6 Prior to commencing the survey, a desk-based assessment was undertaken to assess the estimated presence of peat across the Development. A review of the BGS Onshore GeoIndex indicated that no peat or peaty soils were present across the site. Further investigation through the National soil map of Scotland indicated that a large, isolated outcrop of peaty podzols and peaty gleys was present around the proposed Headpond area.

4.1.7 The Headpond and surrounding areas were surveyed in a 100 m x 100 m grid, with additional peat probes taken at areas of deep peat / in areas with limited coverage. Additionally, while undertaking the peatland survey, additional features were noted, as follows:

- The northern access to the site was taken via the existing forestry tracks within the Keppochan and Upper Sonachan Forest. The forestry tracks were accessible via vehicle up to 1.5 km from the western edge of the forest at which access was made via foot. The remaining 1.5 km to the edge of the forest was along a severely overgrown access track. A hard subbase could be felt underfoot whilst walking on the overgrown track but years of organic deposit and tree growth made it difficult to traverse on foot.
- The southern Access Track went through the current landowner's farmland, the track was in good condition, but it was steep in some sections and a 4x4 vehicle was necessary to drive up. The areas to the side of the track were mostly shallow peat (between 0m and 0.5m) though when coming closer to the proposed location for Temporary Compound 07 some areas of very deep peat (between 3 m and 5 m) were recorded to the west of the track.
- The eastern area of the site generally showed evidence of deeper peat and regularly displayed peaty hollows and peat bogs. The presence of peat in these areas is likely due to the topography, evidenced by small rolling hills which creates dips and pockets that promote the creation of peat as organic material and water are contained in these hollows.
- The western area of the site was notably less peaty. This is likely due in part to the natural topography and lack of conditions for peat development.
- There were many watercourses on site which ranged from many small brooks through peat and grass caused by heavy rainfall, feeding into larger streams going across most of the site and further into the Beochlich Hydro Electric Site.
- The site has regular changes in topography, mainly sloping down from the outer edges of the site to the area where Lochan Airigh is currently located, and further to the reservoir of Beochlich hydro.
- Around the Tailpond Inlet / Outlet structure, working farmland was observed. As such, no peatlands were observed and omitted from the assessment.

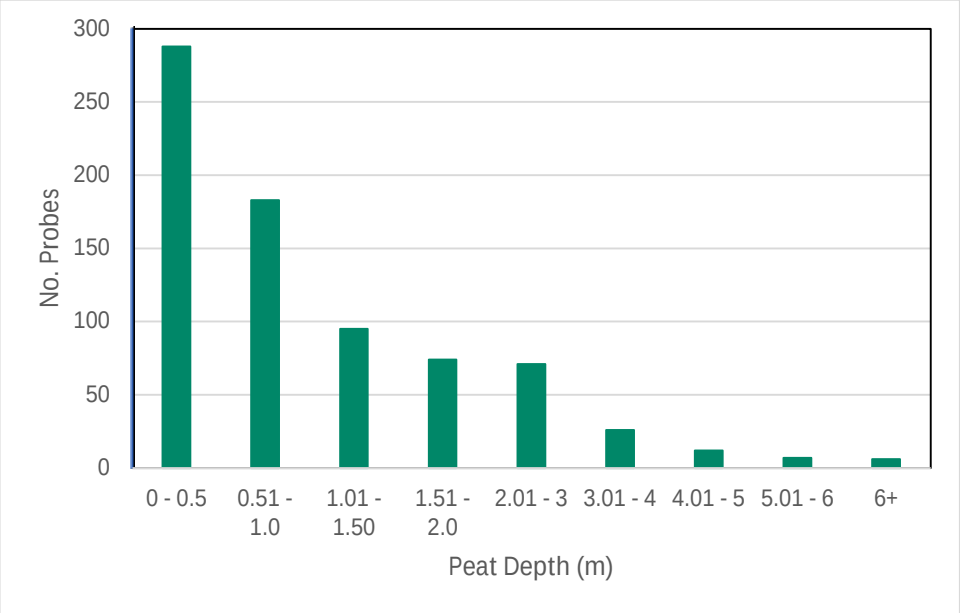
4.1.8 Prior to mobilising on site, SEPA were consulted where it was proposed to undertake around 550 peat probes across a 100 m x 100 m grid. SEPA requested that a "dynamic probing regime be undertaken", as such, as detailed in Section 10.6.3.2, additional peat probes were taken in areas of deep peat and as requested by SEPA, 1) along the extents of the existing access tracks, 2) along the proposed Access Track and 3) across the proposed Embankments.

Peatland Surveys Summary

4.1.9 In total, 766 peat probes were taken during the Phase I Peat Survey (216 extra probes compared to the proposed 550). The results from the survey are listed below and shown graphically in Insert 10.1 Peat Depth Range below.

- 288 probes recorded a depth of peat below 0.5 m (38% of the site surveyed).
- 183 probes recorded a depth of peat between 0.5 m and 1.0 m (24% of the site surveyed).
- 95 probes recorded a depth of peat between 1.0 m and 1.5 m (12% of the site surveyed).

- 75 probes recorded a depth of peat between 1.5 m and 2.0 m (10% of the site surveyed).
- 71 probes recorded a depth of peat between 2.0 m and 3.0 m (9% of the site surveyed).
- The last 7% of the site has depths of peat ranging between over 3.0 m and up to 7.30 m, which equates to 57 locations of very deep peat, mostly located on the outer eastern edges of the survey extents.



Insert 1 Peat Depth Distribution

4.1.10 The results of the Phase I Peat Probing survey were used to create a map of the varying depths of the peat surface across the Development – shown on **Figure 10.3.9 Peat Depth Interpolation (Annex A Figures)**.

5. Peat Stability

General Information on Peat

5.1.1 The BGS describe peat as a “partially decomposed mass of semi-carbonized vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps.” [BGS, 2024].

5.1.2 Peat is characterised as generally having an extremely high water content, high organic content, low bulk and dry densities, low shear strength and very high compressibility [O’Kelly, 2017]. PLHRA: BPG provides further information on the characteristics of peat indicating that dry peat is typically 90 – 95% organic matter and that it has special hydrological properties with water contents of around 90%.

5.1.3 Peat deposits are split into two layers an upper acrotelm and a lower catotelm. The acrotelm is typically <0.6 m deep and is where there is a living root system which helps to loosely bind the plant remains together with a normal level of water table fluctuations also within the layer. The catotelm is a more decomposed layer which is below the water table level and is waterlogged [O’Kelly, 2017]. The position of the water table therefore controls the level of acrotelm and catotelm deposits which therefore control the stability of the peat deposits.

5.1.4 BS 5930 [BSI, 2020] provides a means for describing peat in the field in the form fibrous peat, pseudo-fibrous peat and amorphous peat. Fibrous peat is described as having clearly recognisable plant remains with the deposits also retaining some tensile strength. Pseudo-fibrous peat is described as a mixture of plant fibres and amorphous peat paste. Amorphous peat is described as having no recognisable plant remains with the deposits also having a ‘mushy’ consistency. The degree of decomposition of the peat

can be further estimated in the field by applying the von Post Scale of humification which ranges from H1 (no decomposition) to H10 (totally decomposed) [von Post, 1924].

5.1.5 The PLHRA: BPG records three different naming conventions depending on the depth of the peat deposits. These are listed as follows:

- Peaty Soil – a peat or surface organic soil with a depth of <0.5 m;
- Peat – a peat of >0.5 m but ≤1.0 m depth and which has an organic matter content of >60%; and
- Deep Peat – a peat that is >1.0 m depth.

5.1.6 The PLHRA: BPG also identifies three different types of peat deposits; raised bog, blanket bog and fen bog. The Wildlife Trust [Wildlife Trust, 2021a] records that a raised bog is formed of deep peat which can be several metres higher than the surrounding ground level and covered with a surface layer of vegetation. Generally, raised bogs are significantly wetter than the surrounding land and are fed almost entirely by rainwater. The Wildlife Trust [Wildlife Trust, 2024b] records that a blanket bog is generally an upland habitat with peat that has accumulated to a depth of at least 0.5 m, typically on flat or gently sloping land where drainage is poor, and the peat is predominately fed by rainwater. The International Peat Society [International Peat Society, 2021] records fen peatlands as being in depressions which have strong connections with groundwater that have been in contact with mineral bedrock or soil.

5.1.7 Peat accumulations are typically thickest in reasonably flat lying areas or topographic hollows where surface and groundwater drainage are often concentrated and thins as the local slope angle increases. On steep slopes the conditions are generally considered too steep for thick peat to form, although some peat may be present.

Factors Controlling Peat Instability

5.1.8 The PLHRA: BPG indicates that peat instability can manifest in a number of ways, which generally fall into two categories: minor instability and major instability. Minor instability are features which may be warning signs of major instability or possibly just simply represent a response to the land against drainage and gravity (e.g. creep). Localised and small tension cracks, tears in the acrotelm, compression ridges or bulges and thrusts in the peat deposits represent some features which represent minor instability. Major instability comprises an actual peat landslide which can vary in form and scale.

5.1.9 The PLHRA: BPG document records that peat instability can be caused by a number of factors which can be split into two groups: preparatory factors and triggering factors. Preparatory factors increase the susceptibility of peat to become unstable (i.e. fail) without necessarily causing a peat landslide. As such, preparatory factors can influence peat stability over a long period of time. Triggering factors have an immediate or rapid effect on the peat changing its stability from stable to unstable. As such, triggering factors can be considered as being the cause of failure.

5.1.10 The main preparatory factors, which reduce the overall stability of peat include:

- Increase in the mass of peat (e.g. through vertical accumulation of peat, increase in water content and through afforestation within the peat);
- Reduction in shear strength of the peat or substrate through physical changes in its structure (e.g. creep or vertical fracturing), chemical or physical weathering or by clay dispersal in the substrate;
- Loss of surface vegetation (e.g. through burning, pollution or through deforestation) causing reduction in tensile strength;
- Increased buoyancy of the peat through increase in sub-surface water or wetting of desiccated areas; and
- Afforestation, which will reduce the water content of the peat body and increase the likelihood in the formation of desiccation cracks which are likely to be infiltrated by rainfall.

5.1.11 Triggering factors can be split into two types; natural events and man-made. Triggering factors covering the two types include

- Natural Events:

- High intensity and prolonged rainfall, in particular following a dry period, or melting of snow / ice causing a short-term high pore-water pressure at pre-existing or potential rupture surfaces;
- Earthquakes causing rapid ground acceleration;
- Erosion at the toe of a peat slope, reducing support to the upslope peat mass; and
- Increased loading on the peat mass (e.g. through previous peat landslide debris).

- Man-made Events:
  - Alteration of hydrological regime by changing natural drainage paths;
  - Rapid ground accelerations caused by works (e.g. through blasting or vibrations of plant);
  - Extraction of peat at toe of slope, reducing support to the upslope peat mass;
  - Increased loading on the peat by plant, structures or overburden;
  - Earthworks including excavating, filling, stockpiling and Embankment of material; and
  - Ground subsidence associated with mining.

5.1.12 While peat failures are often considered to originate in thick or extensive accumulations, it should be noted that instability can still occur in areas of limited peat thickness. The nature of the peat and the interface between the separate layers can also influence its stability. The plane of failure can be located at the interface between the upper, periodically saturated acrotelm layer and the underlying permanently saturated catotelm layer. The plane of failure can also be located at the interface between the peat and the underlying substrate.

5.1.13 Failure can occur due to heavy or prolonged rainfall or due to melting snow or ice which can cause short-term high pore-water pressure along pre-existing or potential rupture surface (e.g. between the substrate and the peat) and can increase the mass of the peat accumulation. This can be exacerbated by drying out of the peat (in summer months for example) leading to the formation of desiccation cracks which can in turn fill with water during rainfall resulting in a short-term increase in pore-water pressure and potentially cause failure. The influence of rainfall on potential peat failure is considered to be heavily dependent on the natural drainage regime within the peat. It should be noted that peat failures often occur after heavy rainfall events after the peat slope has been conditioned to fail after other processes. Given the effect of global warming and the anticipated greater frequency of extreme weather conditions, including more intense storms with heavy rainfall, the rainfall trigger of peat instability may be of more significant concern in the future.

5.1.14 Peat extraction can generate new drainage pathways, leading to a concentration of surface and / or groundwater flow and subsequently result in either increased erosion or concentration of water within localised areas of the accumulation, which can potentially increase the instability of the peat mass. Extraction or erosion can also have the effect of releasing the confining pressures acting on the peat, which can lead to the development of tension cracks in adjacent peat accumulations as a result of the loss in lateral support. Extraction or erosion of the peat mass at the toe of a slope also reduces the support to the upslope material which can result in peat slope failure.

5.1.15 Loading of peat causes an increase in the shear stress applied to the peat mass and can also generate the formation of tension cracks through compression and bulging of underlying or adjacent peat soils. In the case where tension cracks are formed, depending on the topography, the strength of the peat may be dramatically reduced and due to the alteration in loading, rainfall may not be required to initiate a failure.

5.1.16 Ground subsidence associated with the collapse of shallow underground workings and / or abandoned mine shafts may trigger localised peat slumps. Peat failures initiated by mining subsidence could be expected to typically involve peat slumping in towards the area affected by subsidence and their scale would be dependent on a number of factors including the depth of the peat deposits, the nature of the local hydrological regime and the topography of the surrounding area.

5.1.17 Rapid ground accelerations caused by either man-made vibrations or earthquakes increases the shear stresses within the peat mass and may trigger a peat landslide.

5.1.18 Tree felling (even where affected areas are subsequently re-planted) and permanent deforestation can impact upon the hydrogeological regime of the peatland area through reduced groundwater extraction

and altered drainage pathways. This can lead to increased peat erosion and focused drainage and short-terms high pore-water pressures within pre-existing or potential rupture surfaces in the peat accumulation, both of which can increase the risk of peat failure. Also removal of trees can remove the potentially stabilising root systems, which can reduce the tensile strength of the peat mass.

5.1.19 Alteration of the hydrological regime can have long-term and far reaching effects on the stability of peat accumulations. Alteration by diverting or blocking either man-made or natural surface drainage pathways or the proposed development of new ditches can transport and concentrate water into areas which can cause potential peat instability.

5.1.20 Within peat accumulations, groundwater will generally flow more readily within the upper acrotelm layer relative to the underlying less permeable catotelm. Excavations within peat will influence existing drainage paths and local permeability. The construction of a pumped storage hydro scheme will potentially generate an area of hydrological sensitivity due to the free draining nature of the construction stone.

5.1.21 It should be noted that peat is a natural feature which under the correct conditions will grow. It is likely that, on sloping ground and where the peat has been growing, there will be a time when the stabilising forces (e.g. internal strength of the peat and the interface with the underlying substrate) will be outweighed by the destabilising forces (e.g. weight of the peat mass) and the peat accumulation will fail.

Peat Failures

5.1.22 Areas that have experienced historic peat instability are more likely to experience future instability issues during construction. It is therefore essential to identify and record any signs of past instability (e.g. cracking of the peat surface, any debris from past failures, peat creep, etc) as part of any peat instability assessment.

5.1.23 Peat failures can occur on gentle slopes just as on steeper slopes, depending on the loading, drainage conditions and the condition of the peat structure. Changes in gradient, including the subsurface gradient of underlying strata, can also contribute to peat failure due to the potential short term excess pore-water pressures they can create within both concave and convex slope profiles and the gravitational effects on the peat mass.

5.1.24 Table 2.1 of the PLHRA: BPG identifies the following different types of peat failures:

- Bog Bursts – failure of a raised bog which involves the emergence of liquid basal peat followed by the settlement of the previously overlying residual peat. Typically recorded to occur on slopes with gradients between 2° and 5° with a typical peat thickness of between 2 and 5 m;
- Bog Flow – failure of a blanket bog which involves the emergence of highly humified (decomposed) basal peat from a clearly defined source followed by the settlement of the previously overlying residual peat. Typically recorded to occur on slopes with gradients between 2° and 5° with a typical peat thickness of between 2 and 5 m;
- Bog Slide – failure of blanket bog involving the sliding of the peat along a shearing surface within the peat mass. Typically recorded to occur on slopes with gradients between 5° and 8° with a typical peat thickness of between 1 and 3 m;
- Peat Slide – failure of blanket bog involving sliding of entire peat mass on a shearing surface at the peat / substrate interface leading to a transitional type failure. Typically estimated to occur on slopes with gradients between 5° and 8° with a typical peat thickness of between 1 and 3 m;
- Peaty Debris Slide – Transitional failure in which the shearing surface is entirely located within the substrate. The covering layer of peat is part of the failure; however, the peat is only considered to be a secondary influence on the failure. Typically recorded to occur on slopes with gradients between 4.55° and 32° with a typical peat thickness of <1.5 m; and
- Peat Flow – any other failure not covered by one of the above, in any other peat deposit (e.g. fen, basin bog, etc) and by any other failure mechanism.

6. Peat Landslide Hazard and Risk Assessment

General

6.1.1 Peat slides can represent a significant hazard and can occur during the construction, operation and decommissioning phases of a development. The nature of electricity generation developments in Scotland often situates them in areas where peat moorland is typically found, and it is inevitable that some alteration of the local hydrological regime of a site will occur due to the design and construction practices of such a development.

6.1.2 It is widely considered that development in areas of peat accumulation can have an effect on the stability of these soft soils through alteration of the drainage regime, alteration of loadings (both temporary loads during construction and final working loads), alteration of land use (e.g. removal of surface vegetation) and alteration of the topography. Any proposed development within such an area requires a PLHRA to characterise the Proposed Development Site, identify issues and develop the required construction mitigation measures to reduce the risk of a failure occurring within the peat.

6.1.3 The key considerations of this assessment are that:

- Existing, historical or potential areas of instability are identified; and
- The Proposed Development, including construction works, does not result in an unacceptable risk of peat failure.

Triggering and Preparatory Factors Relevant to the Proposed Development

6.1.4 The following provides a summary of the relevant triggering and preparatory factors which relate to the Proposed Development:

- Rainfall is not a controllable factor. However, the assessment considers the potential effects of heavy rainfall at the Proposed Development Site;
- Peat loading, and peat extraction are potential hazards. However, both can be mitigated through particular working methodologies (to be identified in the site-specific construction methodology documents to be prepared by the Contractor prior to construction);
- The topography of the Proposed Development Site is characterised by relatively elevated and sloping terrain and the assessment should take cognisance of the combined topography and peat thickness;
- The creation of new drainage paths may lead to the potential channelling and ponding of run-off in areas of the Proposed Development Site, posing a potential hazard. This hazard can be minimised through the adoption of particular working methodologies (to be confirmed in site-specific construction methodology documents);
- The creation of rapid ground acceleration through plant and construction methods. This hazard can be reduced through the adoption of particular working methodologies and practices (to be confirmed in site-specific construction methodology documents); and
- The removal of surface vegetation (i.e. through tree felling and vegetation clearance). This hazard can be reduced by minimising the level of felling and clearance to complete the Proposed Development.

6.1.5 Working methodologies / mitigation measures referred to above are discussed further in Section 8 of this report.

Consequences of Peat Failure

6.1.6 A key part of the risk assessment process is to identify the potential scale of peat failure should it occur and identify the receptors of the consequences. For the Proposed Development Site, the key potential sensitive receptors of peat failure are considered to be the following:

- The Proposed Development (e.g. new substation, new / upgrades to existing access track, damage to existing and temporary overhead lines, underground cable route, etc.);
- Site workers and plant (risk of injury / death or damage to plant);
- Wildlife (disruption or destruction of habitat);
- Watercourses and aquatic fauna;
- Site drainage (blocked drains / ditches leading to localised flooding / erosion); and
- Visual amenity (scarring of landscape).

Qualitative Risk Assessment

6.1.7 This Preliminary PLHRA consists of a qualitative assessment based on an examination of available topographical maps and aerial photography, a digital terrain model, observations made during site visits, an assessment of peat probing activities, initial GI results and engineering judgement.

6.1.8 The Qualitative Risk Assessment ('Hazard Ranking') was undertaken by identifying the factors that can cause landslide events and estimating the impact of such events on the Proposed Development. The Hazard Ranking has been undertaken in accordance with the PLHRA: BPG.

6.1.9 The Hazard Ranking was calculated using the following equation (Eq. 3 from the PLHRA: BPG):

Hazard Ranking = Hazard x Exposure

6.1.10 The term Hazard is defined in this case as "the likelihood of the peat landslide event occurring." The term Exposure is defined in this case as "the impact and consequences that the event may have" or its "adverse consequences."

6.1.11 The Hazard scale used in this assessment is shown in Table 3. Peat Landslide Hazard Ranges over the Lifetime of the Proposed Development, which is based on the scale recommended in Table 5.1 of the PLHRA: BPG.

Table 3. Peat Landslide Hazard Ranges over the Lifetime of the Proposed Development

Scale	Likelihood	Probability of Occurrence
5	Almost certain	> 1 in 3
4	Probable	1 in 10 – 1 in 3
3	Likely	1 in 10^2 – 1 in 10
2	Unlikely	1 in 10^7 – 1 in 10^2
1	Negligible	< 1 in 10^7

6.1.12 The Exposure scale used in this assessment is shown in Table 4. Peat Landslide Exposure Ranges over the Lifetime of the Proposed Development, which is based on the scale recommended in Table 5.2 of the PLHRA: BPG.

Table 4. Peat Landslide Exposure Ranges over the Lifetime of the Proposed Development

Scale	Exposure	Impact as % damage to (or loss) of receptor	Example Consequences
5	Extremely high	> 100% of the asset	Loss of life or serious injury, major pollution incident, destruction of property or infrastructure or public road, major loss of habitat.

Scale	Exposure	Impact as % damage to (or loss) of receptor	Example Consequences
4	Very high	10% – 100%	Minor or non-serious injury, minor damage to property or temporary closure of infrastructure, significant pollution incident or significant loss of habitat.
3	High	4% – 10%	Minor pollution incident, destruction of Access Track locally, significant delay to construction, localised loss of habitat.
2	Low	1% – 4%	Temporary closure of forest roads, minor delay to construction.
1	Very low	< 1% of the asset	Minor remediation of infrastructure or habitat.

6.1.13 Once all areas within the Proposed Development Site have been assigned a Peat Landslide Hazard and degree of Exposure, a Hazard Level can be estimated for the Proposed Development. The indicative Hazard Levels used in this assessment are shown in Table 5. Indicative Hazard Levels, which is based on the scale recommended in Table 5.3 of the PLHRA: BPG.

Table 5. Indicative Hazard Levels

Peat landslide probability or likelihood	Adverse consequence				
	Extremely High	**Very High**	**High**	**Low**	**Very Low**
Almost Certain	High	High	Moderate	Moderate	Low
Probable	High	Moderate	Moderate	Low	Negligible
Likely	Moderate	Moderate	Low	Low	Negligible
Unlikely	Low	Low	Low	Negligible	Negligible
Negligible	Low	Negligible	Negligible	Negligible	Negligible

6.1.14 Where the Hazard Level for a zone is moderate or high, avoidance or specification of mitigation measures would normally be the only means by which project infrastructure could be considered acceptable within that zone at the Proposed Development Site.

6.1.15 The need for further investigation or specification of mitigation measures should be a function of the risk level present on the Proposed Development Site. The Hazard Levels and suggested actions used in this assessment are shown in **Table 6. Hazard Level and Suggested Actions**, which is based on the scale recommended in Table 5.4 of the PLHRA: BPG.

Table 6. Hazard Level and Suggested Actions

Risk Level	Action suggested for each zone
High	Avoid project development at these locations
Moderate	Project should not proceed unless risk can be avoided or mitigated at these locations, without significant environmental impact, in order to reduce risk ranking to low or negligible.
Low	Project may proceed pending further investigation to refine assessment and mitigate hazard through relocated or re-design at these locations.
Negligible	Project should proceed with monitoring and mitigation of peat landslide hazards at these locations as appropriate.

Estimating the Hazard

6.1.16 To estimate the level of Hazard, the inputs used have been based on the major factors that can affect slope stability at the Proposed Development Site, namely: slope angle, peat thickness, evidence of peat instability, substrate present, presence of forestry and hydrology. The selection of the ranges for ranking of these inputs was based on a literature review, site evidence and engineering judgment. A discussion on the rankings chosen for each of the main factors listed is given in the following sections.

Slope Angle

6.1.17 Gravity is the primary driving force of all landslides and as such, slope angle is a significant factor in controlling the stability of peat soils.

6.1.18 Although peat is known to have failed on relatively gentle sloping land, with the majority of failures occurring on ground sloping between 4° and 8°, this is likely to correspond to these slope angles being favourable to significant peat accumulation, and therefore more closely linked to the thickness of peat [Boylan, et al., 2008].

6.1.19 Shallower sloping ground is considered to have a reduced likelihood of failure, since there is less gravitational force to facilitate instability. As such, gentle slopes are not considered to be as susceptible to failure as steeper slopes.

6.1.20 As a result, assigned rankings relating to slope angle vary between 0.5 (where slopes are almost flat) and 5 (where steep slopes are present), as presented in **Table 7. Slope Angle Ranking (Ranking Factor 1)**.

Table 7. Slope Angle Ranking (Ranking Factor 1)

Slope Angle (°)	Ranking
0 – 2	0.5
< 2 – 5	1
< 5 – 10	2
<10 – 15	3
<15 – 20	4
≥ 20	5

6.1.21 Please refer to **Figure 15.3.4 Topography (Volume 5: Appendices)** for the topography across the Proposed Development Site.

Peat Thickness

6.1.22 Mills, A.J (2002) reports that peat slides most frequently occur in peat accumulations between 0.5 m and 1.5 m in thickness, while bog bursts commonly occur in peat ranging between 1.0 m and 5.0 m in depth. Peat slides are defined as “slab-like, shallow translational failures with a shear failure mechanism operating at, or just below, the peat and underlying substrate interface” [Warburton, et al., 2004]. Bog bursts “involve large quantities of water and peat debris that flows downslope…usually associated with raised bogs” [Mills, 2002] following bursting of peat in a near-liquid state through tears in the surface layers, possibly as a result of a build-up of hydrostatic pressures within the peat.

6.1.23 Peat failure may be facilitated through the development of weak layers within the peat mass which may either form naturally or by ‘hydrological factors’. Peat has a natural anisotropic strength due to the process by which it is formed. In particular, the nature of the interface between the distinct layers within a peat mass is defined by hydrology. These distinct layers are:

- An upper vegetative mat consisting of the living vegetation of herbaceous plants, grasses and mosses;
- The acrotelm, which is the surface layer of an active peat forming mire; and
- The catotelm, which is the lower layer of an active peat forming mire.

6.1.24 It is considered that the nature of the boundary between the acrotelm and catotelm, and between the catotelm and the underlying substrate (e.g. mineral soil, weathered rock) influence the strength of the peat mass [JNCC, 2011].

6.1.25 Peat stratification and thickness are associated with one another. This is due to the fact that thin deposits of peat are unlikely to have a catotelm and may mainly be composed of a vegetative mat and acrotelm. As such, with inherent strength as a consequence of a more fibrous morphology, peat thicknesses of less than 0.5 m are not reported to fail catastrophically. However, thicker deposits are more likely to contain weaker layers or bands of pseudo fibrous / amorphous peat, which are more likely to fail.

6.1.26 For the purposes of this assessment, peat thickness has been ranked between 0.5 and 4. The ranking increases with depth; increasing values relate to more onerous conditions and reflect the tendency for 'weaker' peat to be present as thickness increases, in addition to the presence of a greater disturbing force as a consequence of the increasing thickness. The ranking adopted for peat thickness is given in **Table 8. Peat Thickness Ranking (Ranking Factor 2)**.

Table 8. Peat Thickness Ranking (Ranking Factor 2)

Peat Thickness (m)	Ranking
≤ 0.5	0.5
>0.5 - 1.0	1
>1.0 - 2.0	2
>2.0 - 3.0	3
> 3.0	4

6.1.27 Please refer to Figure 15.3.8 Peat Probe Survey Results and Figure 15.3.9 Peat Depth Interpolation Plan (Annex A Figures) for the peat depths across the Proposed Development Site.

Evidence of Peat Instability

6.1.28 Evidence of previous or incipient peat instability may provide an indication that conditions at that location are favourable to peat instability and therefore the area may be prone to further instability. As such, it is considered that areas with evidence of peat instability will have a higher risk of failure than areas where no stability issues have been identified.

6.1.29 For the purposes of this assessment, where no peat instability is identified through the DBA or site visit, a ranking of 0 is applied. Where localised small-scale failures or instability features are identified, a ranking of 1 is used and where more widespread or large-scale failures are identified, a ranking of 2 is applied, as indicated in **Table 9. Signs of Relic Failure Ranking (Ranking Factor 3)**.

Table 9. Signs of Relic Failure Ranking (Ranking Factor 3)

Signs of Relic Failure in Vicinity	Ranking
Absent	0
Localised evidence of instability	1
Widespread evidence of instability	2

Substrate

6.1.30 As noted in the Peat thickness section above, it is considered that the nature of the boundary between the acrotelm and catotelm, and between the catotelm and the underlying substrate (e.g. mineral soil, weathered rock) influence the strength of the peat mass. The nature of the substrate can therefore play a part in the level of stability of a peat mass.

6.1.31 Where fine-grained deposits (e.g. clay or silt) are present at the interface, there is likely to be weathering and softening of the clay due to the peat likely being saturated, with poor or non extent vertical drainage paths. This will result in a reduction of the undrained shear strength or effective shear strength parameters of the fine-grained deposits. This means failure could occur within the peat mass itself, at the interface with the fine-grained deposit or within the fine-grained deposit.

6.1.32 Where coarse-grained deposits (e.g. sand, sand & gravel or gravel) are present at the interface, the effective shear strength parameters are likely to be comparatively high compared to the fine-grained deposits. Where coarse-grained deposits are present failure is likely to occur in the peat mass itself.

6.1.33 Rock provides a high strength substrate, where encountered, however, the rock surface may be smooth and as such can provide a weak interface with the peat. Failure of the peat may therefore occur within the peat mass itself or at the interface with the rock. For the purposes of this preliminary assessment any rock interface has been given a higher risk rating similar to that of the fine-grained interface.

6.1.34 Table 10. Substrate Ranking (Ranking Factor 4) presents the ranking for the possible substrates which can be encountered at the Proposed Development Site.

Table 10. Substrate Ranking (Ranking Factor 4)

Substrate	Ranking
Coarse-grained (fine to coarse sand, sand & gravel, Gravel)	1
Fine-grained (silt or clay) & very clayey/silty fine to medium sand	2
Rock	2

Presence of Forestry

6.1.35 The process of afforestation and subsequent deforestation can have significant effects on the structure and hydrological properties of peat soils, which may in turn result in an increased risk of peat failure.

6.1.36 During the planting operations, a series of drains are generally cut into the peat soil across the area to be afforested. These drains are typically between 0.4m and 0.6m deep and are cut perpendicular to the surface contours to allow drainage of the soils to fall away from the plantation (Wilson & Hegarty, 1993). This process initially affects the structure and hydrology of the upper acrotelmic layer of peat. Drains were noted to have been installed within the forestry in the Proposed Development Site, as described, during the site walkover surveys undertaken.

6.1.37 Over the years and decades following initial planting, drying out and degradation of the peat adjacent to the furrows results in their widening. As the trees mature and their canopies grow, an increase in the capacity of the trees to intercept rainfall and for evapotranspiration to occur, results in further drying of the peat. Dry summers can also exacerbate the drying effects on the peat, with water uptake by root systems replacing drainage as the main cause of peat drying, resulting in the water table falling below the base of the furrows and causing cracking to extend deeper into the catotelmic layer. Eventually, the drying effects can cause the peat to crack, with the cracks typically following the lines of drains / furrows. No cracks were noted within the peat on site during the site walkover surveys, however, the peat surface was typically obscured by vegetation and so cracks may have been present.

6.1.38 As the plantation matures, the peat is subject to progressive loading from the growing trees and the water table generally decreases in level. Over the lifetime of the forest, drainage ditches can become blocked due to the trees shedding their needles / leaves, ground vegetation cover infiltrating them and soils washing into them causing them to ‘silt up’. This can prevent water draining away as intended and can cause a short-term high pore-water pressure build-up following periods of heavy rainfall. During the site walkover surveys, the drainage channels were generally noted to be free from debris. As such, the process of afforestation can have a negative effect on the stability of peat.

6.1.39 Following deforestation, peat loading from the trees is largely removed and there is typically a rise in the water table. However, with the reintroduction of a higher water table level, a short-term increase of pore-water pressure may be established within the peat mass. Deforestation is considered to have a negative effect on peat stability but is considered less of a concern than when recently forested due to the overall reduction of peat loading.

6.1.40 Based on the above discussion, the following ranking for the presence of forestry is considered appropriate, as shown in Table 11. Presence of Forestry Ranking (Ranking of 5).

Table 11. Presence of Forestry Ranking (Ranking of 5)

Presence of Forestry in the Area	Ranking
Absent	0
Recently deforested / afforested	1
Present	2

6.1.41 Please refer to **Figure 15.3.3 Site Walkover Features (Annex A Figures)** for the presence of forestry across the Proposed Development Site.

Hydrology

6.1.42 An increase in pore-water pressures generated by intense rainfall is a significant potential 'triggering mechanism' for peat slides. However, prolonged periods of heavy rainfall are not necessarily related to instability. Both the distribution and intensity of precipitation have a complex influence on the mass movement of peat [Carling, 1986].

6.1.43 In many cases of peat failures, a relatively dry period has been followed by intense rainfall. Although intense rainfall appears to be an important factor, it is important to recognise that the occurrence of an extreme event does not necessarily directly result in peat instability; this being a function of many factors and a combination of climatic preparatory events. For the purpose of this assessment, rainfall has been considered to be a constant for the entire Proposed Development Site.

6.1.44 It has been noted that peat slides have been initiated along natural drainage lines or in association with artificial drainage [JNCC, 2011]. Blocking of existing drainage paths could create a buoyancy effect which may reduce the strength of the peat or cause liquefaction due to raised pore-water pressures at the base of the peat.

6.1.45 Poorly drained areas (such as boggy ground with few / no drainage channels) are considered to be more susceptible to instability due to higher groundwater tables than well-drained areas.

6.1.46 Where drainage ditches become blocked with vegetation for example, water can build up in them allowing pore-water pressures to develop and exceed critical levels during or immediately following intense rainfall.

6.1.47 Generally the site walkover surveys identified that the Proposed Development Site was well drained with a good drainage system in working order, however, locally boggy or saturated ground was also encountered.

6.1.48 The parameter for hydrology has been given a ranking value of between 0.5 and 2 as shown in Table 12. Hydrology Ranking (Ranking Factor 6). Increasing values relate to relatively poor drainage conditions that are considered likely to increase the probability of instability occurring.

Table 12. Hydrology Ranking (Ranking Factor 6)

Hydrology description	Ranking
Well drained with a good drainage system in working order	0.5
Boggy or saturated ground	1
Blocked drainage paths	2

6.1.49 Please refer to **Figure 15.3.7 Hydrology (Annex A Figures)** for the presence of hydrology across the Proposed Development Site.

Weightings

6.1.50 The factors affecting peat instability are not considered to contribute equally and as such, weightings have been applied based on AECOMs understanding of the Proposed Development Site and experience of assessing peat slide risk.

6.1.51 For example, as slope angle is considered to represent one of the main driving forces for peat instability, a weighting of 6 has been assigned to the factor to capture its importance in the mobility of peat. Likewise, evidence of peat instability is considered to be equally influential, as if the conditions in areas have resulted in failures in the past, similar failures could initiate in the future and therefore a weighting of 6 has also been assigned to this factor.

6.1.52 Peat depth is also considered to play a significant role in the stability of peat. As the thickness of peat increases, so does the weight of the peat, which could result in the activation of a slip plane. Also, due to the anisotropic nature and highly variable structure of peat, the thicker the deposits are, the more likely they are to have a greater number of weaker zones throughout its profile affecting the overall stability of the peat mass. This factor is, however, considered less influential to slope instability than the slope angle and evidence of peat instability and has therefore been given a lower weighting value of 4.

6.1.53 The type of substrate present within the Proposed Development Site can be significant as relates to the peat landslide risk. The presence of fine-grained or rock substrate can mean there is multiple potential failure zones and hence more chance of a peat landslide. The peat thickness can play an important role as to the increased risk of peat instability depending on the substrate present. This factor is, however, considered less influential than peat thickness and has therefore been given a lower weighting value of 3.

6.1.54 Forestry plays a significant role on the peat stability within the Proposed Development Site due to its extensive coverage. The planting process will likely have caused damage to the structure of the upper peat layer, additional loading on the peat from the weight of the trees and degradation of the peat by their drying out all of which can result in an increased risk of peat instability. However, this is not considered to be as significant a factor as peat thickness, slope angle and evidence of peat instability and has therefore been assigned a weighting value of 3.

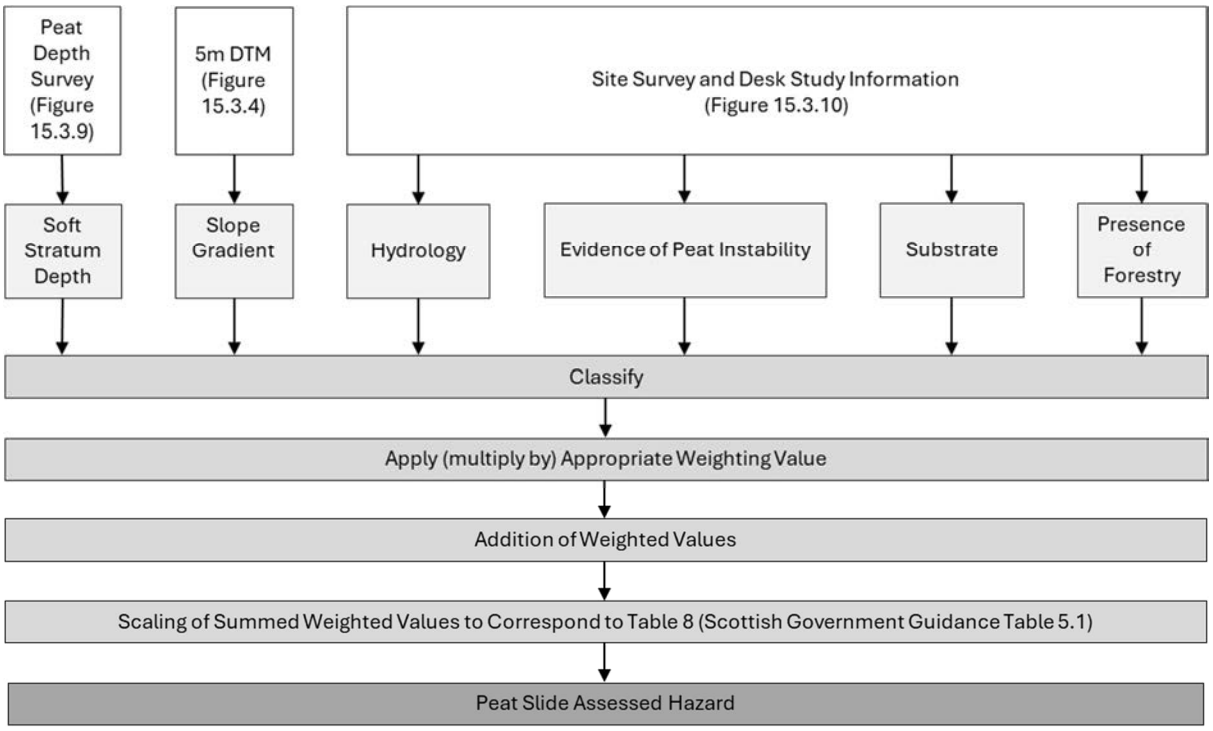
6.1.55 Finally, the hydrology of the peat is also considered to contribute to its stability. However, due to the extent of the forestry across the Proposed Development Site, hydrology is considered to be less influential. This is because the hydrology is closely related to the drainage network throughout the forestry and this factor is therefore linked to and largely covered under the weighting applied to the forestry. However, it is still important to consider this factor, and as such it has been assigned a weighting value of 2.

6.1.56 The weightings assigned to each of the parameters are summarised in Table 13. Weighting Values for Each Parameter.

Table 13. Weighting Values for Each Parameter

Layer	Ranking Factor	Weighting
Slope Angle	1	6
Peat Thickness	2	4
Signs of Relic Failure	3	6
Substrate	4	3
Forestry	5	3
Hydrology	6	2

6.1.57 To estimate the level of hazard across the Proposed Development Site and produce the Peat Slide Assessed Hazard plan, the classification and weighting was carried out in Geographic Information Systems software using a multi-criteria analysis. The processed used is illustrated in **Insert 2 Geographic Information Systems Multi-Criteria Analysis**.



Insert 2 Geographic Information Systems Multi-Criteria Analysis

Blasting

6.1.58 Blasting is being considered as part of the Proposed Development to allow construction of parts of the infrastructure that will require significant rock cut. Considering the proposed above ground works, blasting is likely to be considered to construct Tunnel Portals, the UCW and the BP Search Area.

6.1.59 Blasting will increase the probability of a peat landslide through initiation of ground accelerations through the peat which could cause the structure to destabilise. Estimating the effects blasting can have on the structure of the peat and its risk in relation to stability is complex. As such, for the purposes of this preliminary assessment, it is considered where blasting may be undertaken, this will increase the peat slide hazard in that area by a ranking factor of one, e.g. 'unlikely' would become 'likely'. A more detailed assessment would then be undertaken as part of the Final PLHRA undertaken post-consent following GI, design maturity and further understanding of the blasting that may be required.

6.1.60 Blasting is not taken into account as part of the Geographic Information Systems Multi-criteria Analysis described above. Instead, the increase in peat slide hazard will be assigned as part of the assessment. The effect of the blasting will only be considered as part of the assessment on the actual infrastructure to which it is being considered, e.g. on Tunnel Portals assessment, and not on the assessment of the proposed Access Track which is in the vicinity.

6.1.61 The scaling of the Weighted Totals corresponds to Table 3. Peat Landslide Hazard Ranges over the Lifetime of the Proposed Development (and Table 5.1 of the PLHRA: BPG) and is shown in Table 14. Weighted Total vs Scale.

Table 14. Weighted Total vs Scale

Weighted Total	Scale	Likelihood	Probability of Occurrence
> 50	5	Almost certain	> 1 in 3
41 – 50	4	Probable	1 in 10 – 1 in 3
31 – 40	3	Likely	1 in 10^2 – 1 in 10

Weighted Total	Scale	Likelihood	Probability of Occurrence
21 – 30	2	Unlikely	1 in 10^7 – 1 in 10^2
< 20	1	Negligible	< 1 in 10^7

Peat Slide Assessed Hazard Plan

6.1.62 The Assessed Potential Peat Slide Hazard is presented in **Figure 15.3.10 Peat Slide Assessed Hazard (Annex A Figures)** and indicates that the potential hazard across the Proposed Development Site is generally assessed to be 'Negligible' (1) or 'Unlikely' (2) with only minor areas assessed as being 'Likely' (3) .

6.1.63 The majority of the proposed infrastructure, including the main GIS Switchyard and compound area, is located in areas assessed as 'Negligible' or 'Unlikely' potential peat slide Hazard. Small local areas of "Likely" peat slide Hazard are noted in the vicinity of the proposed Access Track to the west, proposed temporary overhead line diversion to the north and south of the proposed GIS Switchyard platform area.

6.1.64 Following assessment of the potential peat slide Hazard, the potential impact and the consequences (i.e. Exposure) of a peat landslide has been assessed for both environmental exposure and infrastructure exposure.

6.1.65 The Exposure of a peat slide to the environmental receptors (e.g. watercourses, designated sites, ecologically important areas, etc) is based on the likely environmental impact resulting from a peat slide.

6.1.66 When considering the potential impact of a peat failure, the presence of any existing structures or infrastructure (e.g. forestry tracks etc.), future development (i.e. proposed infrastructure) and / or sensitive receptors (e.g. watercourses, designated sites, etc.) are taken into account.

6.1.67 When considering the baseline condition (i.e. the Proposed Development Site prior to construction), where no receptors are present, the impact is typically considered to be 'very low' (i.e. Exposure rating of 1). Where existing forestry tracks are present and no change is proposed along these, an impact of 'very low' is also considered sufficient, due to the potential impact as a percentage of the total project cost is likely to be less than 1% (i.e. Exposure rating of 1). Where infrastructure is located within 50 m of a watercourse, the impact is rated at 'high' (i.e. Exposure rating of 3 – minor pollution incident may occur).

6.1.68 When considering the potential impact, a peat failure during construction could have on the Proposed Development, the following was taken into account. Generally, where Access Tracks, compounds, underground cabling (trenched) and drainage systems are proposed, the impact is considered to be 'very low' or 'low' (i.e. Exposure rating of 1 or 2 – e.g. minor remediation of infrastructure or temporary closure of access roads, minor delay to construction). At the location of the proposed Tunnel Portals and GIS switchyard an impact of 'high' is considered appropriate due to the increased impact on the cost of the Proposed Development (Exposure rating of 3 – i.e. significant delay to construction and increase in total cost).

6.1.69 Due to the nature of Pumped Storage Hydro, a major part of the works is underground excavations and tunnelling. The underground works are considered to have a negligeable effect on peat landslide and will only be assessed where the Tunnels interact with the ground surface.

6.1.70 For the Embankment works it is assumed that the surface at the base of the Embankments will be stripped from Peat down to the rock and therefore the Peat Landslide Risks associated with that part of the works are negligeable. **Table 15. Qualitative Assessment of Peat Landslide Hazard, Exposure and Hazard Ranking** presents the qualitative assessment undertaken for the Proposed Development Site in a tabular format for each individual infrastructure component. The assessment cross references information set out in this Preliminary PLHRA as follows:

- Column 2 is to be cross-referenced with **Table 3. Peat Landslide Hazard Ranges over the Lifetime of the Proposed Development** and refers to the peat slide Hazard value assigned to the infrastructure component (see **Figure 15.3.10 Peat Slide Assessed Hazard (Annex A Figures)**). The peat slide Hazard may be assessed to be reduced during the evaluation process based on engineering judgement. Where any reduction has taken place this will be discussed in the text within the table. It should be noted that the peat slide assessed Hazard includes a 50 m buffer around each

infrastructure component, as within this buffer zone is where it is considered the Proposed Development is most likely to affect the peat stability.

- Column 3 presents the Assessed Exposure (see **Table 4. Peat Landslide Exposure Ranges over the Lifetime of the Proposed Development**) relating to the individual proposed infrastructure components and any existing infrastructure (i.e. existing forestry tracks).
- Column 4 presents the assessed Exposure (see **Table 4. Peat Landslide Exposure Ranges over the Lifetime of the Proposed Development**) relating to the environmental receptors.
- Column 5 is to be cross-referenced with **Table 5. Indicative Hazard Levels** and **Table 6. Hazard Level and Suggested Actions**, and gives the worst-case Hazard Ranking (i.e. Hazard Ranking = Hazard Scale x Exposure Scale), whereby the value given in Column 2 (the Hazard) is multiplied by the higher value of the two Exposure ratings given in Columns 3 and 4 and expressed as a number.
- Column 6 expresses the worst-case Hazard Ranking value as one of the four terms, which are shown in **Table 6. Hazard Level and Suggested Actions**. When considering the worst-case Hazard this is considering what the worst-case combination of peat slide assess Hazard and infrastructure/environmental Exposure is. i.e. the worst-case peat slide Hazard may not interact with the worst-case infrastructure/environmental Exposure, and so the score chosen rationalises what the realistic worst-case combination between the two inputs would be.

Infrastructure Locations for Hazard Assessment

6.1.71 To most accurately assess the Peat Landslide Hazard Risk, the Proposed Development Site has been split up into three sections: 1) Access Tracks, 2) Compounds (Temporary and Permanent) and 3) Headpond and assessed individually.

6.1.72 As the access track network is extensive, the tracks were split into seven different sections as shown in **Figure 15.3.11 Access Track Sections (Annex A Figures)**. The different areas are as follows:

- Section 1 – B840 diversion – Temporary Compound (TC) 07
  - Updated existing track from the planned B840 diversion to Allt Beochlich small scale hydro and where TC07 will be located
  - Provides access to PC05 & PC06 which are Tunnel Portal compounds
- Section 2 – TC07 – Permanent Compound (PC) 09, 20 and 21
  - Section of New Access Track from TC07 which leads to PC09 (Flow control building) at the foot of the main embankment to the North East.
  - Includes access track West to PC20 and PC21 (Ventilation Shafts).
- Section 3 – track split from TC08 to TC11.
  - Section of New Access Track forking away from TC08 and leads to TC11.
  - Includes the tracks connecting with the proposed Blarghour wind farm access track.
- Section 4 – From TC11 to the Northern forestry access track
  - Section of New Access Track from TC11 joining into the Northern forestry access track.
  - Includes the Access Tracks to PC14 (Tunnel Portal 3) and PC15 (GIS switchyard)
- Section 5 – Access track leading to West of Headpond
  - Section of New Access Track from the main track split leading to the West of the headpond and PC17 (Upper Gate House compound), PC18 (Surge Shaft compound), PC19 (Ventilation Shaft compound) and TC16.
  - TC16 represents the location of the Headpond Inlet/Outlet structure.
- Section 6 – Northern Forestry Access track
  - Section of Access track in the forest to the North of site.
  - Includes a section of upgrading the track and a section of new track.

Table 15. Qualitative Assessment of Peat Landslide Hazard, Exposure and Hazard Ranking

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Area Figure 10.3.11	Assessed Hazard (Worst Case) Figure 10.3.10	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking (Column 5 = Column 2 multiplued max(Column 3, Column 4))	Worst-Case Hazard Ranking	Comment
See **Figure 15.3.10 Peat Slide Assessed Hazard (Annex A Figures)** for reference of infrastructure locations and assessed peat slide Hazard						
Section 1 – B840 diversion – Allt Beochlich small scale hydro	3	3	3	9	Low	Assessed Hazard: Areas of 'likely' peat slide hazard underlying and within 50 m of the proposed Access Track Section. Track mostly in 'unlikely' peat slide hazard areas. As such the Assessed Hazard is "likely". Assessed Infrastructure Exposure: The Access track is an upgrade to an existing access track, it runs adjacent to PC05 (Tunnel portal 1), PC06 (Tunnel portal 2) and TC07. Given the presence of the Tunnel Portals and as these would interact with the 'likely' peat slide hazard, a worst-case infrastructure of 'high' has been applied. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the proposed Access Track. However, watercourses are crossed and located within 50 m of the Access Track section and 'probable' peat slide hazard. The assessed environmental exposure is therefore rated at 'high'. Worst-Case Hazard Ranking**: Low.**
Section 2 – TC07 to PC09 and PC21	3	3	3	9	Low	Assessed Hazard: Areas of 'likely' peat slide hazard underlying and within 50 m of the proposed Access Track. Track mostly in 'unlikely' peat slide hazard areas. As such the Assessed Hazard is "likely". Assessed Infrastructure Exposure: The new access track runs alongside TC08, PC09 (Flow control building), PC20 and PC21 (ventilation shaft compounds). Given the presence of permanent compounds with infrastructure on them and as these would interact with the 'likely' peat slide hazard, a worst-case infrastructure of 'high' has been applied. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the proposed Access Track. However, watercourses are crossed and located within 50 m of the Access Track section and 'likely' peat slide hazard. The assessed environmental exposure is therefore rated at 'high'. Worst-Case Hazard Ranking**: Low.**
Section 3 – track split from TC08 to TC11	3	2	3	9	Low	Assessed Hazard: Areas of 'likely' peat slide hazard underlying and within 50 m of the proposed Access Track. Track mostly in 'unlikely' peat slide hazard areas. As such the Assessed Hazard is "likely". Assessed Infrastructure Exposure: The proposed access track runs alongside TC10 and TC11 The infrastructure exposure these compounds are 'very low'. Therefore, the worst-case infrastructure exposure relates to the proposed Access Track to the north which has a ranking of 'low'. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the proposed Access Track. However, watercourses are crossed and located within 50 m of the Access Track section and 'likely' peat slide hazard. The assessed environmental exposure is therefore rated at 'high'. Worst-Case Hazard Ranking**: Low.**
Section 4 – TC11 to Forest Road, including PC14 and PC15	3	4	2	12	Moderate	Assessed Hazard: Areas of 'likely' peat slide hazard underlying and within 50 m of the proposed Access Track. Track mostly in 'unlikely' peat slide hazard areas. As such the Assessed Hazard is "likely". Assessed Infrastructure Exposure: The proposed access track runs alongside PC14 (tunnel portal 3) and PC15 (Switching station). Given the vicinity to PC15 (high importance pieces of infrastructure) and that these are within 50m of 'likely' peat landslide areas, the exposure rating on the infrastructure is considered 'very high'.

Column 1 Area Figure 10.3.11	Column 2 Assessed Hazard (Worst Case) Figure 10.3.10	Column 3 Assessed Infrastructure Exposure	Column 4 Assessed Environmental Exposure	Column 5 Worst-Case Hazard Ranking (Column 5 = Column 2 multiplued max(Column 3, Column 4))	Column 6 Worst-Case Hazard Ranking	Column 7 Comment
						Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the proposed Access Track. However, watercourses are crossed and located within 50 m of the Access Track section. No areas of 'likely' peat slide hazard along the Access Track section are within 50 m of watercourses. The environmental exposure has therefore been reduced to 'low'. Worst-Case Hazard Ranking**: Moderate.**
Section 5 – Access track to West of Headpond	3	4	3	12	Moderate	Assessed Hazard: Areas of 'probable' and 'likely' peat slide hazard underlying and within 50 m of the proposed Access Track mostly in 'unlikely' peat slide hazard areas. Assessed Infrastructure Exposure: Along with the proposed Access Track, the The Upper Gate House compound (PC17), the Surge Shaft Compound (PC18), a Ventilation Shaft (PC19) are also located along the Access Track section. TC16 represents the location of the Headpond Inlet/Outlet structure. Due to the vicinity of the track to these important pieces of infrastructure the assessed infrastructure exposure rating is 'very high' Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the proposed Access Track. However, watercourses are crossed and located within 50 m of the Access Track section. The areas of 'probable' peat slide along the Access Track section do interact with the watercourses within 50 m, and so would have an environmental exposure of 'high'. Worst-Case Hazard Ranking**: Moderate.**
Section 6 – Forestry track	3	3	3	9	Low	Assessed Hazard: Areas of 'likely' peat slide hazard underlying and within 50 m of the proposed Access Track Section. Track mostly in 'unlikely' peat slide hazard areas. As such the Assessed Hazard is "likely". Assessed Infrastructure Exposure: The Access track is partially an upgrade to an existing access track, with two sections of new track. As the main access to the site, and the the 'likely' peat slide hazard, a worst-case infrastructure of 'high' has been applied. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the proposed Access Track. However, watercourses are crossed and located within 50 m of the Access Track section and 'probable' peat slide hazard. The assessed environmental exposure is therefore rated at 'high'. Worst-Case Hazard Ranking**: Low.**
Temporary Compound (TC) 01	1	3	4	4	Negligible	Assessed Hazard: TC01 is located in an area with no mapped peatlands, therefore, is considered to be of 'negligible' peat slide hazard. Assessed Infrastructure Exposure: The infrastructure exposure for TC01 itself is 'very low'. Therefore, the worst-case infrastructure exposure relates to the proposed B840 to the East which has a ranking of 'high'. Assessed Environmental Exposure: The compound is located close to Loch Awe, as such the Environmental Exposure rating is considered 'very high' Worst-Case Hazard Ranking: **Negligible**
TC02	1	3	4	4	Negligible	Assessed Hazard: TC02 is located in an area with no mapped peatlands, therefore, is considered to be of 'negligible' peat slide hazard. Assessed Infrastructure Exposure: The infrastructure exposure for TC03 itself is 'very low'. Therefore, the worst-case infrastructure exposure relates to the proposed B840 to the East which has a ranking of 'high'. Assessed Environmental Exposure: The compound is located close to Loch Awe and near a number of watercourses, as such the Environmental Exposure rating is considered 'very high' Worst-case Hazard Ranking: **Negligible**

Column 1 Area Figure 10.3.11	Column 2 Assessed Hazard (Worst Case) Figure 10.3.10	Column 3 Assessed Infrastructure Exposure	Column 4 Assessed Environmental Exposure	Column 5 Worst-Case Hazard Ranking (Column 5 = Column 2 multiplued max(Column 3, Column 4))	Column 6 Worst-Case Hazard Ranking	Column 7 Comment
Permanent Compound (PC) 03	1	3	4	4	Negligible	Assessed Hazard: PC03 is located in an area with no mapped peatlands, therefore, is considered to be of 'negligible' peat slide hazard. Assessed Infrastructure Exposure: The infrastructure exposure for TC02 itself is 'very low'. Therefore the worst-case infrastructure exposure relates to the proposed B840 to the East which has a ranking of 'high'. Assessed Environmental Exposure: The compound is located close to Loch Awe, as such the Environmental Exposure rating is considered 'very high' Worst-Case Hazard Ranking: N**egligible**
TC04	1	3	1	3	Negligible	Assessed Hazard: TC04 is located in an area with no mapped peatlands, therefore, is considered to be of 'negligible' peat slide hazard. Assessed Infrastructure Exposure: The infrastructure exposure for TC04 itself is 'very low'. Therefore the worst-case infrastructure exposure relates to the proposed B840 diversion, which has a ranking of 'high'. Assessed Environmental Exposure: The compound is not located near any environmentally designated sites, as such the Environmental Exposure rating is considered 'very low' Worst-case Hazard Ranking: **Negligible**
PC05 – Tunnel Portal	4	4	3	16	Moderate	Assessed Hazard: PC05 is mostly located in an area of 'unlikely' peat slide hazard, though there are areas of 'likely' hazard within 50m of the compound area. Blasting may be undertaken to construct the Tunnel Portal and as such the peat slide hazard has been increased by a ranking of one to 'probable'. Assessed Infrastructure Exposure: Access Track Section 2, TC04 and PC06 are located near to PC05. Given the significance of PC05 (Tunnel Portal), this is considered to represent the worst-case exposure with a ranking of 'very high'. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the proposed TC05. Watercourses are located within and around 50 m downslope from TC05 and within 50 m of the 'likely' peat slide hazard. As such, an environmental exposure of 'low' has been applied. Worst-case Hazard Ranking: **Moderate**
PC06 – Tunnel Portal	4	3	3	12	Moderate	Assessed Hazard: PC06 is located in an area of 'negligible' and 'unlikely' peat slide hazard'. Blasting may be undertaken to construct the Tunnel Portal and as such the peat slide hazard has been increased by a ranking of one to 'probable'. Assessed Infrastructure Exposure: Access Track Section 2 and PC05 are all located in the vicinity of PC06. Although TC05 would have a higher exposure, given this is immediately to the south and upslope and would have peat stripped or controlled as part of its construction, the worst-case infrastructure exposure is considered to be the PC06 itself. Given the significance of PC06 being housing a tunnel portal, the exposure is considered to be 'high'. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the proposed TC06. A watercourse is located around 50 m upslope from PC06. As such, an environmental exposure of 'high' has been applied. Worst-case Hazard Ranking: **Moderate**
TC07	3	3	2	9	Low	Assessed Hazard: TC07 is located in an area of 'unlikely' peat slide hazard, with areas of 'likely' present at and around the infrastructure. A worst-case hazard of 'likely' is therefore assigned. Assessed Infrastructure Exposure: Access Track Section 2 and TC08 are both located in the vicinity of TC07. A worst-case infrastructure exposure of 'High' has been applied.

Column 1 Area Figure 10.3.11	Column 2 Assessed Hazard (Worst Case) Figure 10.3.10	Column 3 Assessed Infrastructure Exposure	Column 4 Assessed Environmental Exposure	Column 5 Worst-Case Hazard Ranking (Column 5 = Column 2 multiplued max(Column 3, Column 4))	Column 6 Worst-Case Hazard Ranking	Column 7 Comment
						Assessed Environmental Exposure: No environmentally significant designations are recoded within or in close proximity to TC07 and no watercourses are located within 50m. The environmental exposure is therefore applied as 'low'. Worst-case Hazard Ranking: **Low**
TC08	3	3	3	9	Low	Assessed Hazard: TC08 is located in an area of 'likely' peat slide hazard, with areas of 'unlikely' present at and around the infrastructure. Assessed Infrastructure Exposure: Access Track Section 2 is located near TC08. A worst-case infrastructure exposure of 'High' has been applied. Assessed Environmental Exposure: No environmentally significant designations are recoded within or in close proximity to TC07, however a watercourse is located within 50m. The environmental exposure is therefore applied as 'high' Worst-case Hazard Ranking: **Low**
TC09 – Valve House	4	2	3	12	Moderate	Assessed Hazard:TC09 is located in an area of 'unlikely' peat slide hazard, although there area areas of 'likely' and 'probable' in the close vicinity of the project. A worst-case hazard of 'probable' has therefore been applied. Assessed Infrastructure Exposure: Access Track Section 3 is located adjacent to TC09. The Access Track would give the worst-case exposure of 'low', however, the likely hazard would not interact with this or TC09 itself as is located downslope. Therefore, the infrastructure exposure that would interact with the 'likely' peat slide hazard has been reduced to the lowest, 'very low', as it should not affect any infrastructure. 'Unlikely' peat slide hazard would interact with worst-case infrastructure exposure as shown with the rankings in the brackets. Assessed Environmental Exposure: TC09 will be constructed to control the folw of the existing watercourse and will be constructed on the watercourse itself, with an environmental expososure of 'very high'. However, the watercourse would be diverted prior to constructed, thus reducing the impact to 'low'. Worst-case Hazard Ranking: **M**oderate
TC10	2	2	2	4	Negligible	Assessed Hazard: TC10 is located in an area of 'unlikely' peat slide hazard. Assessed Infrastructure Exposure: Access Track section 3 is located adjacent to TC10. The Access Track gives the worst-case exposure of 'low', with TC10 assumed to have an exposure or 'very low'. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to TC10 and no watercourse located within 50 m. Watercourses are located downslope within the vicinity of TC10, however, and as such the environmental exposure is rated at 'low'. Worst-case Hazard Ranking: **Negligible**
TC11	3	2	1	6	Low	Assessed Hazard: TC11 is located in an area of 'negligible' and 'unlikely' peat slide hazard, though there is and area of 'likely' hazard within 50 m of the proposed location to the east. A very small isolated area of 'probable' peat slide hazard is recorded within 50 m of TC11 to the east, however, given its size and the surrounding hazard is not considered representative. Assessed Infrastructure Exposure: Access Track section 4 is located adjacent to TC11. The Access Track gives the worst case exposure of 'low', with TC11 assumed to have an exposure or 'very low'. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to TC11 and no watercourse located within 50 m. No watercourses are located downslope within the vicinity of TC11 either and as such the environmental exposure is rated at 'very low'. Worst-case Hazard Ranking: **Low**

Column 1 Area Figure 10.3.11	Column 2 Assessed Hazard (Worst Case) Figure 10.3.10	Column 3 Assessed Infrastructure Exposure	Column 4 Assessed Environmental Exposure	Column 5 Worst-Case Hazard Ranking (Column 5 = Column 2 multiplued max(Column 3, Column 4))	Column 6 Worst-Case Hazard Ranking	Column 7 Comment
TC12	1	4	1	4	Negligible	Assessed Hazard: TC12 is located in an area with no mapped peatlands, therefore, is considered to be of 'negligible' peat slide hazard. Assessed Infrastructure Exposure: The infrastructure exposure for TC01 itself is 'very low'. Therefore, the worst-case infrastructure exposure relates to the existing forestry track which has a ranking of 'high'. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to TC12 and no watercourse located within 50 m. No watercourses are located downslope within the vicinity of TC11 either and as such the environmental exposure is rated at 'very low'. Worst-Case Hazard Ranking: **Negligible**
PC14 – Tunnel Portal	3	3	2	9	Low	Assessed Hazard: PC14 is mostly located in an area of 'unlikely' peat slide hazard. A very small, isolated area of 'probable' peat slide hazard is recorded within 50m of TC14, however, given its size and the surrounding hazard, it is not considered to be representative. Blasting may be undertaken to construct the Tunnel Portal and as such the peat slide hazard has been increased by a ranking of one to 'likely'. Assessed Infrastructure Exposure: Access Track Section 5 is located in the vicinity of PC14. PC14 is considered to have the worst-case exposure rating of 'high'. The Access Track would have an exposure of 'low' and TC17 an exposure of 'very low'. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to PC14 and no watercourse located within 50 m. However, watercourses are located downslope within the vicinity of PC14. Therefore, an environmental exposure of 'low' is applied. Worst-case Hazard Ranking: **Low**
PC15 – Switchyard	3	3	2	9	Low	Assessed Hazard: PC15 is located in an area of 'unlikely' peat slide hazard, although areas of 'likely' and 'probable' are located within 50m of the infrastructure. Given its size and the surrounding hazard, it is not considered to be representative to consider the 'probable' peat slide hazard. For worst-case scenario, 'likely' is therefore assigned. Assessed Infrastructure Exposure: Access Track section 5 is located adjacent to PC15. Given the presence of the Tunnel Portal and as these would interact with the 'probable' peat slide hazard, a worst-case infrastructure of 'high' has been applied. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to PC15 and no watercourse located within 50 m. However, watercourses are located downslope within the vicinity of PC15. Therefore, an environmental exposure of 'low' is applied. Worst-case Hazard Ranking: **Low**
TC16 – Headpond Inlet / Outlet Structure	3	3	2	9	Low	Assessed Hazard: The area around TC16 would be stripped of peat to competent rock for the construction for the Inlet / Outlet Structuretherefore there would be no peat present to slide. But within 50m of the embankment and during construction the worst-case risk is 'likely'. Assessed Infrastructure Exposure: Embankment 1 is located near TC16, which would constitute a worst-case risk of 'high'. However, due to the scale and mass of Embankment, the likely risk could be reduced to 'low'. Assessed Environmental Exposure: While there is a watercourse that runs through Embankment 1, this would be blocked and drained as the upstream areas sits within the headpond area. As such any peat landslide into the watercourse would not cause a pollution incident. As such a 'low' environmental exposure has been applied. Worst-Case Hazard Ranking: **Low**

Column 1 Area Figure 10.3.11	Column 2 Assessed Hazard (Worst Case) Figure 10.3.10	Column 3 Assessed Infrastructure Exposure	Column 4 Assessed Environmental Exposure	Column 5 Worst-Case Hazard Ranking (Column 5 = Column 2 multiplued max(Column 3, Column 4))	Column 6 Worst-Case Hazard Ranking	Column 7 Comment
PC17 – Gate Shaft	3	3	2	9	Low	Assessed Hazard: PC17 is located in an area of 'unlikely' peat landslide hazard, with areas of 'likely' peat landslide hazard nearby. For worst-case scenario, a 'likely' hazard is therefore assigned. Assessed Infrastructure Exposure: The gate shaft compound is located close to PC16 (Headpond Inlet / Outlet Structure), PC18 and PC19. As such, the infrastructure exposure rating is considered to be 'high'. Assessed Environmental Exposure: The gate shaft is not located close to or within any environmentally significant designations. As such, the environmental exposure rating is considered to be 'low'. Worst-Case Hazard Ranking: **Low**
PC18 – Surge Shaft	3	3	2	9	Low	Assessed Hazard: PC18 is located in an area of 'likely' peat landslide hazard. Assessed Infrastructure Exposure: The surge shaft compound is located close to PC17 and PC19. As such, the infrastructure exposure rating is considered to be 'high'. Assessed Environmental Exposure: The gate shaft is not located close to or within any environmentally significant designations. As such, the environmental exposure rating is considered to be 'low'. Worst-Case Hazard Ranking: **Low**
PC19 – Ventilation Shaft	3	3	2	9	Low	Assessed Hazard: PC19 is located in an area of unmapped peat depths. In line with PC17 and PC18, as they are in close proximity to one another, a worst-case hazard of 'likely' has been assigned. Assessed Infrastructure Exposure: The ventilation shaft compound is located close to PC17 and PC18. As such, the infrastructure exposure rating is considered to be 'high'. Assessed Environmental Exposure: The gate shaft is not located close to or within any environmentally significant designations. As such, the environmental exposure rating is considered to be 'low'. Worst-Case Hazard Ranking: **Low**
PC20	3	3	2	9	Low	Assessed Hazard: PC20 is located in area of unlikely peat landslide hazard. However, there are areas of 'likely' hazard nearby. A worst-case hazard of 'likely' has therefore been assigned. Assessed Infrastructure Exposure: The compound is located close to PC21 and Access Road Section 2. As such, the infrastructure exposure rating is considered to be 'high'. Assessed Environmental Exposure: The compound is not located close to or within any environmentally significant designations. As such, the environmental exposure rating is considered to be 'low'. Worst-Case Hazard Ranking: **Low**
PC21	2	3	2	6	Low	Assessed Hazard: PC21 is located in area of unlikely peat landslide hazard. Assessed Infrastructure Exposure: The compound is located close to PC20 and Access Road Section 2. As such, the infrastructure exposure rating is 'high'. Assessed Environmental Exposure: The compound is not located close to or within any environmentally significant designations. As such, the environmental exposure rating is 'low'. Worst-Case Hazard Ranking: **Low**

Column 1 Area Figure 10.3.11	Column 2 Assessed Hazard (Worst Case) Figure 10.3.10	Column 3 Assessed Infrastructure Exposure	Column 4 Assessed Environmental Exposure	Column 5 Worst-Case Hazard Ranking (Column 5 = Column 2 multiplued max(Column 3, Column 4))	Column 6 Worst-Case Hazard Ranking	Column 7 Comment
Headpond Works – Embankment 1	4	4	2	16	Moderate	Assessed Hazard: The area around the dam would be stripped of peat to competent rock for the construction for the dam therefore there would be no peat present to slide. But within 50m of the embankment and during construction the worst case risk is 'probable'. Assessed Infrastructure Exposure: PC 09 and Section 2 of the access tracks are down slope of Embankment 1 as such the infrastructure exposure is considered very high'. The risk associated with the embankment itself is considered to be 'low' due to the scale and mass of the Embankment. Assessed Environmental Exposure: While there is a watercourse that runs through Embankment 1, this would be blocked and drained as the upstream areas sits within the headpond area. As such any peat landslide into the watercourse would not cause a pollution incident. As such a 'low' environmental exposure has been applied. . Worst-Case Hazard Ranking: **Moderate**
Headpond Works – Embankment 2	4	1	1	4	Negligible	Assessed Hazard: The area around Embankment 2 would be stripped of peat to competent rock for the construction of the dam therefore the peat slide risk within the footprint would be removed. But within 50 m, the worst-case peat slide hazard is 'probable', located in the northwest edge of the dam extents. Assessed Infrastructure Exposure: In the vicinity of Embankment 2 is Access Track Sections 4 and 5 both are upslope of the dam as such the exposure is considered to be 'very low'. The risk associated with the embankment itself is considered to be 'low' due to the scale and mass of the Embankment. Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to Embankment 2 and no watercourse located within 50 m. However, watercourses and waterbodies are located downslope within the vicinity of Embankment 2 albeit over 500m away. Therefore, an environmental exposure of 'very low' is applied. Worst-Case Hazard Ranking: **Negligible**
BP Search Area	4	2	2	8	Low	Assessed Hazard: The area within the BP Search Area would be stripped of peat to commission the pit, therefore the peat slide risk within the footprint would be removed. The BP Search Area is located typically in an area of 'likely/unlikely' peat slide hazard', although localised areas of 'probable' hazard are present within 50 m. Blasting may be undertaken to construct the BP Search Area and as such the peat slide hazard has been increased by a ranking of with areas of 'probable' increased to 'Almost certain' peat slide hazard within 50 m. Assessed Infrastructure Exposure: In the downslope area of the BP Search Area is Embankment 1. Although Embankment 1 is a significant structure, given its scale and mass the infrastructure exposure of this is considered to be 'low' Assessed Environmental Exposure: No environmentally significant designation recorded within or in close vicinity to the BP Search Area, however, watercourses and waterbodies are located within 50 m. The watercourses and waterbodies within 50 m would, however, be drained, blocked or sealed as they are present within the Headpond itself as part of the construction process and therefore any peat landslide into them would not cause a pollution incident. As such a 'low' environmental exposure has been applied. Worst-Case Hazard Ranking**: Low**

6.1.73 The qualitative assessment has identified that 7 No. of the proposed infrastructure aspects are located within 'negligible' Hazard Ranking areas, while 16 No. are located in 'low' Hazard Ranking and 6 No. are considered to have a 'moderate' Hazard Ranking.

7. Mitigation Measures

General

7.1.1 Construction activities (e.g. excavation, drainage, etc.) are known to have a potential destabilising effect on peat deposits. The design of the Proposed Development should consider the weak and susceptible nature of peat.

7.1.2 Although no historic peat instability has been noted within the Proposed Development Site, appropriate good practice and, where required, mitigation measures should be used to minimise the destabilising effects on the peat and its habitat.

7.1.3 As part of the Proposed Development, a Construction and Environment Management Plan (CEMP) and Construction Management Statement (CMS) should be prepared incorporating good practice measures for the construction of electricity generating schemes in peatland environments. These documents will continue to be updated through pre-construction and construction in accordance with good practice guidance. An Outline CEMP can be found within **Appendix 3.1: Outline Construction Environmental Management Plan (Volume 5: Appendices)**.

7.1.4 It should be noted that further GI will be carried out prior to construction of the Proposed Development to inform the detailed design to design maturity. The GI information will also be used to update the PLHRA, following the PLHRA: BPG.

Mitigation Measures

7.1.5 Mitigation measures and good practice procedures are ultimately the responsibility of the construction Contractor. That being said, during the construction phase, the following measures may be considered to mitigate the impact on peat:

- Maintaining and updating a Geotechnical Risk Register throughout the works;
- Provision of a geotechnical specialist on-site during the construction phase to undertake advance inspection, carry out regular monitoring and provide advice when required;
- Supervision of construction work by suitably qualified and experienced personnel;
- Identification of areas of deep peat, physical demarcation of such areas and instruction to site personnel to avoid these areas or minimise activities in these locations, where practical;
- Identification of approved areas for stockpiling of any excavated rock or soils including peat;
- Side-casting of material during construction only in appropriate areas identified following risk assessment and agreed with all relevant parties (Environmental Clerk of Works / Geotechnical Clerk of Works, SEPA, NatureScot etc.);
- Avoid placing excavated material or other forms of loading on breaks of slope or other potentially unstable slopes;
- Any excavations in peat should be risk assessed and measures adopted to minimise the risk of failure within excavation side slopes and surrounding materials;
- Excavation on side slopes within peat should be as shallow an angle as possible and care should be taken to stabilise sides;
- Upslope drainage ditches should be included on all earthworks which are constructed through side-long ground;
- The camber of the Access Track should be such as to encourage surface water drainage to the upslope drainage ditch;

- The construction plant should minimise the extent and duration of open excavations and bare ground;
- Earthmoving activities should be restricted during and immediately after heavy and prolonged rainfall events;
- Establish / re-establish vegetation as soon as possible to improve slope stability and provide sediment transport control;
- Design and construction of a suitable drainage system for tracks and hardstanding's that does not significantly affect the hydrological regime of the peat and that would require minimal maintenance;
- Include measures to ensure drainage systems (including existing) are well maintained, including identification of sensitive drainage areas;
- Prevent artificial drainage from concentrated flows onto slopes or into excavations;
- Where deep peat excavations require dewatering, discharges of the pumped water will require to be controlled in a manner which does not adversely affect habitats on-site (due to potential silt content etc.) and does not lead to the creation of saturated, and hence very soft, areas of peat;
- Design of appropriate sediment control measures including the use of silt traps / barriers where necessary and cut-off ditches in particular at appropriate locations along site tracks and earthworks;
- Identification of drainage areas and areas of run-off which could potentially be affected by the development and establish appropriate stand-off distances;
- Monitoring of slope and peat stability both in the vicinity and down slope of infrastructure (both existing and proposed) during construction by suitably experienced and qualified personnel;
- Appropriate track construction methods to take cognisance of local topography, peat thickness and peat features (such as peat pipes, slumps, hags, etc.);
- Development of working methodologies that ensure that any exposed peat is protected to limit the potential for degradation, erosion or failure of the accumulation;
- Where excavated tracks are constructed, the peat and any soft soils should be removed and replaced with granular material placed in layers and compacted;
- Where floating tracks are constructed, a suitable geogrid and separator geotextile (where required) should be laid over the existing ground surface with graded stone (nominally 75mm down) placed over this in layers and compacted. However, a geotextile specialist should be sought regarding this;
- Any floating track design should take into account the properties of the peat soils at the Proposed Development Site;
- Construction staff should be made aware of peat slide indicators and emergency procedures; and
- Emergency procedures should include steps to be taken on detection of an incipient peat slide or of the event occurring.

7.1.6 Many of the measures provided above serve both to mitigate and reduce the likelihood of a peat slide occurring, as well as being good construction practice.

7.1.7 A more detailed PLHRA will be required for the Proposed Development at design maturity post-consent, which includes the findings of further intrusive works to characterise the peat further, which targets more sensitive areas and that provides peat data (e.g. extents & depths throughout the Site). In the meantime, preliminary mitigation measures could include the following:

- Infrastructure with a 'Negligible' Hazard Ranking – ground conditions in these areas may be considered acceptable provided that all infrastructure and access roads are constructed in line with good practice guidelines which will be set out in the CMS / CEMP. However, even in negligible areas, additional intrusive works should be undertaken to assist in the overall characterisation of the peat, as well as for monitoring for signs of potential instability.
- Infrastructure with a 'Low' and 'Moderate' Hazard Ranking, will require additional peat thickness and characteristic information by intrusive investigation and engineering measures may be required and should be considered during the GI, detailed design and construction to minimise risks of triggering a peat landslide in the short term (during construction) or long term (during operation and decommissioning) such as:

- Installation of drainage - Installation of targeted drainage would aim to isolate the areas of peat from upslope surface water. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water.
- Catch Fences – these should be installed down slope of areas of potential risk and are used to slow or halt run out from a landslide. These would typically be constructed into the peat substrate.
- Catch Ditches – these should be installed down slope of areas of potential risk and like catch wall fences are used to slow or halt run out. These would typically be constructed in non-peat material.
- Monitoring of slope and peat stability both in the vicinity and down slope of track areas during construction by suitably experienced and qualified personnel.

7.1.8 It is considered that such engineering measures would only be used as a last resort in localised areas where a particular hazard could not be avoided or dealt with adequately by other measures. A more detailed peat stability assessment and quantitative PLHRA is required following (post consent) further GI and detailed design to design maturity.

7.1.9 Construction Management, as part of the final CMS, will include but are not limited to:

- Specific work method statements to monitor compliance of activities in susceptible areas.
- Reviewing the weather forecast to prevent working in areas of peat during or immediately following heavy rainfall.
- Construction plant should be operated from the areas already constructed where practicable. Should there be no alternative to plant accessing areas of peat, low ground pressure equipment should be used.
- Spoil disposal areas (both peat and mineral soils) should be located where the risk of erosion, mass movement and water quality deterioration are minimal.
- Continual monitoring of groundwater and ground movement should be maintained.
- Drainage Measures – the installation of drainage measures such as soakaways and gullies (surface water) and pipes (subsurface water) can be used to re-route upslope surface water and groundwater around potential critical areas.
- Localised Slope Re-profiling – this measure would only be recommended where environmental costs have been outweighed by the reduction in the Hazard Ranking.

7.1.10 As detailed in Table 15. Qualitative Assessment of Peat Landslide Hazard, Exposure and Hazard Ranking, there are various areas that have a potential ‘Low’ Hazard Ranking. Once the Final PLHRA, inclusive of further GI information and a more quantitative risk assessment, has been undertaken and finds the Hazard Ranking is the same as this Preliminary PLHRA, then Table 16. Targeted Mitigation for Each Development Area Identified with ‘Low’ or ‘Moderate’ Hazard Ranking sets out targeted preliminary worst-case mitigation measures that could be used for each of these areas within the Proposed Development Site.

Table 16. Targeted Mitigation for Each Development Area Identified with 'Low' or 'Moderate' Hazard Ranking

Area	Worst-Case Hazard Ranking	Comment
Temporary Compounds (All TCs with a Low Hazard Ranking)	Low	**Installation of drainage –** Installation of targeted drainage around the downslope and upslope side of the Temporary Compounds (TCs) would aim to isolate the areas of peat of 'Likely' peat slide Hazard from upslope surface water. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water. Drainage measures need to be carefully planned to minimise any negative impacts. **Catch ditches –** Installation of catch ditches upslope of watercourses and infrastructure within the vicinity of the TCs to help reduce and/or halt any landslide event from reaching the infrastructure or watercourses. **Monitoring –** The slope / peat in the vicinity of the TCs, especially in the vicinity of watercourses, could be monitored for any movement during the construction works. Monitoring of water levels within existing watercourses and groundwater levels throughout the Proposed Development Site during construction could also be undertaken.
Proposed Access Track Section 1,2,3,6	Low	**Installation of drainage** – Installation of targeted drainage around the downslope and upslope side of the Access Tracks would aim to isolate the areas of peat of 'probable' and 'Likely' peat slide Hazard from upslope surface water. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water. Drainage measures need to be carefully planned to minimise any negative impacts. **Monitoring** – the slope / peat on the sides of the Access Track could be monitored for any movement during the construction works. Monitoring of water levels within existing watercourses and groundwater levels throughout the Proposed Development during construction could also be undertaken.
Proposed Access Track Sections 4 & 5	Moderate	**Installation of drainage –** Installation of targeted drainage around the downslope and upslope side of the Access Tracks would aim to isolate the areas of peat of 'probable' and 'Likely' peat slide Hazard from upslope surface water. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water. Drainage measures need to be carefully planned to minimise any negative impacts. **Catch ditches –** Installation of catch ditches in the vicinity of the access tracks and upslope of all watercourses and infrastructure the vicinity to help reduce and/or halt any landslide event from reaching infrastructure or watercourses. **Monitoring –** The slope / peat on the sides of the Access Track, especially in the vicinity of watercourses could be monitored for any movement during the construction works. Monitoring of water levels within existing watercourses and groundwater levels throughout the Proposed Development during construction could also be undertaken.
PC05 & 06 – Tunnel Portal compounds	Moderate	**Installation of drainage –** Installation of targeted drainage around the upslope side of the Tunnel Portals would aim to isolate the areas of peat of 'probable' and 'Likely' peat slide Hazard from upslope surface water. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water. Drainage measures need to be carefully planned to minimise any negative impacts. **Catch wall fences and catch ditches** – Installation of catch wall fences and catch ditches on the slopes around the portals to help reduce and/or halt any landslide event from reaching the proposed Tunnel Portals. **Monitoring** – The slope / peat around the portals, could be monitored for any movement during the construction works. Monitoring of water levels within existing watercourses and groundwater levels throughout the Proposed Development during construction could also be undertaken. **Blasting –** Prior to blasting all personnel and plant should be moved from the area and the Access Tracks in the vicinity closed in-case a peat slide is detected. Following blasting activities, the peat surrounding the area shall be monitored and inspected for any signs of potential peat failure prior to opening the Access Track and portals for works/traffic.
PC14, 15, 16, 17, 18, 19, 20 &21	Low	**Installation of drainage –** Installation of targeted drainage around the upslope side and downslope sides of the compounds would aim to isolate the areas of peat of 'Likely' peat slide Hazard from upslope surface water. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water. Drainage measures need to be carefully planned to minimise any negative impacts. **Catch ditches** – Installation of catch ditches in the vicinity of the access tracks and exposed infrastructure down slope and upslope of all watercourses in the vicinity to help reduce and/or halt any landslide event from reaching the compounds or watercourses. **Monitoring –** The slope / peat on the sides of the compounds, especially in the vicinity of watercourses could be monitored for any movement during the construction works. Monitoring of water levels within existing watercourses and groundwater levels throughout the Proposed Development during construction could also be undertaken.
TC07, 08 & 11	Low	**Installation of drainage –** Installation of targeted drainage around the upslope side and downslope sides of the compounds would aim to isolate the areas of peat of 'Likely' peat slide Hazard from upslope surface water. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water. Drainage measures need to be carefully planned to minimise any negative impacts. **Catch ditches** – Installation of catch ditches in the vicinity of the access tracks and exposed infrastructure down slope and upslope of all watercourses in the vicinity to help reduce and/or halt any landslide event from reaching the compounds or watercourses. **Monitoring –** The slope / peat on the sides of the compounds, especially in the vicinity of watercourses could be monitored for any movement during the construction works. Monitoring of water levels within existing watercourses and groundwater levels throughout the Proposed Development during construction could also be undertaken.
Embankment 1	Moderate	**Installation of drainage –** Installation of targeted drainage around the Embankment aim to isolate the areas of peat of 'Probable' and 'Likely' peat slide Hazard from upslope surface water. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water. Drainage measures need to be carefully planned to minimise any negative impacts. **Catch wall fences and catch ditches** – Installation of catch wall fences and catch ditches on the slopes to the east of PC 09 to prevent peat slide from affecting the Compound. **Monitoring – T**he slope / peat around the dams, especially in the vicinity of watercourses could be monitored for any movement during the construction works. Monitoring of water levels within existing watercourses and groundwater levels throughout the Proposed Development during construction could also be undertaken.
BP Search Area	Low	**Catch ditches** – Installation of catch ditches to the north between the BP Search Area and any watercourses not dammed.

Area	Worst-Case Hazard Ranking	Comment
		Monitoring – The slope / peat around the BP Search Area, especially in the vicinity of watercourses and waterbodies could be monitored for any movement during the construction works. Monitoring of water levels within existing watercourses and groundwater levels throughout the Proposed Development during construction could also be undertaken. **Blasting –** Prior to blasting all personnel and plant should be moved from the BP and Embankment 1 work area. Following the blasting activities, the peat surrounding the area shall be monitored and inspected for any signs of potential peat failure prior to opening the Access Tracks and BP Search Area for works/traffic.

7.1.11 As previously noted, areas where peat will be reused or restored are currently being developed and are in the design stage. Although these areas may increase the risk of peat instability at the Proposed Development Site, design and construction techniques to mitigate against the instability of the areas for reuse or restoration will be developed. Where these areas are within areas where Hazard Ranking is assessed to be Low, the measures used to design and construct these may supersede the measures highlighted within **Table 16. Targeted Mitigation for Each Development Area Identified with 'Low' or 'Moderate' Hazard Ranking** as they will be embedded within the reuse/restoration design and would aim to reduce the peat instability risk.

Potential Peat Slide Indicators

7.1.12 During the site works (i.e. GI works or Construction works), site staff should be made aware of the slope failure indicators, how to recognise them and the importance and mechanism for reporting these. They should also receive training and instruction in emergency procedures in the event of a peat slide. This will minimise the impact should a peat slide occur.

7.1.13 There are a number of recognised indicators for slope failures and these can also indicate the potential of a peat slide event. The factors below are particularly applicable to low velocity events:

- The development of tension cracks across the slope or in semi-circular patterns showing progressive development;
- Boggy ground or new springs appearing at the base of slopes;
- Sudden reactivation / drying up of spring lines, drainage channels or streams;
- Creep and bulging of ground;
- Displacement and leaning of trees, fence posts, dykes, etc.; and
- Breaking of underground services.

8. Conclusions and Recommendations

Conclusions

8.1.1 The general approach to the infrastructure design has been to design the Proposed Development to avoid areas of deep peat deposits (i.e. >1.0 m thickness) wherever possible.

8.1.2 As indicated in **Figure 15.3.10 Peat Slide Assessed Hazard (Annex A Figures)** the peat slide hazard for the Proposed Development Site is generally assessed to be either 'Negligible' or 'Unlikely'. However, some of the infrastructure components of the Proposed Development are located in or within 50 m of an area with a peat slide Hazard of 'Likely' or 'probable'.

8.1.3 From the qualitative assessment (Table 15. Qualitative Assessment of Peat Landslide Hazard, Exposure and Hazard Ranking) of the construction components within the Proposed Development Site, the proposed infrastructure was assessed with 24% being classed with a Hazard Ranking of 'Negligible', 55% classified with a Hazard Ranking of 'Low' and 21% classified with a Hazard Ranking of 'Moderate'.

8.1.4 The majority of the proposed infrastructure is located in areas assessed as having a Hazard Ranking of 'Low', meaning that the project can proceed as long as further investigation to refine the assessment and mitigate the hazard is undertaken. It should be noted that even after this Preliminary PLHRA, the Hazard Ranking is considered to be relatively conservative given the approach undertaken. As such, it is considered that following a quantitative assessment, which incorporates further more detailed GI data and further details on the design and construction, the Hazard Rankings will reduce from that identified within this PLHRA.

8.1.5 For components assessed with a 'Low' and 'Moderate', targeted worst-case mitigation measures have been outlined that could be implemented to reduce the Hazard and Exposure. The decision on whether further analysis is undertaken and/or the selection and details on the mitigation measures used shall be determined by the Designer of the Proposed Development. A detailed Final PLHRA shall be carried out for the Proposed Development, using additional information collected during the additional GI

undertaken post consent, and considering further details of the design of the scheme after this reaches design maturity. As part of the Final PLHRA, it is considered that the Hazard Ranking at several locations will be reduced following the provision of further information and a more detailed qualitative assessment.

8.1.6 The Proposed Development will include the reuse of peat in some form as part of the works. The extent of reuse /restoration is still in the design and development stage and as such has not been included as part of this PLHRA. It is acknowledged that this reuse/restoration of the peat may increase the peat instability risk on the Proposed Development Site, however, it is difficult to quantify this without knowing the full details on the design of these areas. The design of the reuse/restoration areas may also reduce the peat instability risk through engineering measures installed to contain the peat. This may reduce the Hazard Ranking currently assigned to certain areas. As such, the Final PLHRA shall consider the effect that these areas have on the peat stability within the Proposed Development Site considering the further investigative information obtained and the detailed design.

8.1.7 The construction Contractor will be required to produce a CMS for the construction of the Proposed Development. This should include the results of the Final PLHRA, which will be a further development of this Preliminary PLHRA. The Final PLHRA will provide detailed procedures and methods intended to be used by the construction Contractor to minimise any environmental impact, including the risk of any peat slide events.

Recommendations

8.1.8 Further GI should be undertaken across the Proposed Development Site, to include exploratory holes, to better define the composition and ‘truth’ the depth/extent of peat estimated through the probing survey undertaken to inform this Preliminary PLHRA. Further GI should specifically target the areas within the Proposed Development Site which were assessed as having ‘Low’ and ‘Moderate’ Hazard Rankings.

8.1.9 The GI shall also allow for the collection of additional information on peat thickness and characteristic properties (including laboratory testing of samples as set out in the PLHRA: BPG), so that the Final PLHRA can determine whether the extent of these areas can be reduced and allow for the detailed targeting of any mitigation measure required.

8.1.10 The GI shall also allow for the production of a quantitative assessment of the peat slide hazard if required. However, the GI should not be limited to said areas and information on the peat should be collected across the Proposed Development Site to allow for the peat to be better characterised.

9. References

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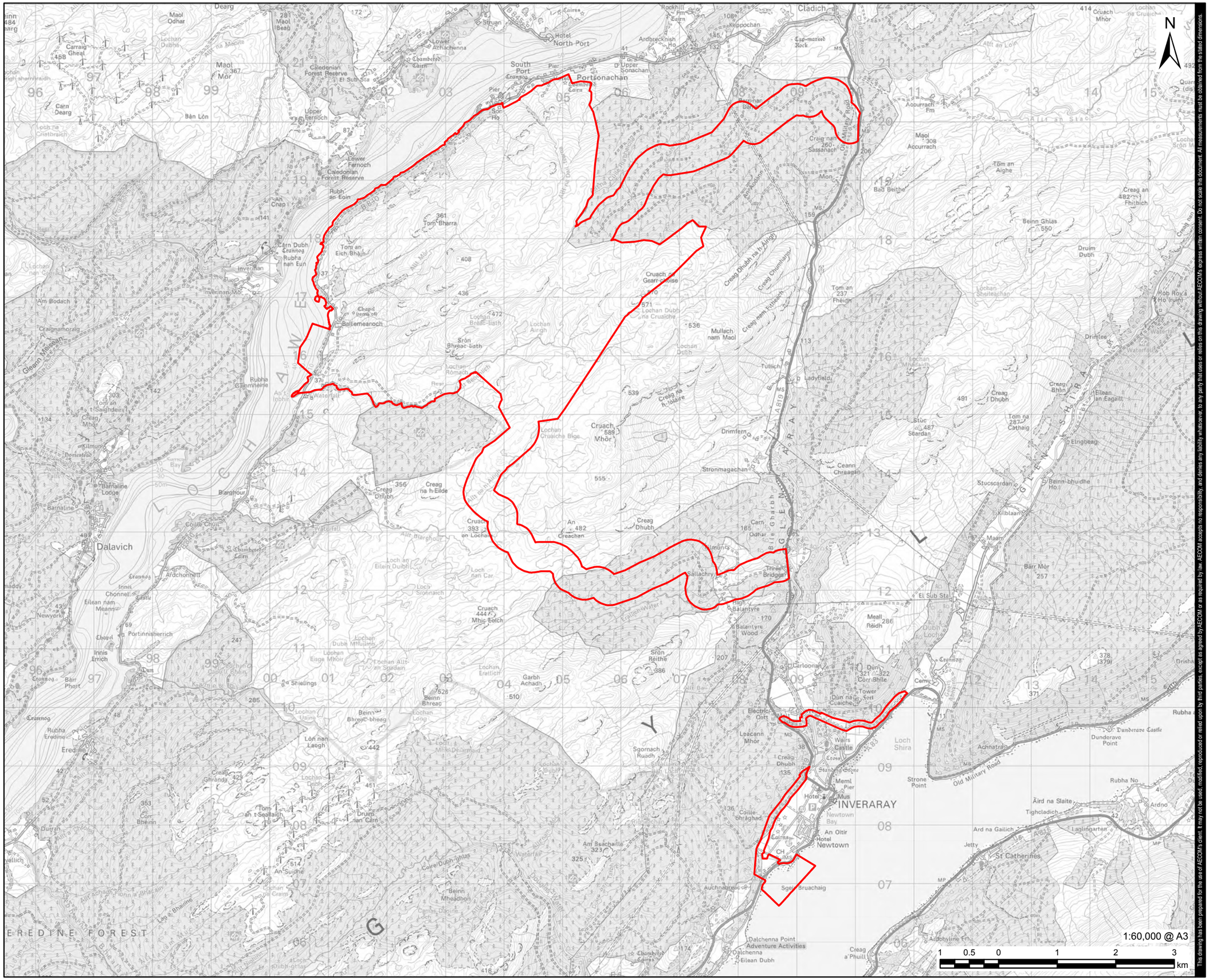
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Annex A Figures

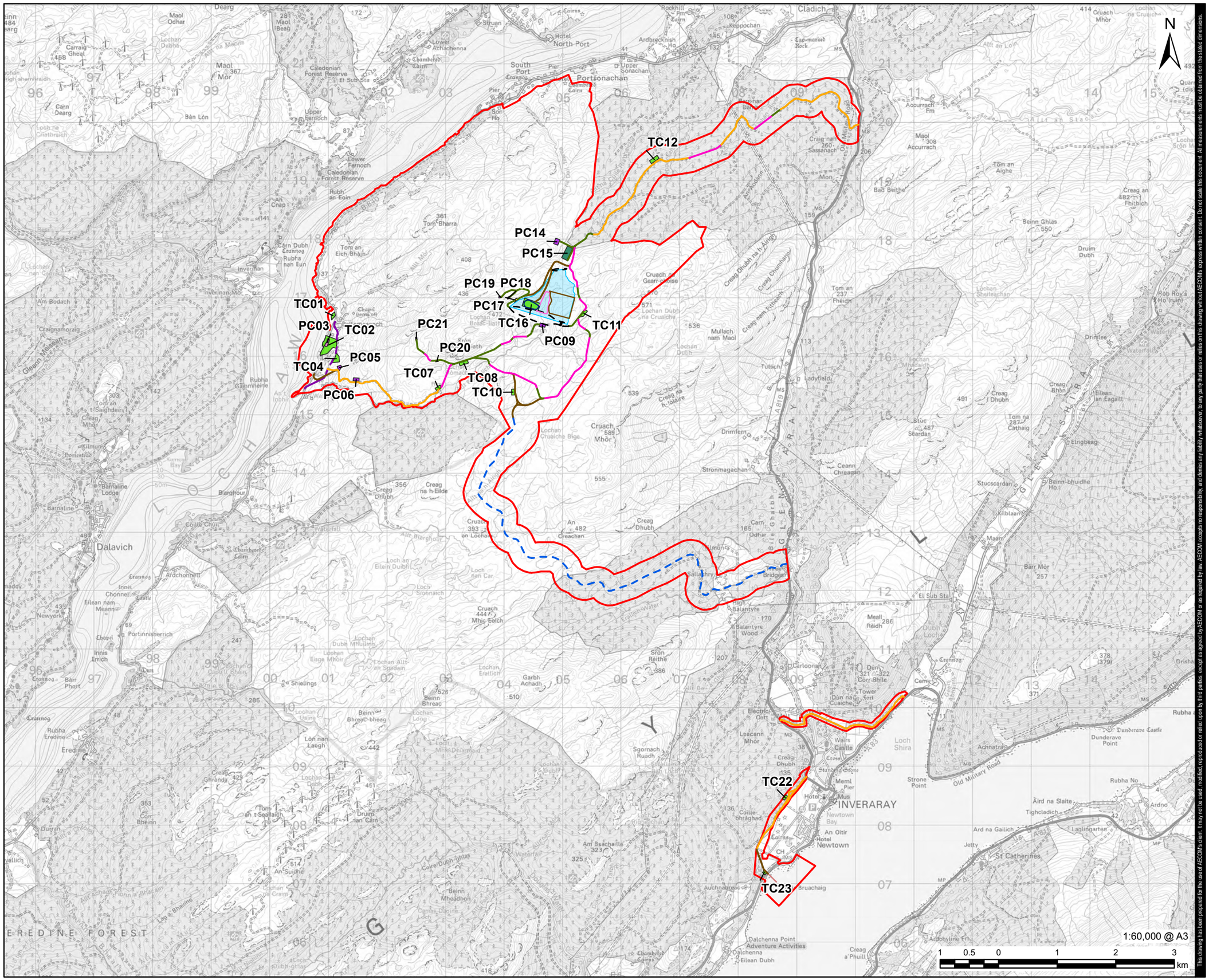
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N
Ballieameanoch
Inverinan
Inverinan Mo
Tom an Eich Bhàin
Carn Dubh Crannog
Rubha nan Eun
Rubh an Eoin
Lower Fernoch
Caledonian Forest Reserve
Upper Fernoch
Tom Bharra
Maol Odhar
Maol Mor
Carraig Gheal
Carn Dearg
Bàn Lòn
Struan
Hotel
North Port
South Port
Portsonachan
Upper Sonachan
Lower Achachenna
Chambered Cairn
Caledonian Forest Reserve
Cladich
Keppochan
Ardbrecknish Ho
Cap-marked Rock
Cruach Mhòr
Craig nan Sassanach
Maol Accurrach
Acpurrach Fm
Tom an Aighe
Bad Beithe
Creag an Fhitbich
Beinn Ghlas
Druim Dubh
Hob Roy's Ho (ruin)
Drimlee
Tom an Fheidh
Cruach na Gearr-choise
Creag Dhubh na h-Airigh
Creag Chumhainn
Creag nam Fitheach
Lochan Dubh na Cruaiche
Mullach nam Maol
Lochan Dubh
Lochan Sheileachan
Lochan Mhadaidh
Tuttich
Ladyfield
Creag Bhàn
Eilean an Eagaill
Creag Dhubh
Tom na Cathaig
Stuc Sgardan
Etingbeag
Stucscardan
Beinn-bhuidhe Ho
Kiblaan
Maam
Barr Mòr
Allt an Lòin
Allt an Stacain
Lochan Sròn Mòr
Lochan Breac-liath
Sròn Bhreac-liath
Lochan Airigh
Lochan Romach
Rubha Gaimmheire
Creag Mhòr
Craignamoraig
Am Bodach
Gleann Maleon
Kilmun
Dornie
Barnaline Lodge
Barnaline
Blarghour
Creag Dhubh
Creag na h-Eilde
Coille Chuil
Dalavich
Ardchonnell
Eilean nam Meann
Innis Chonnel Castle
Portinnisherrich
Innis Errich
Newyork
Loch an Eilein Duibh
Loch nan Car
Loch Sionnaich
Cruach 393 an Lochain
An Creachan 482
Creag Dhubh
Cruach Mhic Eoich 444
Lochan Dubh Mhuilinn
Lochan Eisge Mhòir
Lochan Allt an Sladain
Lochan Eatrtich
Garbh Achadh
Sròn Reithe 386
Beinn Bhreac 528
Beinn Bhreac-bheag
Lochan Uaine
Lochan Long
Lòn nan Laogh 442
Creag Ghranda
Tom an t-Seallaich
Drum nan Carn
Corr Bheinn
Duran
Rubha Eredine
Eredine
Crannog
Bàrr Phort
Shielings
Allt Blarghour
Allt Bad an Sgalaig
Allt Achadh Fionn a' Bhaain
Allt Mhic Eoich
Allt Dubh-ghlas
Allt Garbh Achadh
Allt Beinn Bhreac
Allt Coire Dubh-bhlas
Allt Coire Ghaimh
Allt Coire Craim
Allt Dubh-ghlas
Abhainn Inbhir
Abhainn Dubh
Abhainn Airigh
Abhainn Dubh Lochan Eatrtich
Abhainn Dubh Lochan Eisge Mhòir
Abhainn Dubh Lochan Allt an Sladain
Abhainn Dubh Lochan Dubh Mhuilinn
Abhainn Dubh Lochan Uaine
Abhainn Dubh Lochan Long
Abhainn Dubh Lochan Dubh
Abhainn Dubh Lochan Romach
Abhainn Dubh Lochan Breac-liath
Abhainn Dubh Lochan Airigh
Abhainn Dubh Lochan Dubh na Cruaiche
Abhainn Dubh Lochan Sheileachan
Abhainn Dubh Lochan Mhadaidh
Abhainn Dubh Lochan Dubh
Abhainn Dubh Lochan Dubh Mhuilinn
Abhainn Dubh Lochan Eisge Mhòir
Abhainn Dubh Lochan Allt an Sladain
Abhainn Dubh Lochan Eatrtich
Abhainn Dubh Lochan Long
Abhainn Dubh Lochan Uaine

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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments

Above Ground Infrastructure

- B840 Diversion - Permanent, New, Excavated
- B840 Diversion - Permanent, Upgrade, Excavated
- Spillway
- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Proposed Blarghour wind farm access track
- Basin
- Borrow Area
- Upper Control Works
- Switching Station
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House
- Lower Gate House
- Marine Facility

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ISSUE PURPOSE

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FIGURE TITLE

Scheme Layout Plan

FIGURE NUMBER

Figure 10.3.2

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The remaining 1.5 km to the edge of the forest was along a severely overgrown access track. A hard subbase could be felt underfoot whilst walking on the overgrown track but years of organic deposit and tree growth made it difficult to traverse on foot.

The site has regular changes in topography, mainly sloping down from the outer edges of the site to the area where Lochan Airigh is currently located, and further to the reservoir of Beochlich hydro.

The western area of the site was notably less peaty. This is likely due in part to the natural topography and lack of conditions for peat development.

The eastern area of the site generally showed evidence of deeper peat and regularly displayed peaty hollows and peat bogs. The presence of peat in these areas is likely due to the topography, evidenced by small rolling hills which creates dips and pockets that promote the creation of peat as organic material and water are contained in these hollows.

Working Farmland, no peat deposits observed. Omitted from Assessment.

The southern Access Track went through the current landowner's farmland, the track was in good condition, but it was steep in some sections and a 4x4 vehicle was necessary to drive up.

There were many watercourses on site which ranged from many small brooks through peat and grass caused by heavy rainfall, feeding into larger streams going across most of the site and further into the Beochlich Hydro Electric Site.

TC01 TC02 TC03 TC04 TC05 TC06 TC07 TC08 TC09 TC10 TC11 TC12 TC16

PC01 PC02 PC03 PC04 PC05 PC06 PC07 PC08 PC09 PC10 PC11 PC12 PC13 PC14 PC15 PC16 PC17 PC18 PC19 PC20 PC21

N

1:30,000 @ A3

1 0.5 0 1 2 3 km

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FIGURE TITLE

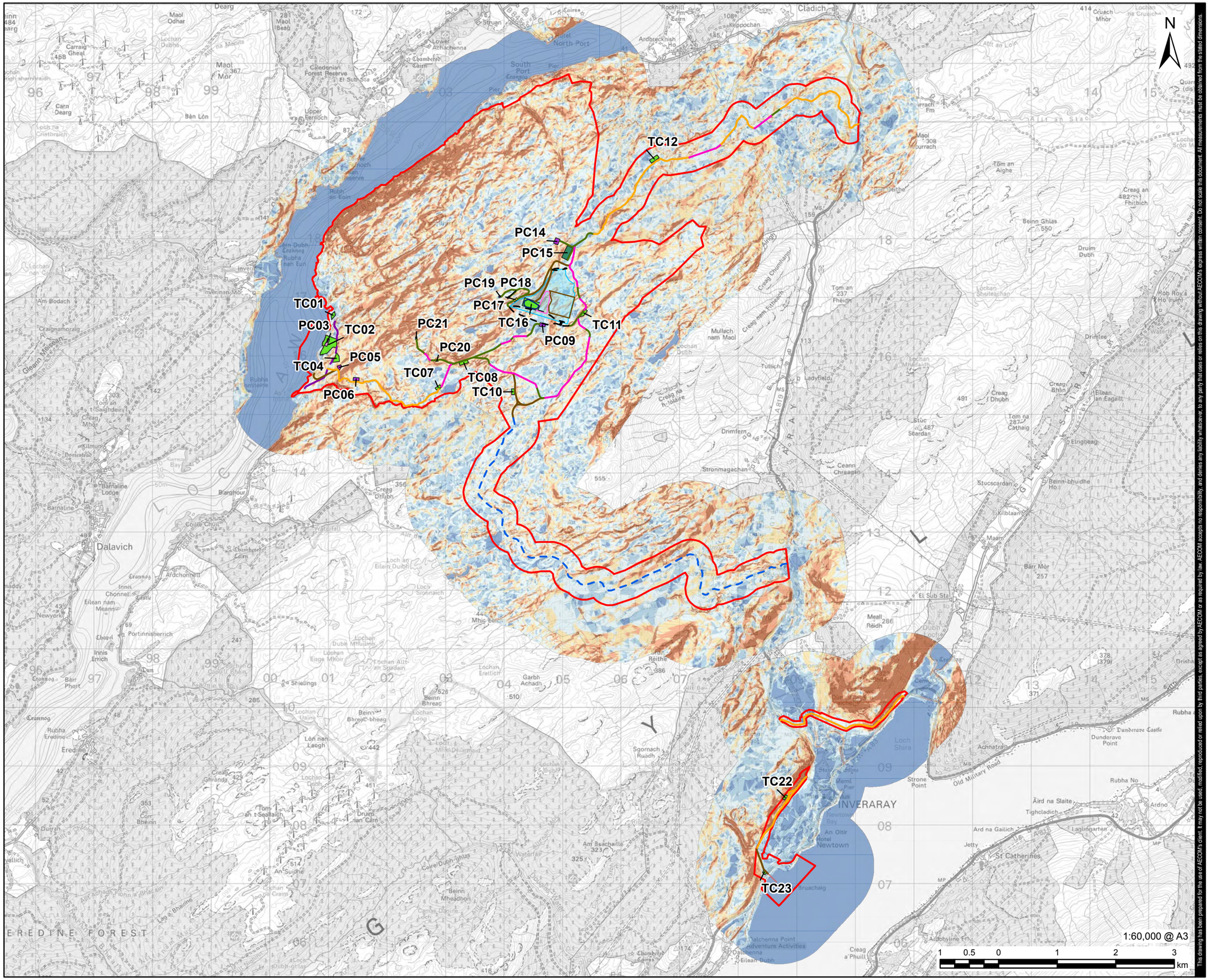
Site Walkover Features

FIGURE NUMBER

Figure 10.3.3

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Slope (Degrees) - OS Terrain 5

- 0 - 2
- 2.001 - 5
- 5.001 - 10
- 10.001 - 15
- 15.001 - 20
- 20+

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Below Ground Infrastructure not assessed as justified within Section1 of the PLHRA Report.

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FIGURE TITLE

Topography

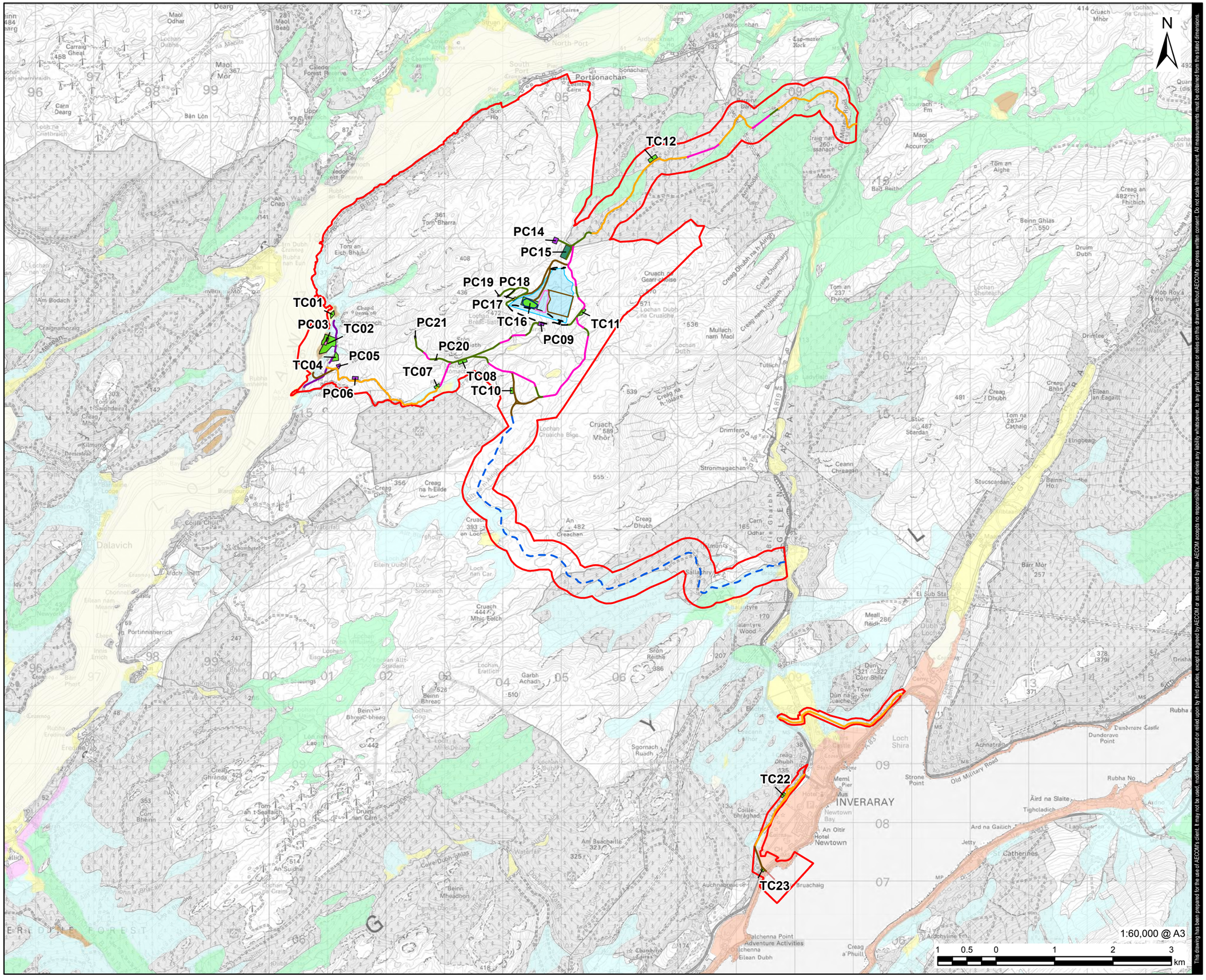
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Figure 10.3.4

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Superficial Geology

- Glaciofluvial Deposits
- Till, Devensian
- Hummocky (Moundy) Glacial Deposits
- Alluvium
- Peat
- Raised Marine Deposits
- River Terrace Deposits
- Marine Beach Deposits

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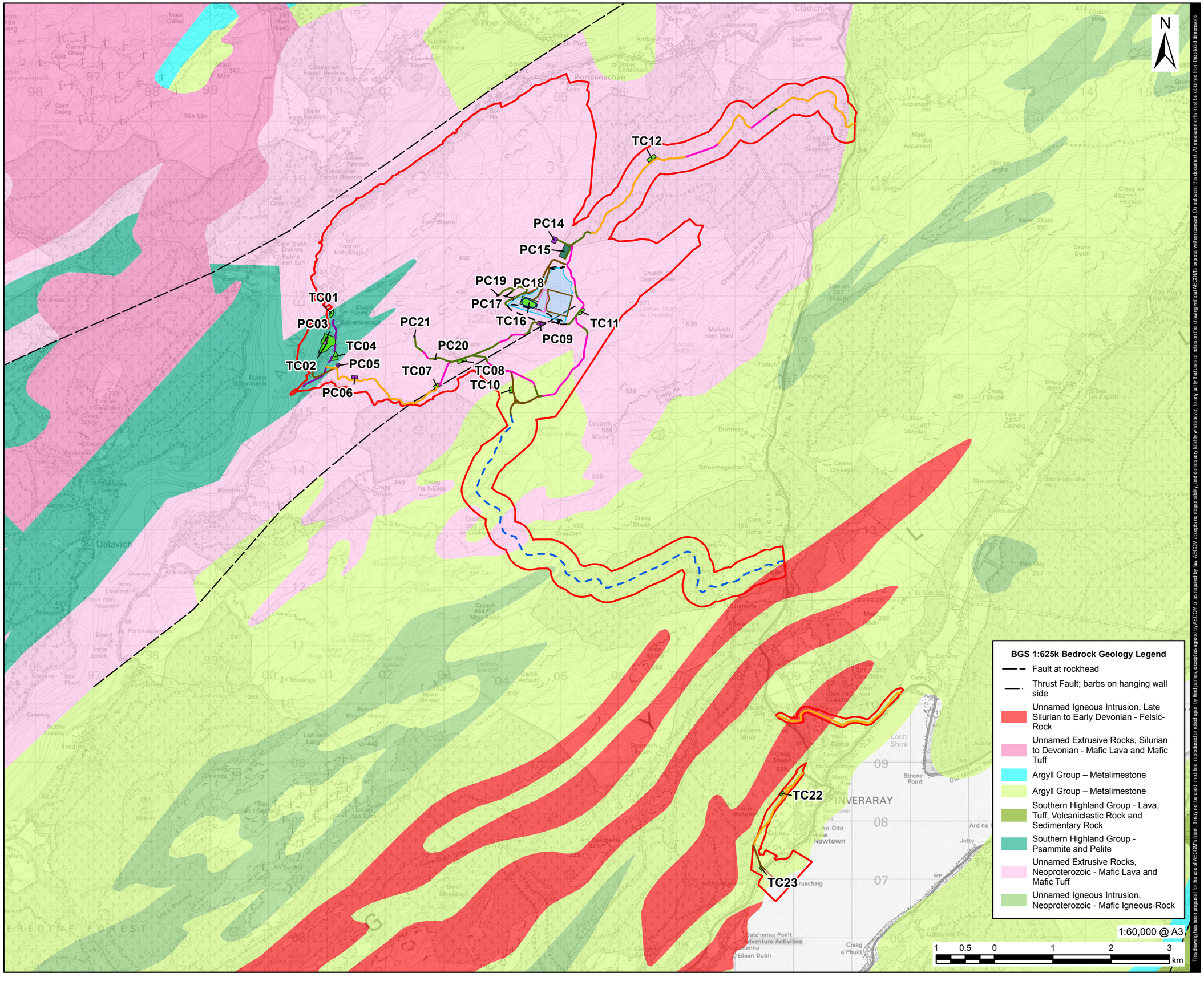
Superficial Geology

FIGURE NUMBER

Figure 10.3.5

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LEGEND

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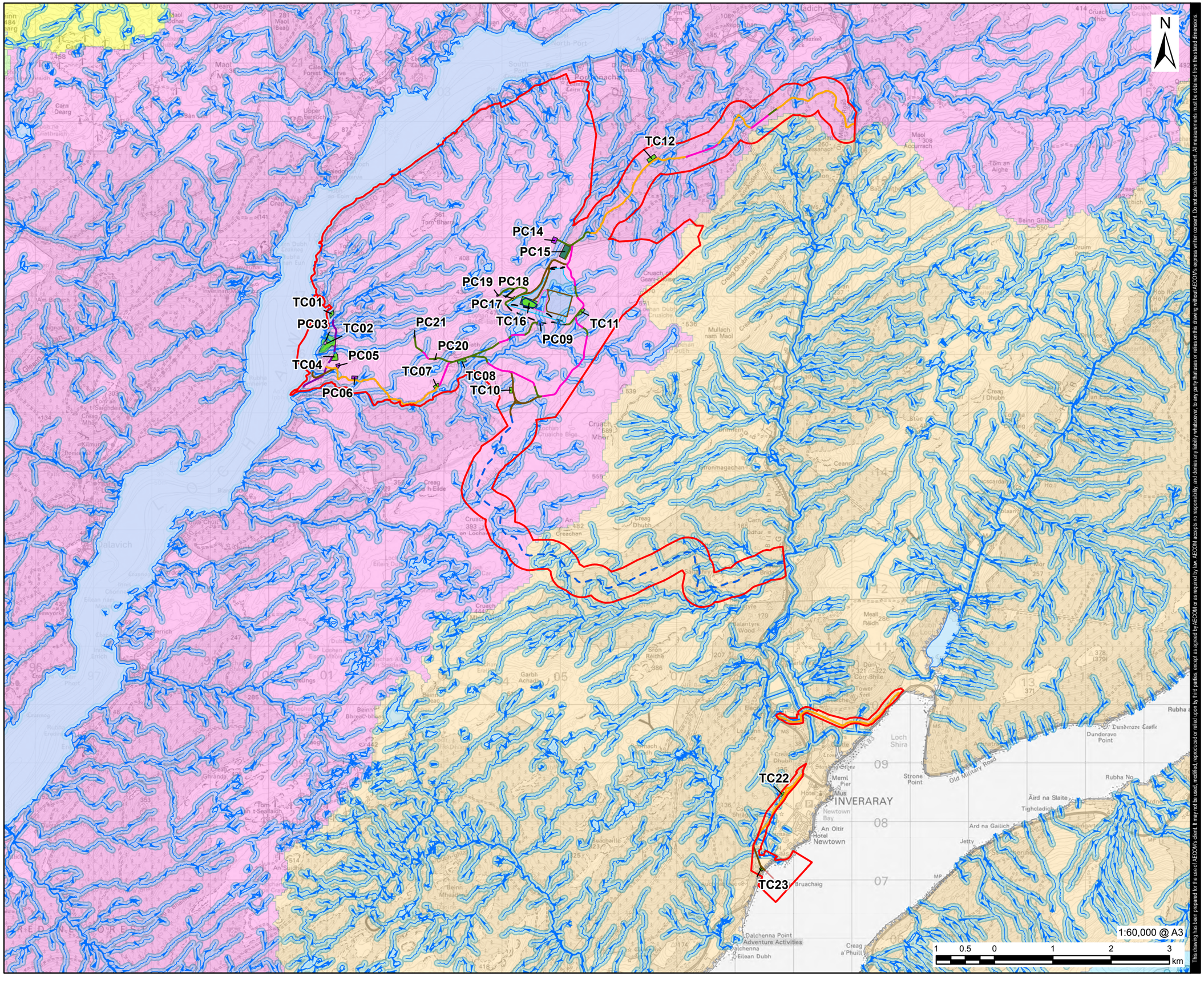
Bedrock Geology

FIGURE NUMBER

Figure 10.3.6

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- Lower Gate House
- Marine Facility

Surface Water

- Surface Water
- Watercourse
- Watercourse - 50m Buffer

River and Loch Catchment Areas

- Argyll & Bute
- Awe
- Cur
- Kinglass
- Loch Fyne Coastal

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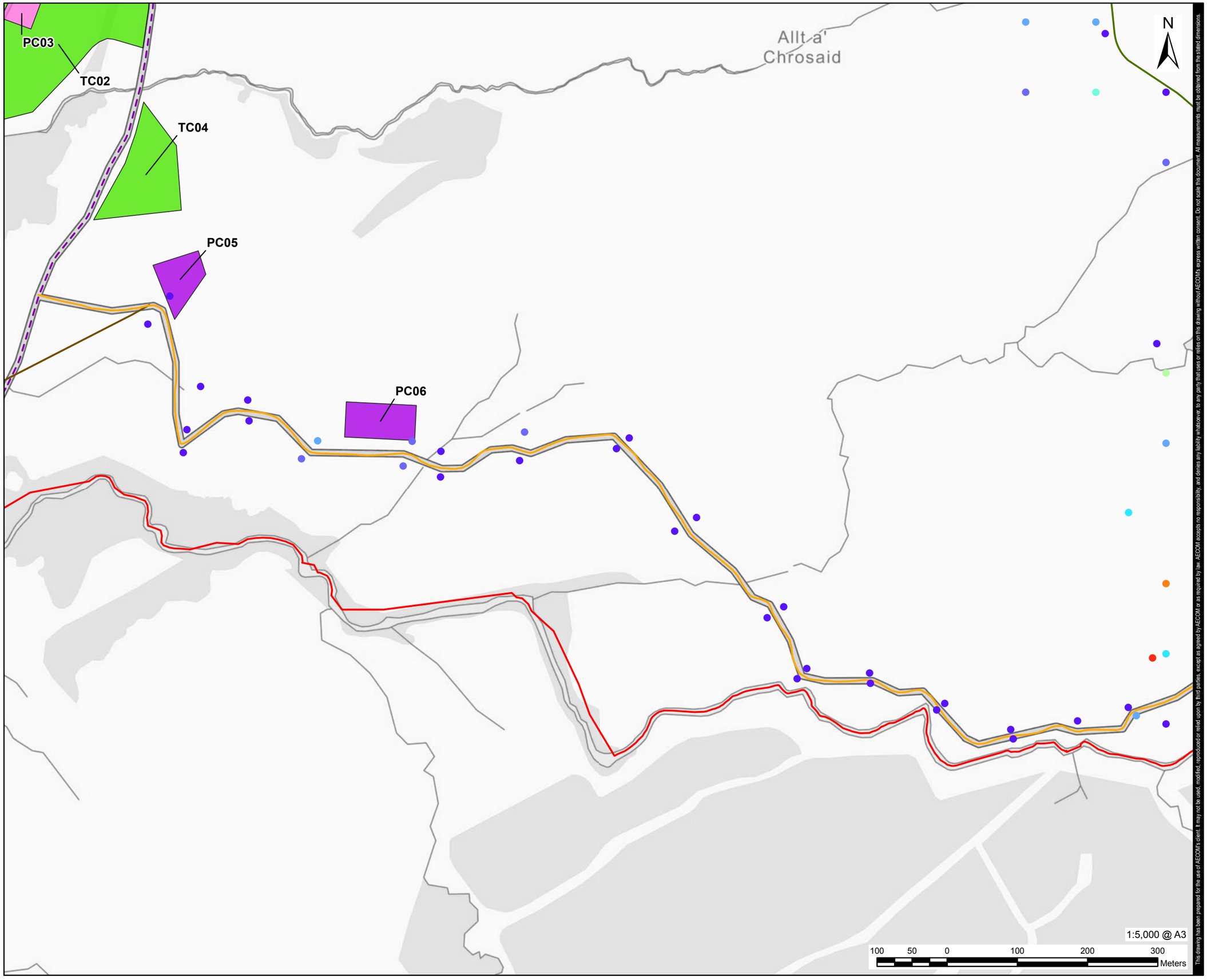
FIGURE TITLE

Hydrology

FIGURE NUMBER

Figure 10.3.7

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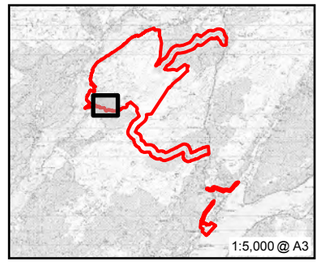
- Development Boundary

Above Ground Infrastructure

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- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, Upgrade, Excavated
- Permanent Construction Compound
- Temporary Construction Compound
- Lower Gate House

Peat Probe Location and Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 4.51 - 5.00
- 5.01 - 7.20



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FIGURE TITLE

Peat Probe Survey Results

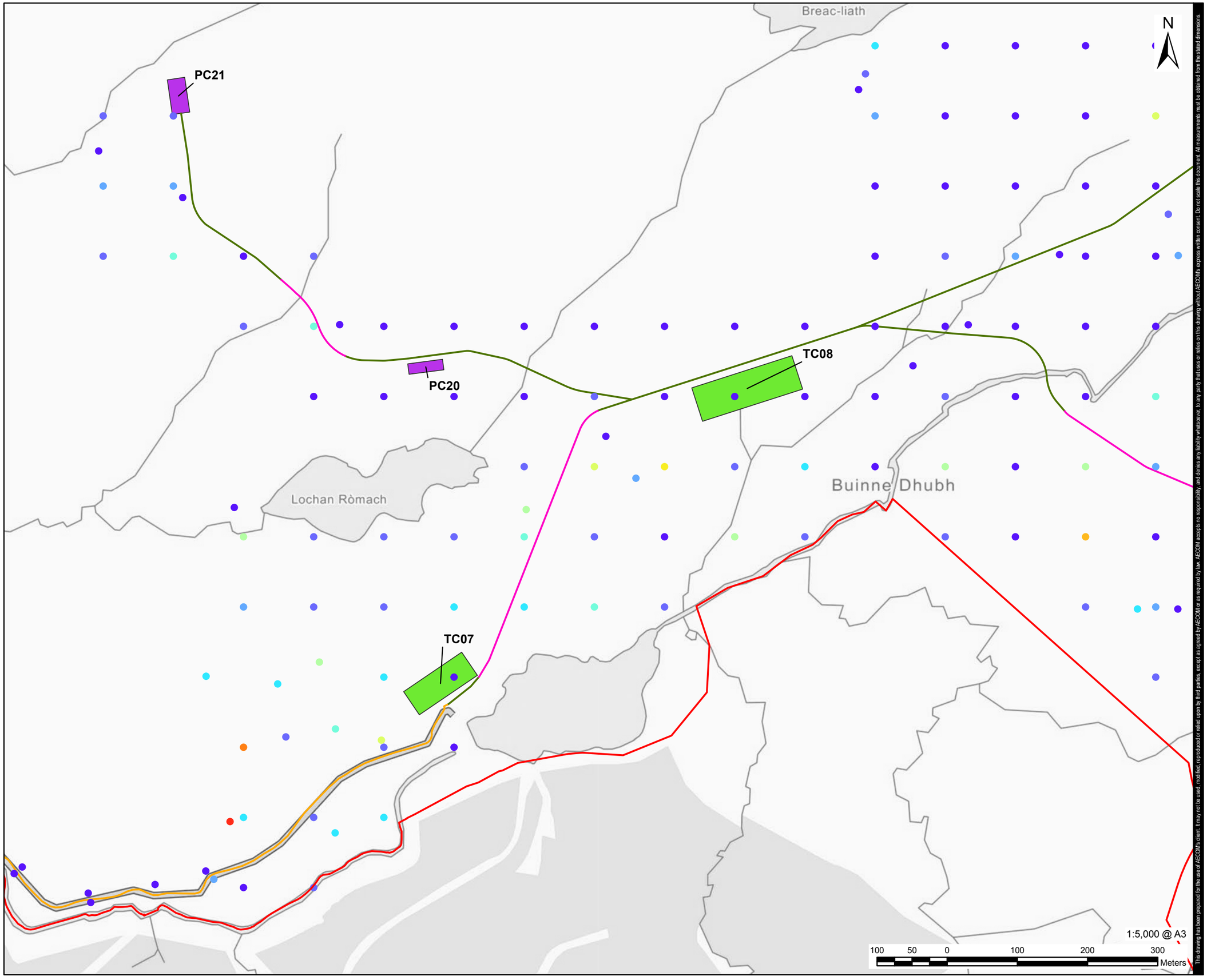
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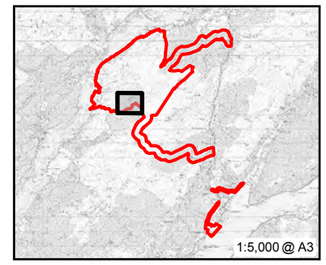
- Development Boundary

Above Ground Infrastructure

- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Permanent Construction Compound
- Temporary Construction Compound

Peat Probe Location and Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.01 - 4.50
- 4.51 - 5.00
- 5.01 - 7.20



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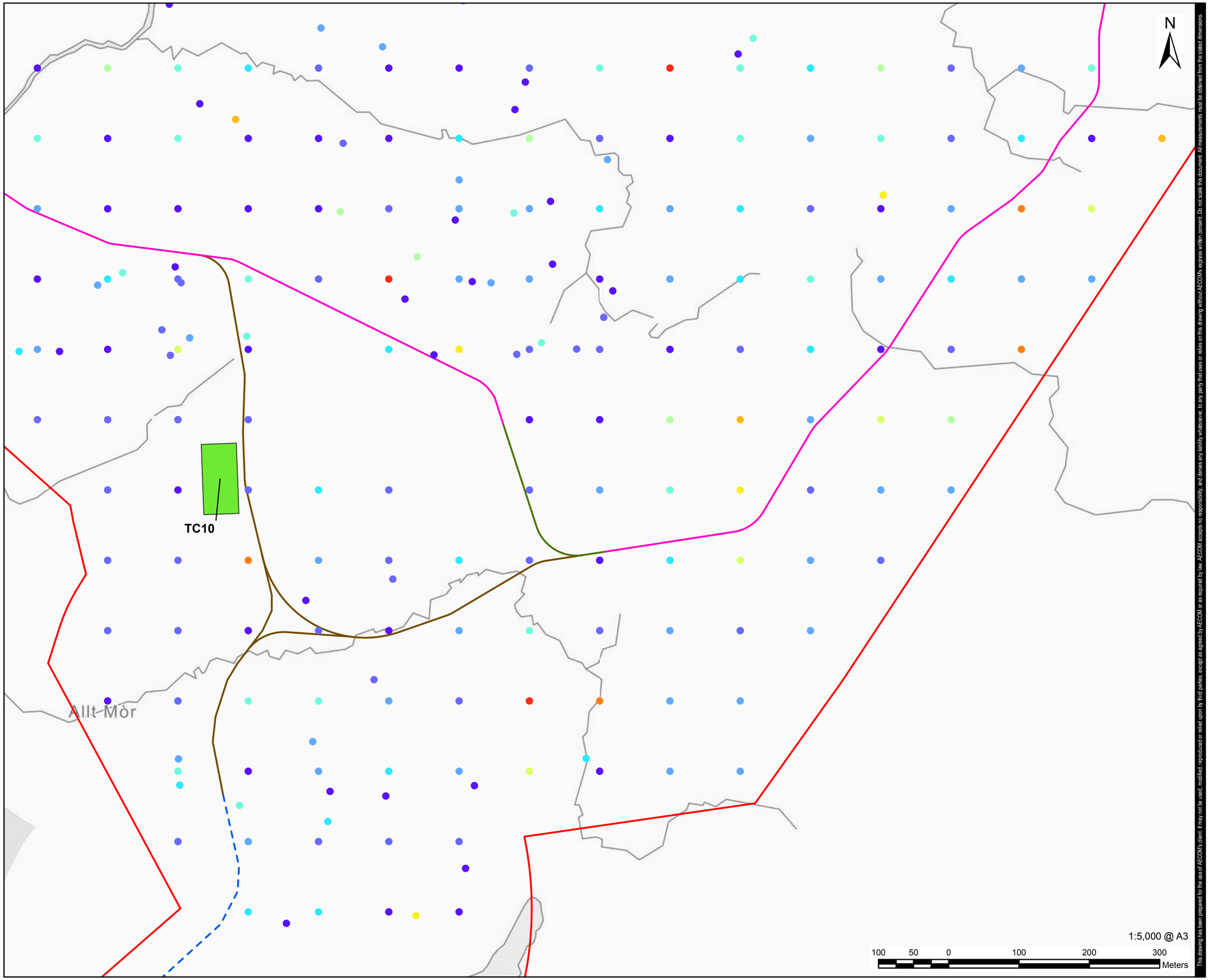
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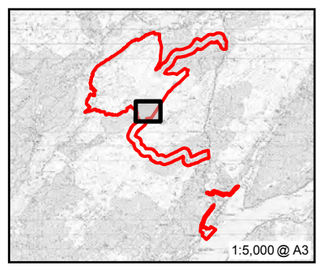
- Development Boundary

Above Ground Infrastructure

- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Proposed Blarghour wind farm access track
- Temporary Construction Compound

Peat Probe Location and Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.01 - 4.50
- 4.51 - 5.00
- 5.01 - 7.20



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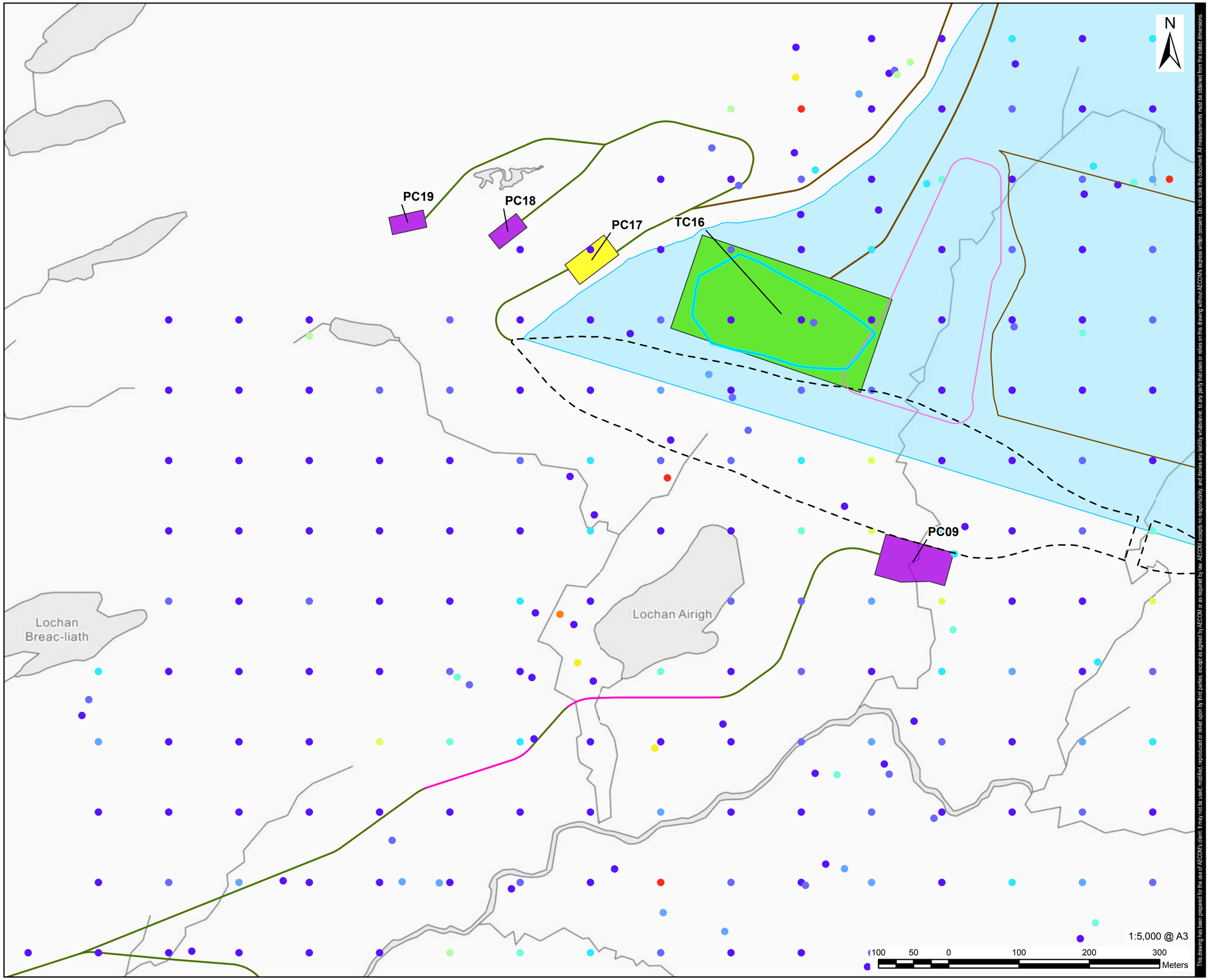
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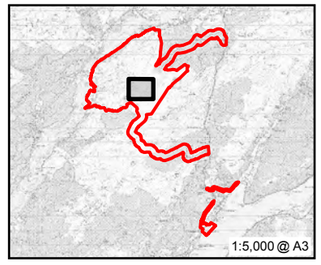
- Development Boundary
- Headpond
- Headpond Embankments

Above Ground Infrastructure

- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Upper Control Works
- Basin
- Borrow Area
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House

Peat Probe Location and Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.51 - 5.00
- 5.01 - 7.20



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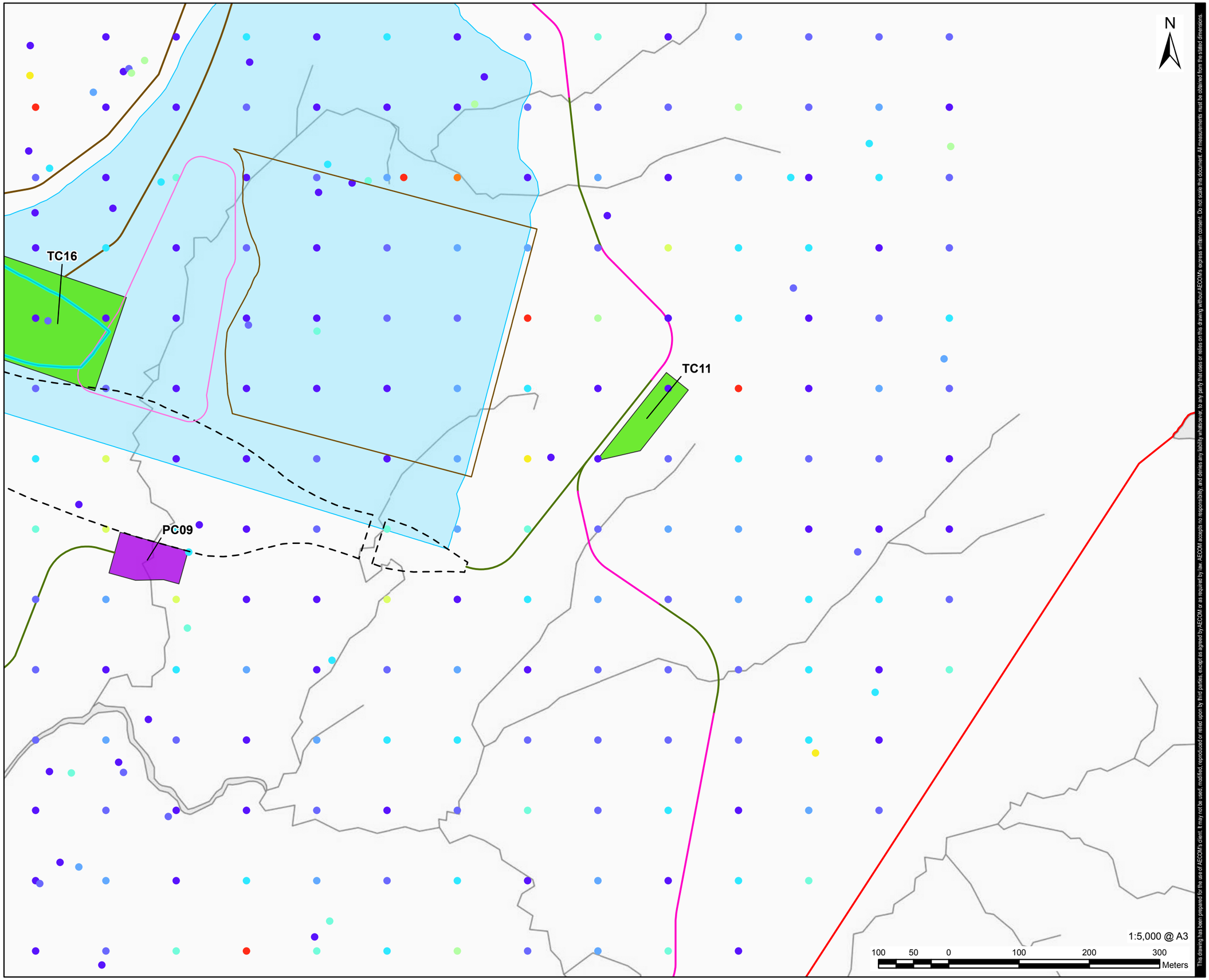
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FIGURE NUMBER

Figure 10.3.8 Sheet 4 of 7

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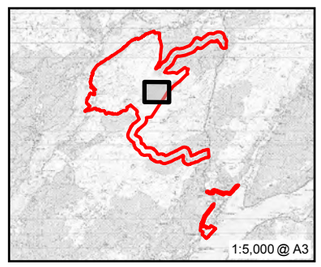
- Development Boundary
- Headpond
- Headpond Embankments

Above Ground Infrastructure

- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Upper Control Works
- Basin
- Borrow Area
- Permanent Construction Compound
- Temporary Construction Compound

Peat Probe Location and Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.51 - 5.00
- 5.01 - 7.20



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FIGURE TITLE

Peat Probe Survey Results

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Figure 10.3.8 Sheet 5 of 7

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PC14

PC15

N

1:5,000 @ A3

100 50 0 100 200 300 Meters

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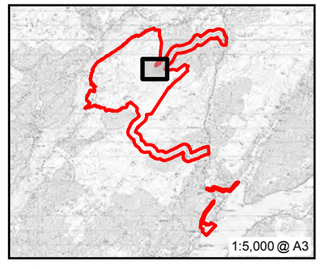
- Development Boundary
- Headpond
- Headpond Embankments

Above Ground Infrastructure

- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Switching Station
- Permanent Construction Compound

Peat Probe Location and Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.51 - 5.00
- 5.01 - 7.20



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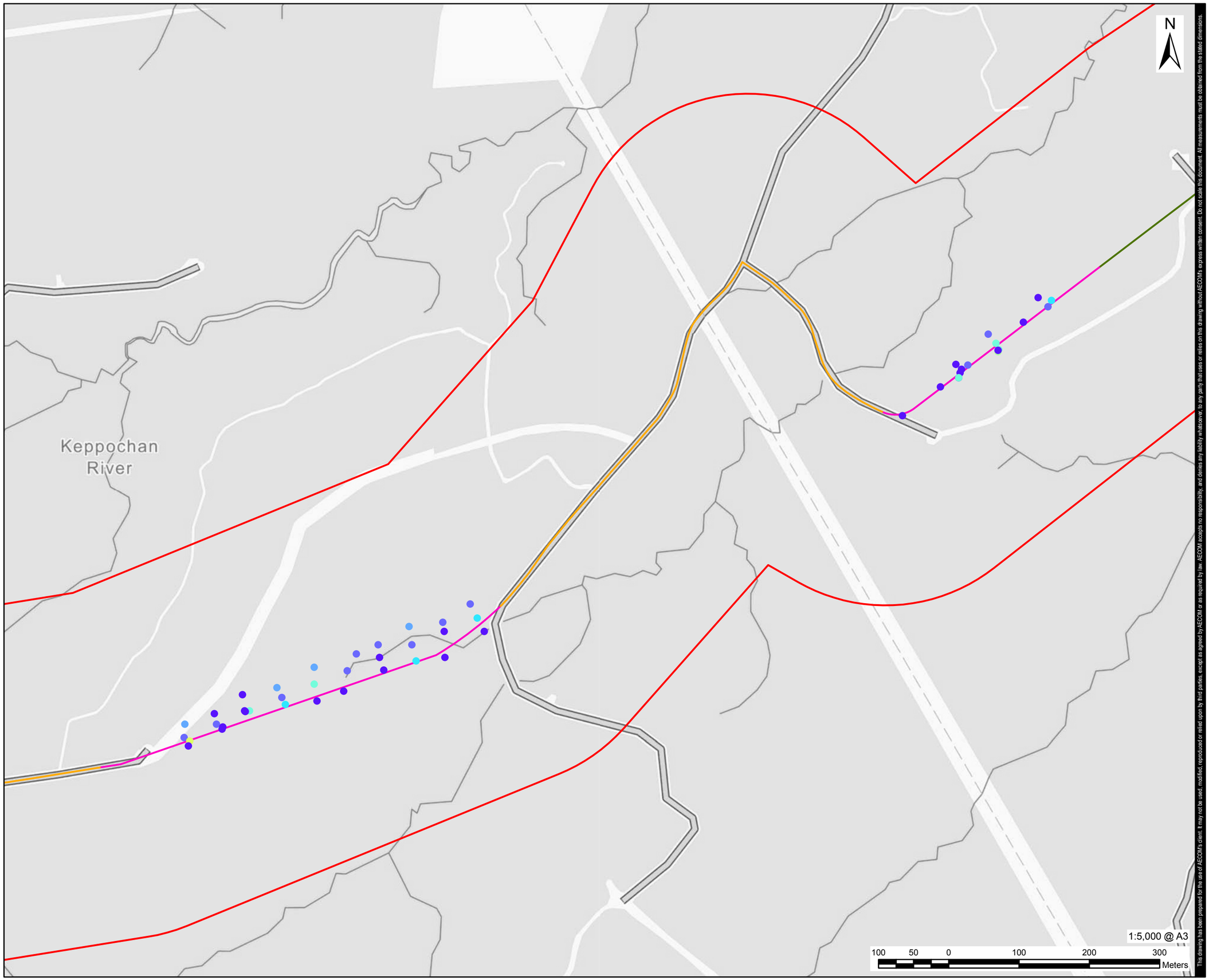
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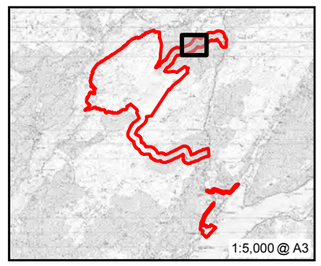
- Development Boundary

Above Ground Infrastructure

- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated

Peat Probe Location and Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50



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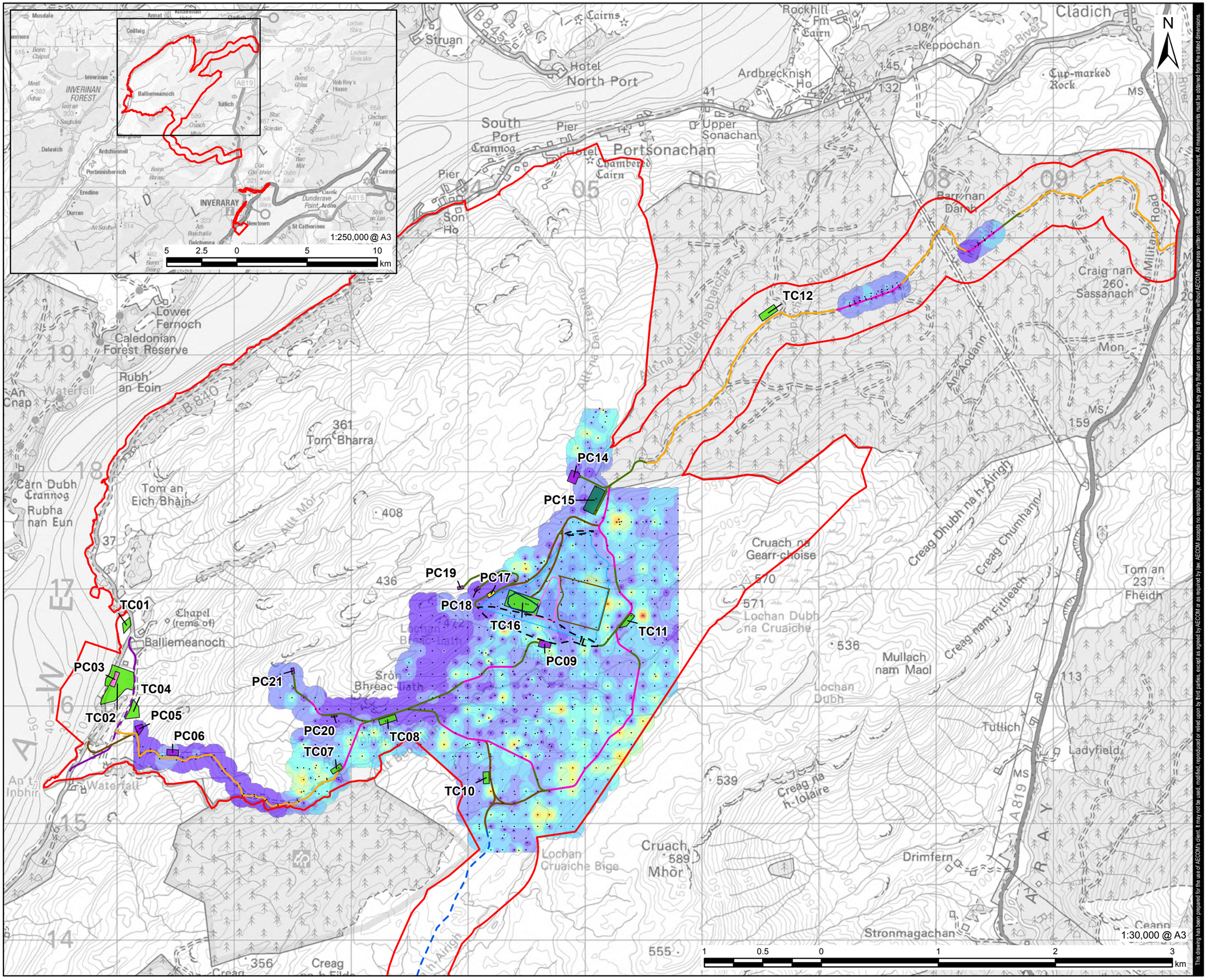
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FIGURE NUMBER

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Edinburgh
EH3 5DA
www.aecom.com

LEGEND

- Development Boundary
- Headpond
- Headpond Embankments
- Peat Probe Location - Total number of peat probes taken from all surveys to date

Above Ground Infrastructure

- B840 Diversion - Permanent, New, Excavated
- B840 Diversion - Permanent, Upgrade, Excavated
- Spillway
- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Proposed Blarghour wind farm access track
- Upper Control Works
- Basin
- Borrow Area
- Switching Station
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House
- Lower Gate House
- Marine Facility

Peat Depth Interpolation (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01 +

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FIGURE TITLE

Peat Depth Interpolation Plan

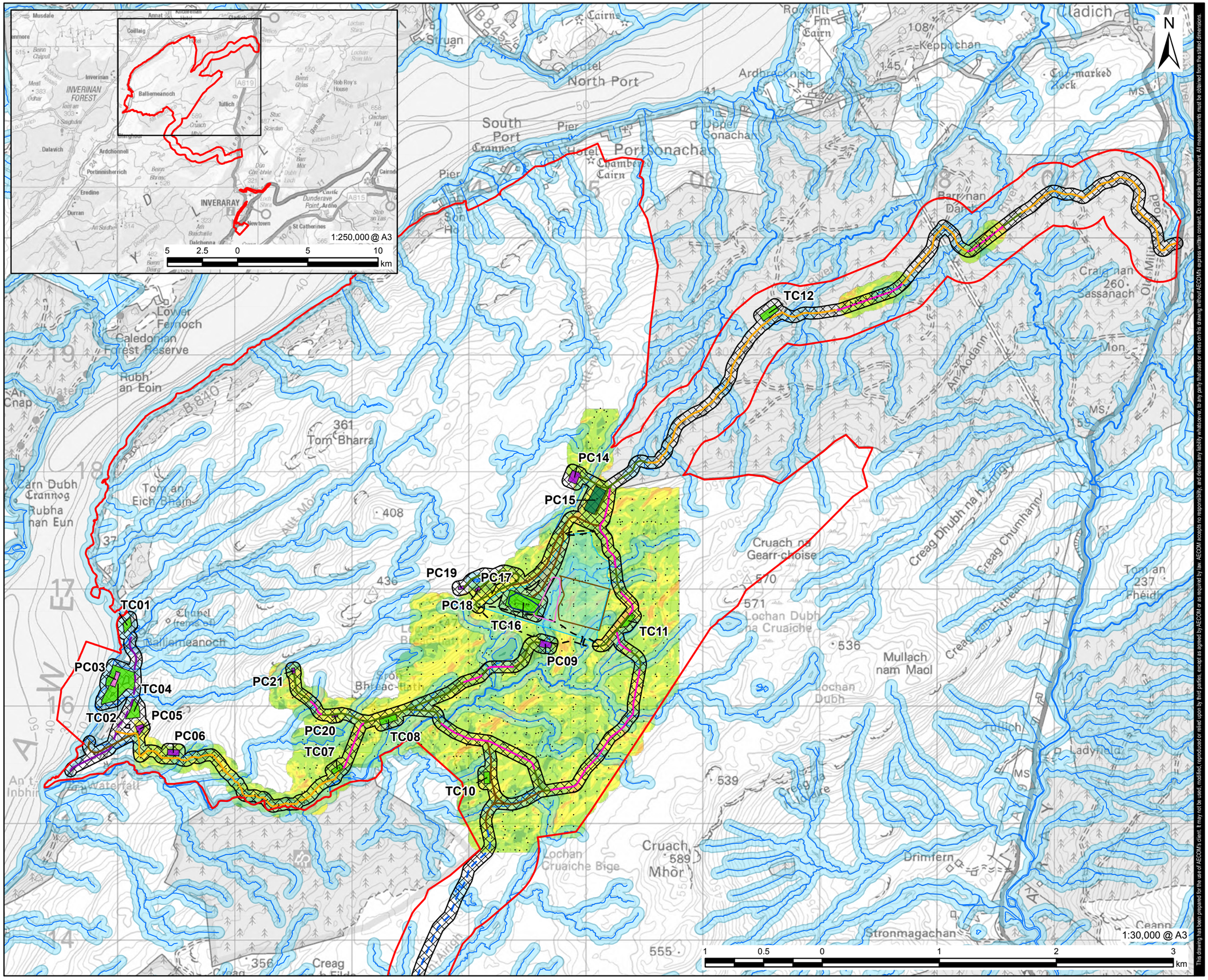
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Edinburgh
EH3 5DA
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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments

Above Ground Infrastructure

- B840 Diversion - Permanent, New, Excavated
- B840 Diversion - Permanent, Upgrade, Excavated
- Spillway
- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Proposed Blarghour wind farm access track
- Upper Control Works
- Basin
- Borrow Area
- Switching Station
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House
- Lower Gate House
- Marine Facility
- Above Ground Infrastrucure - 50m Buffer
- Watercourses
- Watercourse - 50m Buffer

Peat Slide Assessed Hazard

- Negligible
- Unlikely
- Likely
- Probable
- Almost Certain

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FIGURE TITLE

Preliminary Peat Landslide Hazard and Risk Assessment

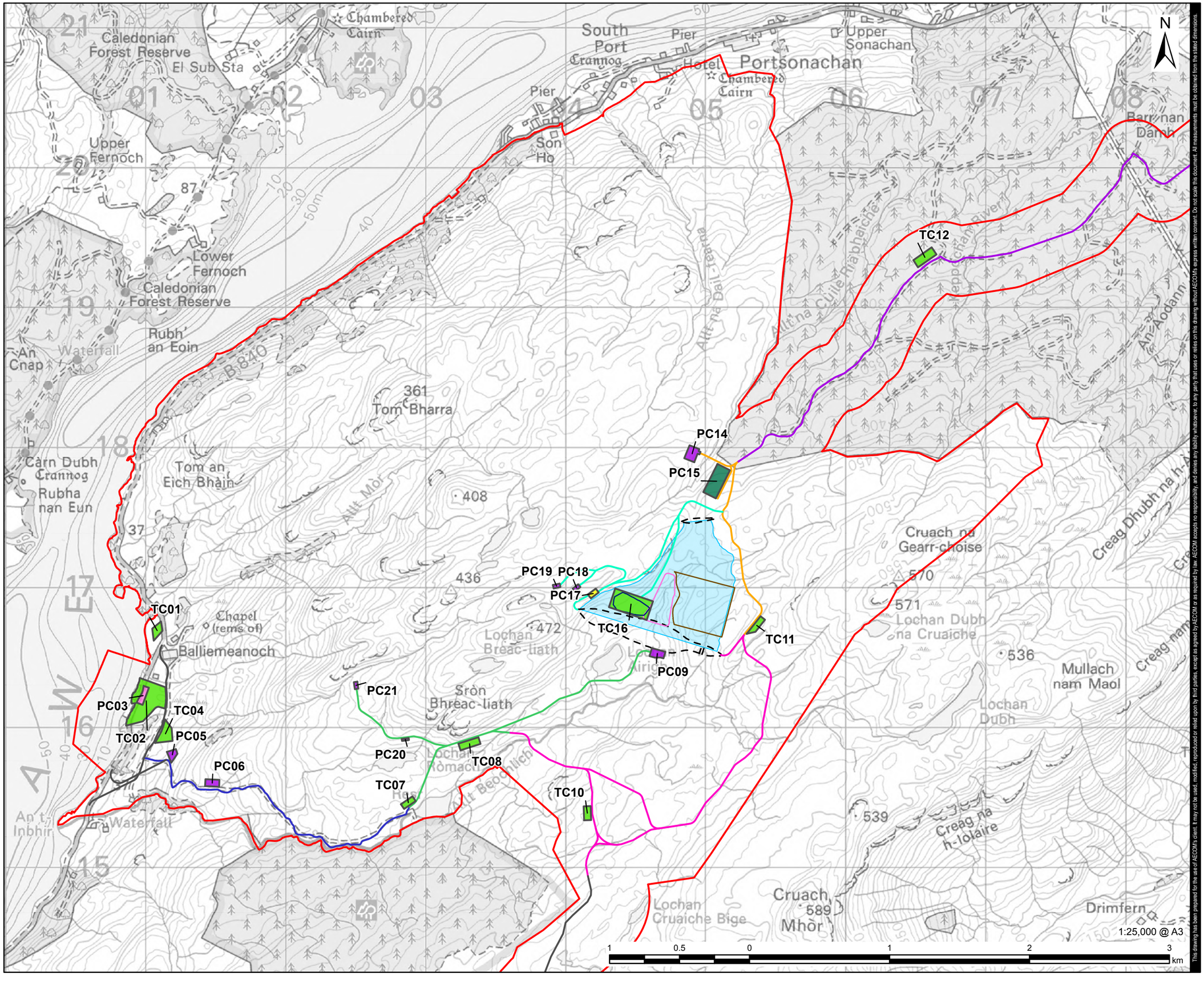
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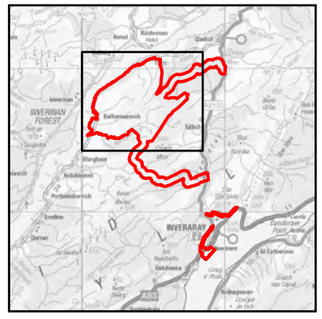
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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments
- Upper Control Works
- Basin
- Borrow Area
- Switching Station
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House
- Lower Gate House
- Marine Facility

Access Track Sections

- Section 1
- Section 2
- Section 3
- Section 4
- Section 5
- Section 6
- Proposed Blarghour Wind Farm Access Track



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FIGURE TITLE

Access Track Sections

FIGURE NUMBER

Figure 10.3.11

Appendix G Outline Peatland Restoration Plan

Balliemeanoch Pumped Storage Hydro

FEI: Outline Peatland Restoration Plan

ILI (Borders PSH) Ltd

June 2025

Delivering a better world

Quality Information

Prepared by	Checked by	Verified by	Approved by
MP	ND (MCIEEM)	TM (MCIEEM)	DL
Ecology Placement	Associate Director (Ecology)	Technical Director (Ecology)	Technical Director

Issue History

Issue	Issue Date	Details	Authorised	Name	Position
1	21/06/2025	Final	DL	David Lee	Technical Director

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1. Introduction

1.1 Background

1.1.1 This outline Peatland Restoration Plan (oPRP) has been prepared as part of a Further Environmental Information request, and supplements **Chapter 6: Terrestrial Ecology** of the EIAR **(Volume 2: Main Report)**. It provides an outline of proposed peatland restoration and management measures to address blanket bog impacts incurred by the Proposed Development. It also indicates the extent of required compensation as per NatureScot guidance, to which the Applicant is committed. Also relevant is the outline Peat Management Plan (oPMP) presented in **Appendix 10.2: Outline Peat Management Plan (Volume 5: Appendices)** of **Chapter 10: Geology and Soils (Volume 2: Main Report)** where information regarding peat management (e.g. excavation, storage, and management of peat) is presented. Information in relation to the peat baseline, including peat depth probing, is also presented in **Chapter 10: Geology and Soils (Volume 2: Main Report)**.

1.1.2 This oPRP has been developed owing to the identification of extensive peatland habitat including blanket bog within the footprint of the Proposed Development, and a requirement to compensate for loss of blanket bog by restoring blanket bog in accordance with the 1:10 lost:compensation ratio (+10% enhancement) stipulated by NatureScot. Upon the Proposed Development receiving consent, the oPRP will be refined and expanded, including for off-site restoration which will necessarily constitute the majority of the compensatory restoration area. These details will then be included in a final PRP.

1.1.3 **Note that the peatland restoration outlined in this document supersedes and replaces the blanket bog rehabilitation set out in Appendix 5.4 Landscape and Ecology Management Plan (Volume 5: Appendices) of the EIAR.**

1.2 On-site / Off-site Terminology

1.2.1 It is important to note that to address the 1:10 lost:compensation ratio (+10% enhancement), the majority of restoration must be undertaken off-site. For the purposes of this oPRP, 'on-site' means within the application boundary (and within ownership of the same estate within which the Proposed Development is located). Accordingly, 'off-site' means outside application boundary.

1.3 Plan Objectives

1.3.1 This oPRP has been prepared to set out the principles to be adhered to during design, construction, operation and decommissioning of the Proposed Development in relation to peatland restoration.

1.3.2 Once finalised, in consultation with relevant stakeholders, the measures outlined within this oPRP, when implemented, aim to conserve, restore and enhance peatland to an appropriate extent that fulfils the stipulated compensation and enhancement ratio. It will enable areas of peatland to be restored and enhanced in a manner which would not be possible without intervention.

1.3.3 The final plan will include detailed restoration methods, and a monitoring programme to identify and report on the efficacy of management measures. This will allow for dynamic changes or interventions that may be required.

1.3.4 The main management objective of this oPRP is to restore degraded blanket bog areas to functioning open blanket bog systems, which will act as long-term carbon stores and increase biodiversity value. In proposing methods for management, this oPRP addresses and applies current best practice and expertise in peatland restoration operations with reference to NatureScot's *Peatland Action Technical Compendium*[1].

1.4 Quality Assurance and Statement of Authority

1.4.1 This document has been prepared in accordance with the AECOM Integrated Management System (IMS). AECOM's IMS places emphasis on professionalism, technical excellence, quality, as well as covering health, safety, environment, and sustainability management. All AECOM staff members are committed to maintaining

[1] NatureScot (2022). *Peatland Action – Technical Compendium* (online). Available at: https://www.nature.scot/doc/peatland-action-technical-compendium (Accessed 4 March 2025).

AECOM's accreditation to those parts of BS EN ISO 9001:2015 and 14001:2015 that are relevant to a consultancy service.

2. Baseline Conditions

2.1 Definitions of Peat and Blanket Bog

2.1.1 NatureScot peatland guidance[2] defines peat as "*an organic soil which contains more than 60% of organic matter and exceeds 50 cm in thickness*". Scotland's National Peatland Plan[3] also includes organic soil less than 50 cm which can support typical peatland vegetation in their definition of peat.

2.1.2 SEPA guidance[4] describes the two peat layers as follows:

- Acrotelmic: the upper layer, quite fibrous and contains plant roots etc. Acrotelmic peat is relatively dry and has some tensile strength, usually less than 300 mm deep but may be up to 500 mm; and
- Catotelmic: the lower layer, highly amorphous, with very high water content and tends to have very low tensile strength. The structure of catotelmic peat tends to disrupt completely on excavation and handling.

2.1.3 **Appendix 10.2: Outline Peat Management Plan (Volume 5: Appendices)** of **Chapter 10: Geology and Soils** of the EIAR **(Volume 2: Main Report)** provides further detail on peat probing results.

2.1.4 Note that for the purposes of defining what is blanket bog, NatureScot take the standard approach of requiring 0.5 m or more peat depth. Some vegetation, such as wet heath, can occur on 0.5 m or more peat depth, and is then considered (modified) blanket bog. However, as explained in the next section, for the purposes of establishing viable areas for peatland restoration a minimum peat depth of 0.3 m is used.

2.2 Existing Peatland Habitats

2.2.1 Baseline habitats within the surveyed area in and around the Proposed Development Site are detailed in **Chapter 6: Terrestrial Ecology** of the EIAR **(Volume 2: Main Report)**, and associated **Appendix 6.3: Habitats (Volume 5: Appendices)**. The majority of habitat within the footprint of the Headpond and access tracks on the moorland comprises blanket bog, with wet heath occurring in strips and patches and most extensively on the higher ground west of the Headpond. There are now no lochans within the revised footprint of the Headpond; the nearest is is at closest approximately 80 m south of the southern Headpond embankment and 25 m from the nearest access track.

2.2.2 Peatland habitats identified during baseline Phase 1 and National Vegetation Classification (NVC) surveys were assigned Peatland Action[5] categories. The peatland categories of 'eroding: hagg and gully' and 'flat bare peat' were mapped in GIS with the aid of aerial photography. A 30 m buffer was applied to these to give the 'drained' category. As per Peatland Action guidance[5], this 30 m buffer could include peatland habitats on interpolated peat depths down to 0.3 m depth. Wet sphagnum-rich areas were assigned the 'Near Natural' category (this included any polygons with 70% or more flat and wet M17a; a few polygons with 60% or less M17a have been shown as partly Near Natural on **Figure 1** in **Annex A** of this document. Bog within the survey area not falling into the 'Hagg/Gully', 'Flat Bare Peat', 'Drained' or 'Near Natural' categories is dominated by drier forms and was assigned to the 'Modified' Peatland Action category. Some habitat polygons support mosaics of such drier bog and ineligible rocky wet heath, and have been shown as partly 'Modified' on **Figure 1** in **Annex A** of this document.

2.2.3 Small amounts of infrastructure lie beyond the detailed habitat survey area, owing to alterations to the design. This comprises small parts of three permanent and temporary compounds shortly east, north and west of the Headpond, and the entirety of a very small permanent compound and approximately 500 m of associated access track on high ground 1.6 km south-east of the Headpond. These areas are all within the peat probing survey extent, and interpolated peat depth was therefore used to inform the habitat. In nearly all these small extents

[2] NatureScot (2023). *Advising on peatland, carbon-rich soils and priority peatland habitats in development management*. (online). Available at: https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management (Accessed 4 March 2025).
[3] SNH (2015). *Scotland's National Peatland Plan – Working for our future* (online). Available at: https://www.nature.scot/doc/scotlands-national-peatland-plan-working-our-future (Accessed 4 March 2025).
[4] SEPA (2017). *Developments on peat and off-site uses of waste peat* (online). Available at: https://www.sepa.org.uk/media/287064/wst-g-052-developments-on-peat-and-off-site-uses-of-waste-peat.pdf (Accessed 4 March 2025).
[5] NatureScot (2021). *Peatland Action, Peat Depth and Peatland Condition Survey* (online). Available at https://www.nature.scot/doc/peatland-action-peat-depth-and-peat-condition-survey-guidance-and-recording-form-guidance (Accessed 4 March 2025).

(including both direct loss and indirect modification zones), interpolated peat depth was 0.3 m or more and the habitat was assumed to be blanket bog. A precautionary approach was taken and the habitat was assumed to be blanket bog even where adjacent field survey data was partly not bog. The assigned Peatland Action category in this cases was Modified, based on adjacent habitat data and topography which suggested that the bog was drier and Near Natural was improbable. Small parts of the aforementioned section of access track with less than 0.3 m of peat were assumed to be wet heath, based again on nearby field survey data.

2.2.4 Categorisation of the blanket bog according to the Peatland Action types indicates that scattered patches of blanket bog (several of which are large) are drained (i.e. lying within 30 m of haggs/gullies or flat bare peat). Outside of drained areas, the majority of the bog is drier (either M19 or M17b) and falls into the Peatland Action Modified category. Although some of this Modified category (approximately 20% of all impacted blanket bog) was classed during field survey as Phase 1 modified bog (see **Figure 6.3 Phase 1 Habitats (Volume 3: Figures)**, and **Appendix 6.3: Habitats (Volume 5: Appendices)**), other parts are nevertheless more natural. However, whilst on some blanket bog sites dwarf birch *Betula nana* can be an important and notable bog species (often in drier bog that would fall into the Peatland Action Modified category if not drained), none was found at this Site. The notable bog sphagna *Sphagnum austinii* and *Sphagnum fuscum* were recorded, however the only two recorded locations on this Site are not impacted by the Development, directly or by indirect habitat modification (see **Appendix 6.3: Habitats (Volume 5: Appendices)** of the EIAR regarding the locations of these sphagna). The Peatland Action category of Near Natural, with continuous wet ground containing abundant sphagna, is present in flatter areas, however much less is now impacted by the revised smaller Headpond design, and there is much more beyond impact (see **Figure 1** in **Annex A** of this document).

2.2.5 No obvious evidence of peat cutting was recorded. Local recent evidence of burning of blanket bog was recorded,, however, thus it is likely that burning has previously also taken place in across other parts of the blanket bog, and this may have contributed to the low cover of ericoids in some parts.

2.2.6 Whilst grazing pressure can also contribute to reduced ericoid cover, the reported deer density is relatively low. Published deer density for the Inveraray and Tyndrum Deer Management Group, according to the deer management plan[6], indicates that in February 2017 the deer count was 3,883 giving an average density was 7.3 deer km^{-2}. During the latest count in March 2022, overall deer numbers had been reduced to 3,084 giving a further reduced and **relatively low density of 5.8 deer km^{-2}**. At these deer densities, significant damage to upland vegetation (or peatland restoration areas) as a result of deer pressure is considered unlikely.

2.3 Impacted and Compensation Extents

2.3.1 Whilst the Proposed Development has been designed to minimise impacts on the peatland as far as reasonably practicable, and the impact has been much reduced by the revised smaller Headpond footprint, it is not possible to avoid blanket bog which is abundant in the vicinity of the Headpond (the location of which is largely fixed by topography)) and nearby areas. The majority of blanket bog that would be permanently lost or indirectly modified falls into the Modified Peatland Action category. About 20% falls into the Near Natural category (flatter areas with a significant proportion of the wetter NVC type M17a), and there are small areas of Drained bog with gullying within the revised Headpond footprint (see **Figure 1** in **Annex A** of this document).

2.3.2 Impacted blanket bog, accounting for all permanent and temporary infrastructure, and 30 m buffers for indirect habitat modification, is quantified below:

- Permanent direct loss: 44.98 ha
- Permanent indirect modification: 46.83 ha
- Permanent indirect modification also subject to temporary loss: 8.56 ha
- Temporary direct loss: 2.52 ha
- Temporary indirect modification: 12.53 ha
- **Total impacted bog: 115.43 ha (1.15 km^2)**

2.3.3 Consequently, compensatory restoration at a 1:10 ratio, with an additional 10% of the impacted area as enhancement, gives a **compensatory restoration area of 11.66 km^2** (11.54 km^2 + 0.12 km^2).

[6] Available here: https://inverarayandtyndrumdmg.deer-management.co.uk/deer-management/

2.3.4 Identified **on-site** restoration (as shown on **Figure** 1 in **Annex A** of this document and in **Table** 1 below) amounts to **1.45 km^2**.

2.3.5 This leaves an **off-site** restoration requirement of **10.21 km^2**.

3. Proposed Restoration Measures

3.1 Governance and Implementation

3.1.1 Given that this oPRP proposes management measures over an extensive area, both on-site and off-site, it is proposed that the final PRP be governed by a Habitat Management Group. The Habitat Management Group would be responsible for approving and overseeing delivery of the final PRP. Members of the group would include:

- The Applicant and their representative(s);
- NatureScot; and
- Other relevant landowners and/or land managers, in particular those associated with off-site works, once these are agreed with landowners and with NatureScot.

3.1.2 The Applicant would be responsible for preparing the final PRP.

3.1.3 Other relevant parties and/or stakeholders would be engaged or consulted as necessary during the development, and prior to implementation, of the final PRP.

3.2 Best Practice Techniques and Principles

3.2.1 The *Peatland Action Technical Compendium*[1] was reviewed to inform peatland restoration techniques and interventions that would be appropriate for inclusion within this oPRP, with reference to the existing baseline conditions within the Proposed Development Site and adjacent areas, and characteristics and features of areas identified for restoration (which are discussed in the next Section). On this basis, the primary guidance from the *Peatland Action Technical Compendium* that is relevant to on-site works is related to gully and bare peat restoration[7]. The same techniques are likely to be relevant to off-site restoration.

3.2.2 Restoration techniques for bare peat and gullies aim to stop further loss/erosion of peat from bare peat surfaces (both vertical or horizontal are relevant) by the combined actions of wind, water, oxidation, and other pressures, through reestablishing vegetation on such surfaces. Restoration of haggs or bare peat may require reprofiling and/or revegetation interventions, however it must be noted that gullies have the additional factor of acting as watercourses and therefore may need additional considerations.

3.2.3 Important factors to consider in relation to planning restoration works include:

- The geomorphological and hydrological characteristics of the area proposed for restoration;
- The width, gradient, depth, steepness of sidewalls and base material of gullies, which are key in relation to flow management, stabilisation, and revegetation;
- Whether reprofiling is required. Steep peat faces found in haggs and gully sides cannot be readily vegetated, therefore the gradient needs to be reduced;
- The chemical conditions and nutrient status of the bare peat, which can affect the vegetation types that can colonise;
- Whether natural regeneration of vegetation is appropriate, or whether interventions are required for revegetation;
- Where peat turves will originate from, for example, if they will be sourced directly from excavation during construction, or whether donor/borrow pits will be required;
- Practical issues, for example, how an area will be accessed to carry out restoration works (both in terms of personnel and machinery), choosing an appropriate type and size of machinery, and considering the need for mats to allow tracking over sensitive habitats; and
- The intended outcome for an area where restoration works are carried out and ensuring that the cause of erosion has been addressed (e.g. water flow, grazing pressure).

[7] NatureScot (2022). *7. Gully and Bare Peat Restoration: Stabilisation and Revegetation* (online). Available at: https://www.nature.scot/doc/peatland-action-technical-compendium-restoration-7-stabilisation-and-revegetation (Accessed 4 March 2025).

3.2.4 The potential areas identified for peat restoration are herein termed ‘Restoration Areas’, and have been identified based on habitat surveys and interpretation of aerial imagery, and location within the ownership of the estate that the Proposed Development is situated in.

3.2.5 The best approach to restore the Restoration Areas will be mainly through reprofiling, and gully blocking using *in situ* adjacent peat. Some Restoration Areas may require some level of hydrological intervention to avoid slumping, sliding, or further erosion of peat. This may be through the installation of damming structures or by appropriate reprofiling of haggs/gullies.

3.2.6 Where reprofiling is required, the requirements for machinery would be determined, including appropriate types and size e.g. typically an excavator on low pressure tracks with toothed bucket (ideally with universal tilt bucket, to help scrape/stretch turves when re-covering ground) is generally appropriate, however size and type will depend on the characteristics of the Restoration Area (e.g. what length of reach is required), and access (e.g. ground conditions). In several cases access would be straightforward from constructed tracks for the Proposed Development. Elsewhere, there are generally swathes of drier bog and/or wet heath that would be most appropriate to access across. Use of bog matting may be required if it is necessary to traversing wetter bog. During reprofiling, vegetation would be carefully rolled back, preserving the root structure, and banks reprofiled to 30-35°. Haggs greater than 2 m would be subject to machine reprofiling from above and below to ensure that the slope has adequate vegetation to prevent further eroding.

3.2.7 Restoration works would occur concurrently with construction (or if possible commence before construction).

3.2.8 As noted above, deer density in the relevant deer management area is quite low at 5.8 deer km^{-2}. Additionally, none of the proposed restoration areas are close to the lower parts of the moorland to the east, where livestock grazing appears more intense. As such, herbivore grazing and trampling pressure is considered very likely low enough to avoid damage to peatland restoration areas, however this would be monitored.

3.2.9 Considering the best practice techniques and principles described, coupled with the degree of access to the on-site Restoration Areas, it is considered that the majority of on-site restoration works will involve machine-based techniques. In regard to accessing on-site Restoration Areas, it is important to note that some are adjacent or close to construction tracks (which would eventually become narrower permanent tracks), and can therefore be very easily reached by machinery and personnel. Additionally, the surrounding terrain frequently includes substantial areas of wet heath and/or drier bog types, rather than more easily-damaged wet bog, such that pathways to the Restoration Areas that avoid more easily-damaged habitats would in many cases be feasible. Some areas may require local access across wetter areas using appropriate matting and/or low ground pressure vehicles.

3.2.10 It is important to note that an experienced peatland restoration contractor would be appointed for the peatland restoration works, and the contractor would be required to conduct thorough site assessments of all proposed Restoration Areas to develop and confirm detailed, location-specific working procedures tailored to the unique characteristics and challenges of each restoration area. This comprehensive site evaluation process would inform precise methodologies, access strategies, equipment selection, and material requirements for each Restoration Area, ensuring that restoration techniques are optimally adapted to site-specific conditions. This same rigorous approach of detailed site assessment and tailored methodological development would also be applied to all off-site restoration works.

3.3 Off-site Restoration Areas

3.3.1 To reach the required compensation and enhancement ratio stipulated by NatureScot, an off-site restoration area of approximately 10.21 km² is required. The locations of these areas are in the process of being identified and confirmed, with ongoing discussions with interested parties. The Applicant is committed to engaging with NatureScot to agree the specifics of off-site restoration in line with best practice to the extent required or agreed with NatureScot. The Applicant is in active discussion with major landowners upon whose land extensive peatland restoration would be possible. Areas for off-site peatland restoration would be within the same broad region as the Proposed Development. The final locations and extents of off-site restoration would be agreed with NatureScot post-application. All off-site restoration would be in accordance with the *Peatland Technical Compendium*, and proposed off-site restoration areas would be subject to survey to determine restoration extents.

3.3.2 An experienced peatland restoration contractor would be appointed who would inspect each off-site restoration area and detail precise methods to be used in each case, in accordance with the *Peatland Action Technical Compendium*.

3.4 On-site Restoration Areas

3.4.1 A total of 52 on-site Restoration Areas have been identified for on-site interventions and restoration works (as shown on **Figure 1** in **Annex A** of this document and in **Table 1** below), involving reprofiling, gully blocking and associated techniques. As noted, 'on-site' means within ownership of the estate that the Proposed Development lies in and on land over which the Applicant would have control.

3.4.2 Each Restoration Area comprises the area within a 30 m buffer corresponding to the Peatland Action 'Drained' category, around gullies and significant areas of flat bare peat. The Restoration Areas exclude the following:

- areas falling within the footprint of constructed infrastructure (permanent or temporary) or a 30 m habitat modification buffer upon constructed infrastructure (permanent or temporary);
- areas indicated by interpolated peat depths to contain less than 0.3 m peat depth;
- areas indicated by survey to be non-bog habitat without significant or any peat, or non-bog peat demonstrably not affected by drainage (such as acid flush and swamp);
- for cases outside the peat probing zone, occasional areas where surveyor familiarity with the wider area, topography, and experienced ecological assessment of aerial photography indicate a high likelihood of rocky wet heath with shallow peat of less than 0.3 m;
- two smaller zones for potential peatland restoration south of the Headpond, where the Applicant (as a result of Blarghour Wind Farm) does not have control over the land; and,
- a small area of drier bog on a small hill which is not hydrologically affected by gullying in adjacent low-lying wetter bog.

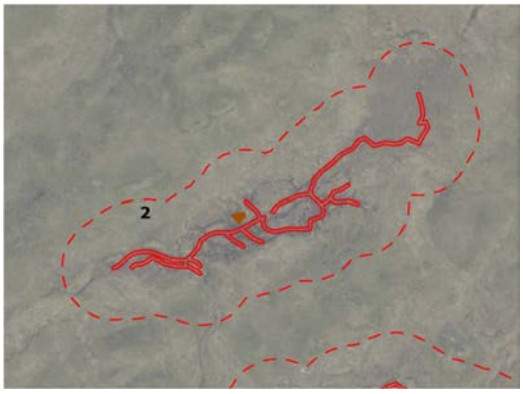
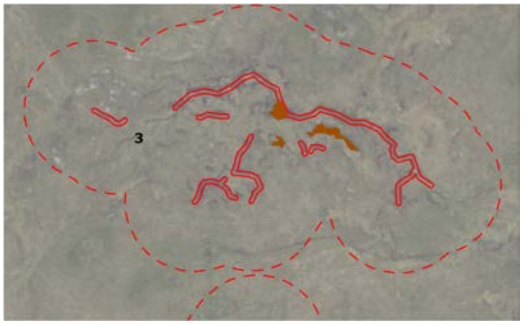
3.4.3 Of the Restoration Areas, 14 are within the area of the habitat survey (regarding which see **Appendix 6.3: Habitats (Volume 5: Appendices)**) or substantially intersect it, and the remaining 38 are located in the wider estate.

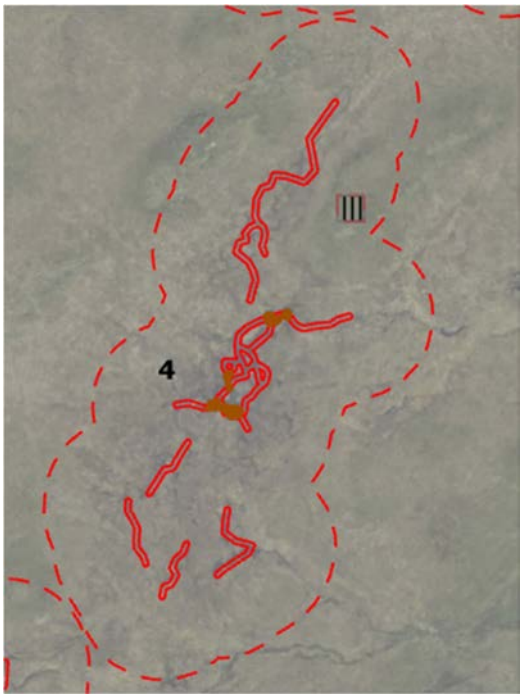
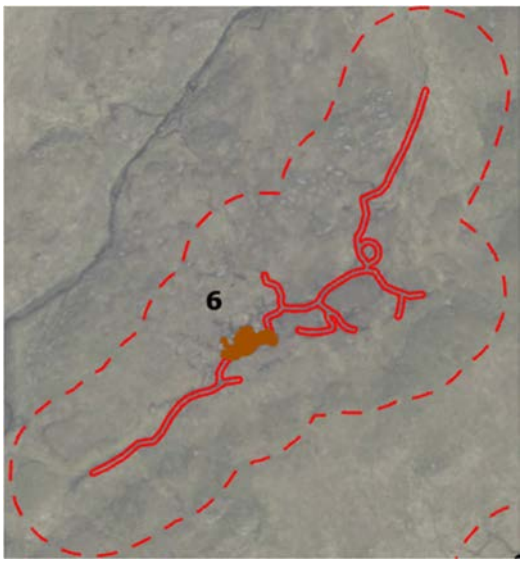
3.4.4 Below, **Table 1: Potential Restoration Areas identified for peatland restoration** presents details of the 52 Potential Restoration Areas identified for reprofiling, gully blocking and related techniques. This table contains information relevant to each Restoration Area, including a grid reference of the centre of the Restoration Area, area in m^2 (to the nearest metre) of the whole Restoration Area (including gullies and flat bare peat) and separate areas for gullies and flat bare peat, interpolated peat depth (where the peat probing survey extended, regarding which see **Chapter 10: Geology and Soils** of the EIAR **(Volume 2: Main Report)**), and brief note of National Vegetation Classification (NVC) where where within the detailed habitat survey area (regarding which see **Appendix 6.3: Habitats (Volume 5: Appendices)** and associated figures including **Figure 6.3 Phase 1 Habitats** and **Figure 6.4: NVC (Volume 3: Figures)**. Alongside each description, recommendations have been made for potential restoration techniques that could be employed, and potential access to each Restoration Area.

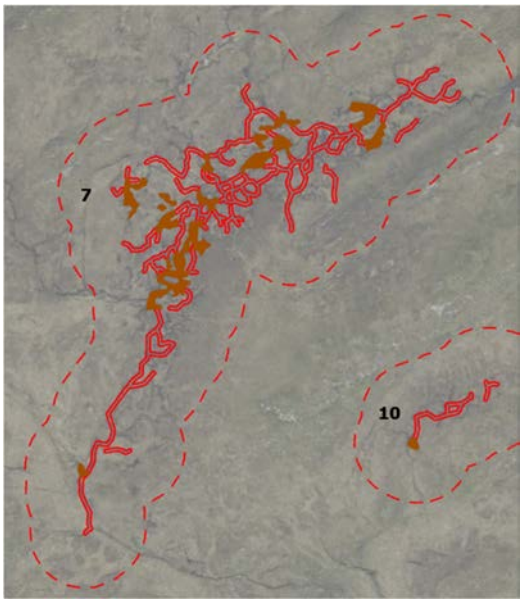
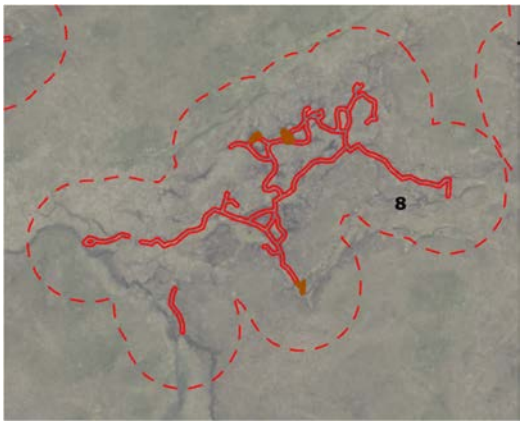
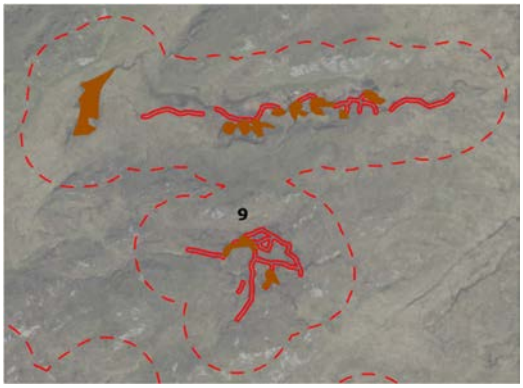
3.4.5 In the individual photos in the table, the Restoration Areas are indicated by a dashed red line (corresponding to the Peatland Action 'Drained' category) and are labelled with a Restoration Area reference number. The gullies within the Restoration Areas are indicated by solid red lines, and significant areas of flat bare peat are coloured brown. Where proposed infrastructure and buffers are within view, these are shown in black, showing zones of permanent loss (e.g. access tracks) with a 30 m buffer of potential indirect modification; where infrastructure is temporary it is shown with a dotted line. Scale is not provided, as the image is only presented to give an overview of the area. However, all on-site Restoration Areas are shown in the context of the Proposed Development and Peatland Action peatland categories in **Figure 1 in Annex A** of this document.

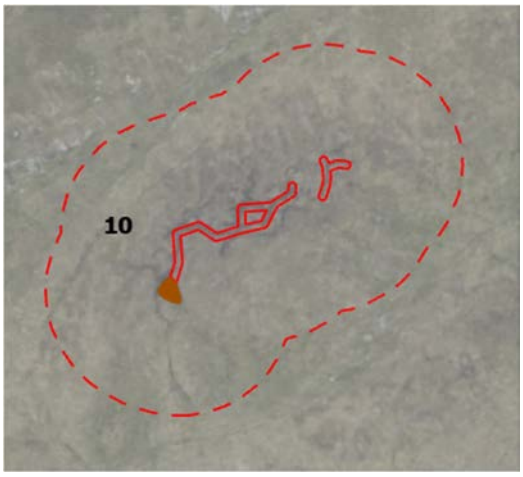
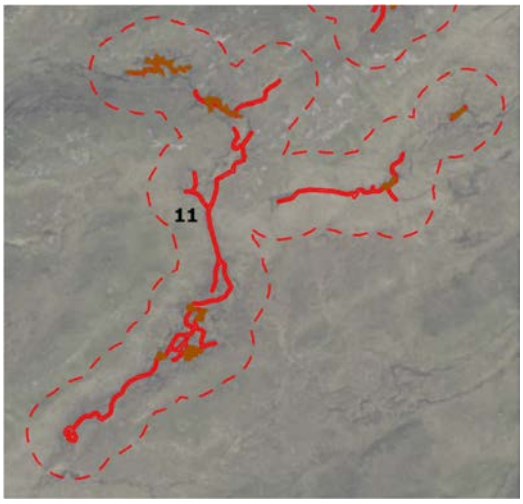
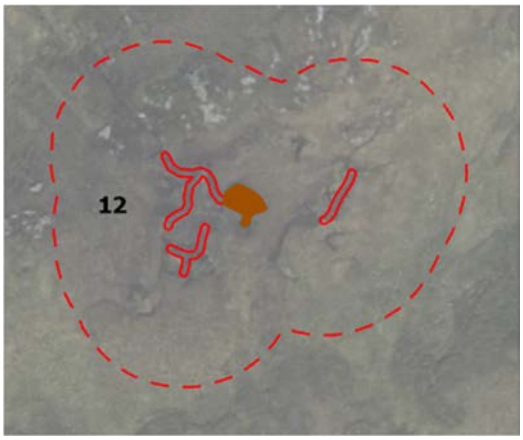
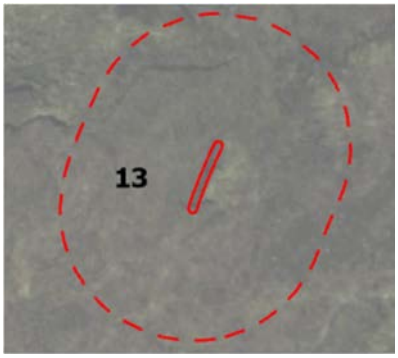
In Table 1 below, red channels are eroding gullies, brown patches are flat bare peat, and red dashed outlines are the Restoration Areas (which in places exclude areas of ground, shown with black hatching, for the reasons given in the text above).

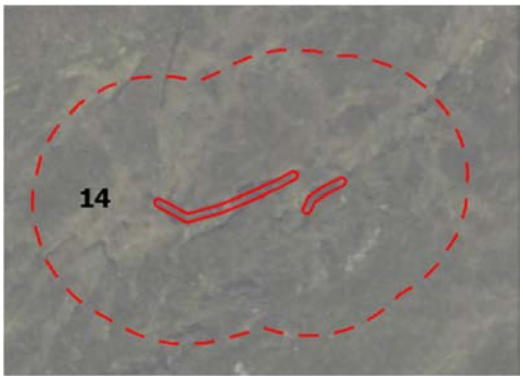
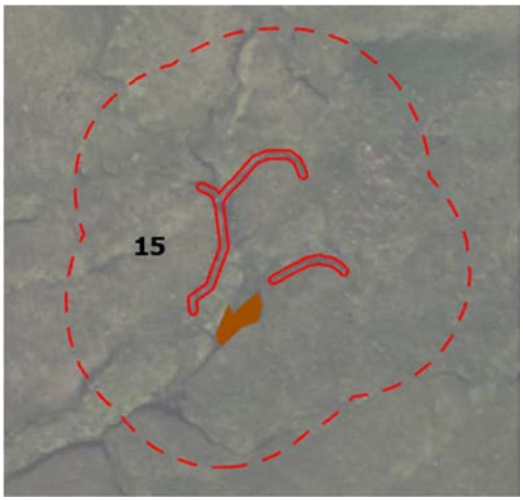
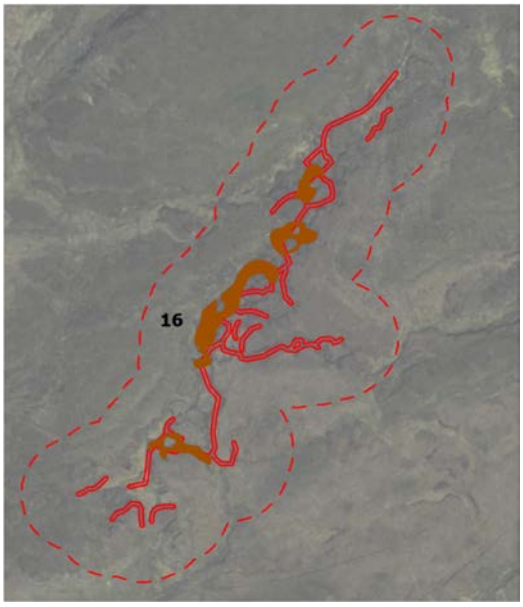
Table 1: Potential Restoration Areas identified for peatland restoration

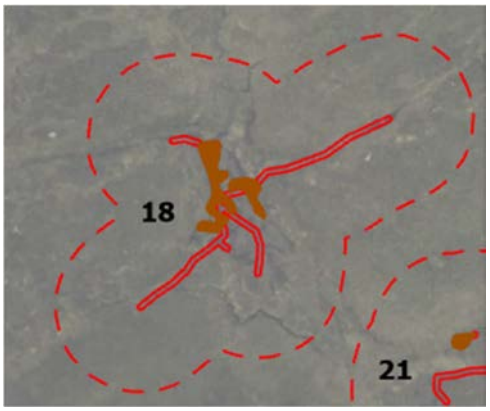
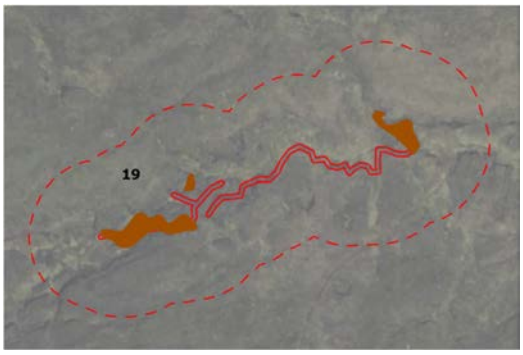
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 1 **Grid reference:** NN 03980 18840 **Areas:** Restoration Area - 14963 m^2 Gullies - 499 m^2 **Peat depth:** Outside peat probing zone **Description:** Erosion gullies in strip of blanket bog on high ground NW of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 2 **Grid reference:** NN 05032 18774 **Areas:** Restoration Area - 20841 m^2 Gullies - 899 m^2 Bare peat - 31 m^2 **Peat depth:** Outside peat probing zone **Description:** Erosion gullies and small amount flat bare peat in strip of blanket bog on high ground N of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 3 **Grid reference:** NN 05104 18633 **Areas:** Restoration Area - 17763 m^2 Gullies - 570 m^2 Bare peat - 100 m^2 **Peat depth:** Outside peat probing zone **Description:** Erosion gullies in patch of blanket bog on high ground N of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	

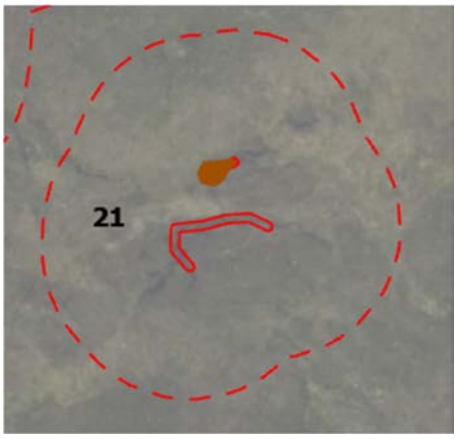
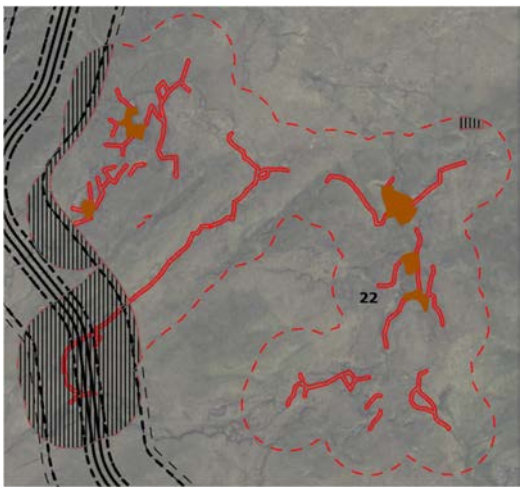
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 4 **Grid reference:** NN 05066 18448 **Areas:** Restoration Area - 21100 m^2 Gullies - 774 m^2 Bare peat - 105 m^2 **Peat depth:** Mostly In 1-3 m depth band, locally > 3 m and 0.5-1 m. Small patch less than 0.3 m depth, which is hatched in the figure and has been removed from restoration extent. **Description:** Erosion gullies and small amount flat bare peat in patch of blanket bog on high ground N of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 5 **Grid reference:** NN 03990 18484 **Areas:** Restoration Area - 9675 m^2 Gullies - 249 m^2 **Peat depth:** Outside peat probing zone **Description:** Erosion gullies in patchy blanket bog amongst wet heath on high ground NW of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 6 **Grid reference:** NN 04691 18412 **Areas:** Restoration Area - 18255 m^2 Gullies - 607 m^2 Bare peat - 136 m^2 **Peat depth:** Outside peat probing zone **Description:** Erosion gullies and patch of flat bare peat in blanket bog on high ground N of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	

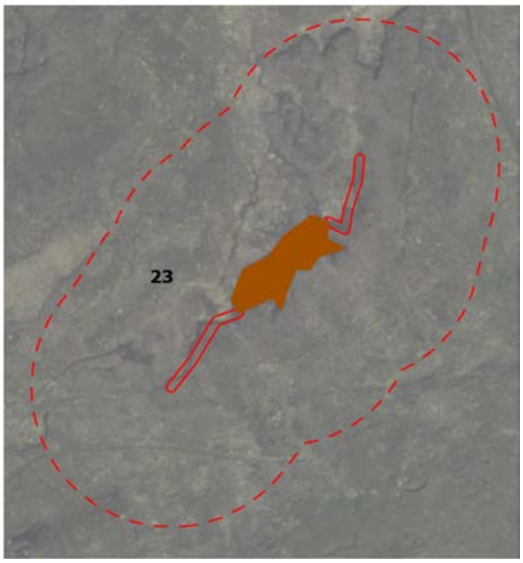
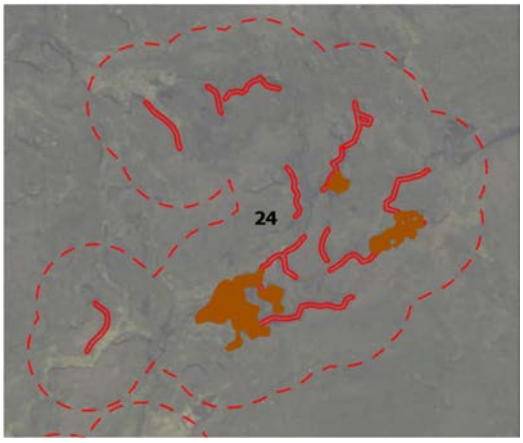
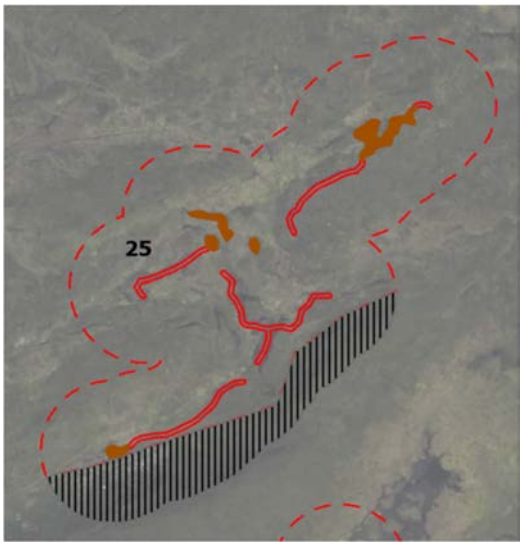
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 7 **Grid reference:** NN 04282 18357 **Areas:** Restoration Area - 39268 m^2 Gullies - 2247 m^2 Bare peat - 1192 m^2 **Peat depth:** Outside peat probing zone **Description:** Extensive erosion gullies and numerous patches of flat bare peat in blanket bog on high ground NW of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 8 **Grid reference:** NN 04881 18322 **Areas:** Restoration Area - 27580 m^2 Gullies - 1229 m^2 Bare peat - 90 m^2 **Peat depth:** Mostly in 1-3 m depth band, locally >3 m. **Description:** Erosion gullies in blanket bog on high ground N of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 9 **Grid reference:** NN 04004 18263 **Areas:** Restoration Area - 29964 m^2 Gullies - 711 m^2 Bare peat - 817 m^2 **Peat depth:** Outside peat probing zone **Description:** Erosion gullies and areas of flat bare peat, some large, in blanket bog on high ground NW of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	

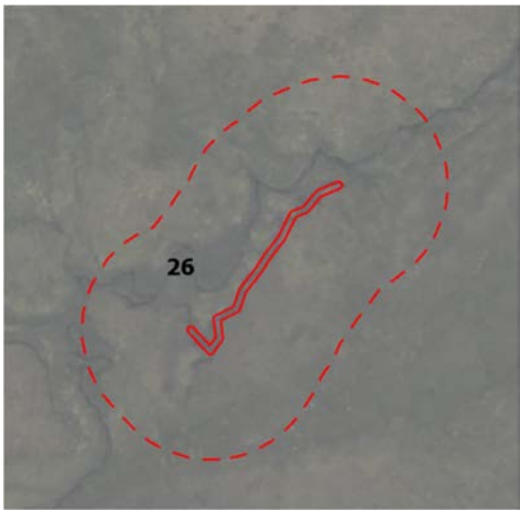
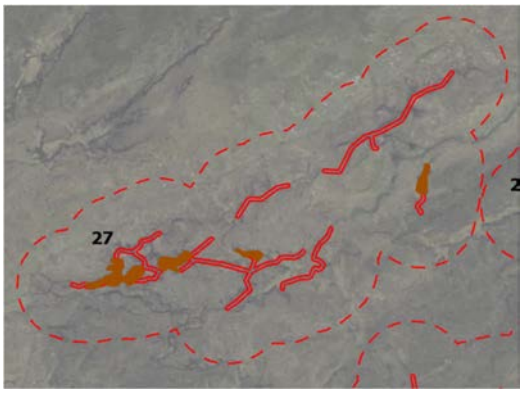
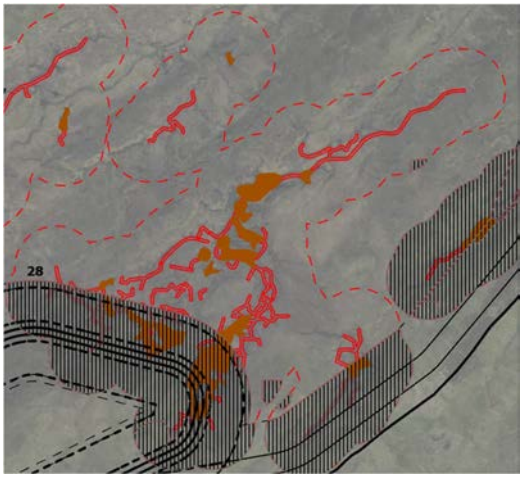
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 10 **Grid reference:** NN 04407 18261 **Areas:** Restoration Area - 7434 m^2 Gullies - 161 m^2 Bare peat - 26 m^2 **Peat depth:** Outside peat probing zone **Description:** Small number of erosion gullies and small amount of flat bare peat, in blanket bog on high ground N of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 11 **Grid reference:** NN 03888 18022 **Areas:** Restoration Area - 51974 m^2 Gullies - 1522 m^2 Bare peat - 734 m^2 **Peat depth:** Outside peat probing zone **Description:** Extensive erosion gullies and several patches of flat bare peat, in blanket bog on high ground NW of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 12 **Grid reference:** NN 04617 18057 **Areas:** Restoration Area - 8085 m^2 Gullies - 157 m^2 Bare peat - 69 m^2 **Peat depth:** Outside peat probing zone **Description:** Small area with short a few short erosion gullies and small amount of flat bare peat, in small patch of blanket below mountain slope N of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 13 **Grid reference:** NN 07535 18056 **Areas:** Restoration Area - 3989 m^2 Gullies - 34 m^2 **Peat depth:** Outside peat probing zone **Description:** Single short gully in blanket bog far east of Headpond	Restoration of eroded gully using blocking, potentially by hand.	

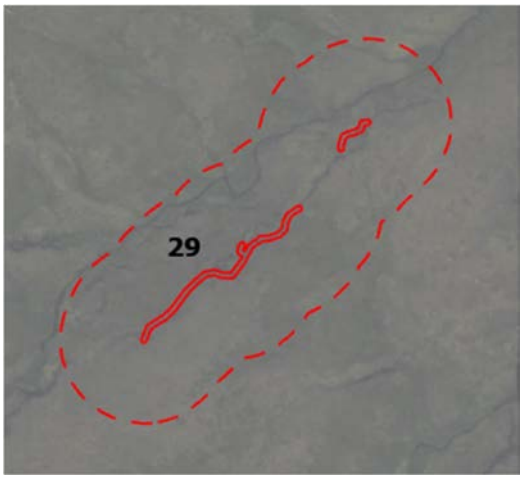
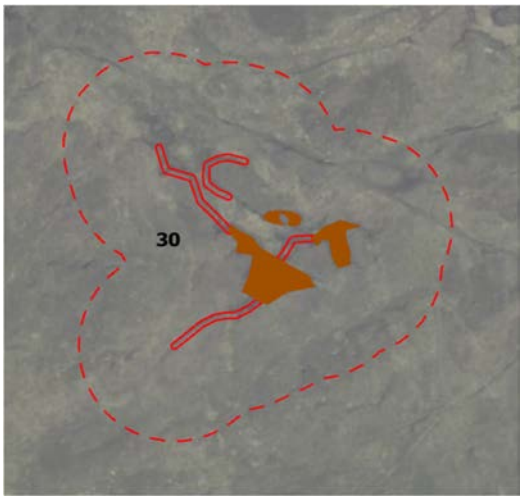
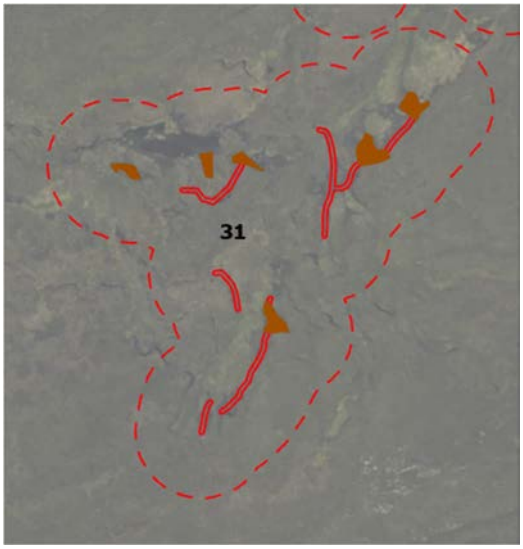
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 14 **Grid reference:** NN 07289 17862 **Areas:** Restoration Area - 6095 m^2 Gullies - 101 m^2 **Peat depth:** Outside peat probing zone **Description:** Two small gullies in blanket bog far east of Headpond	Restoration of eroded gully using blocking, potentially by hand.	
Area ID: 15 **Grid reference:** NN 07630 17793 **Areas:** Restoration Area - 8084 m^2 Gullies - 172 m^2 Bare peat - 58 m^2 **Peat depth:** Outside peat probing zone **Description:** Two moderately small gullies and patch of bare peat in blanket bog far east of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 16 **Grid reference:** NN 05531 17578 **Areas:** Restoration Area - 31883 m^2 Gullies - 1200 m^2 Bare peat - 1118 m^2 **Peat depth:** Mainly in 1-3 m depth band, some 0.5-1 m, very locally >3 m. **Description:** Extensive erosion gullies and several larger patches of flat bare peat, in blanket bog east of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	

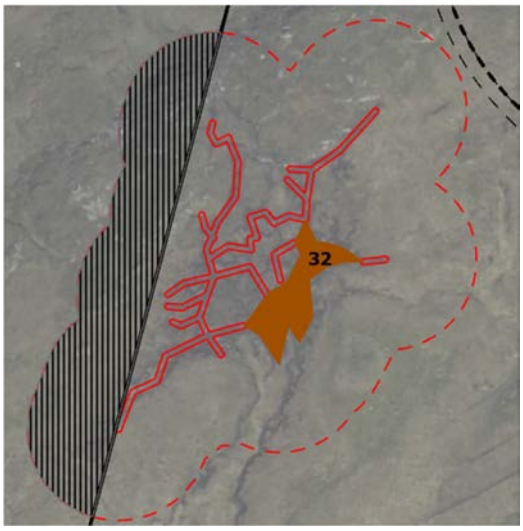
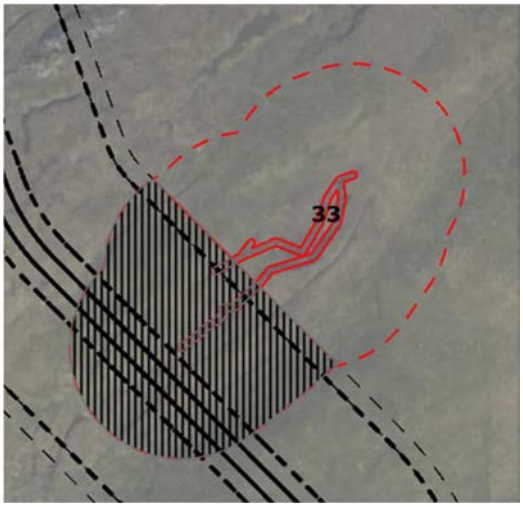
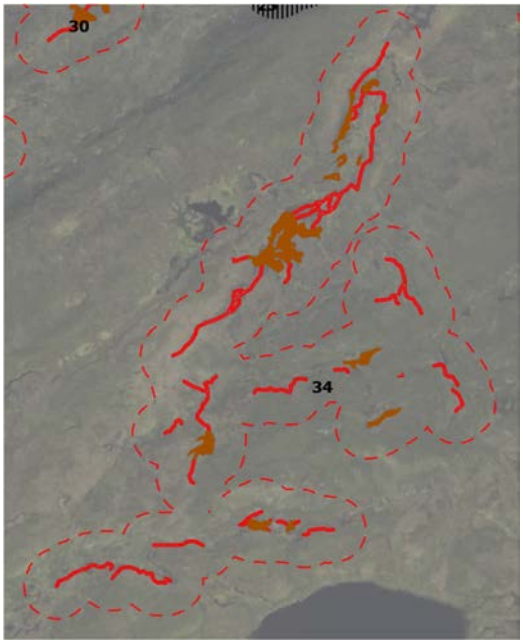
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 17 **Grid reference:** NN 07131 17653 **Areas:** Restoration Area - 11478 m^2 Gullies - 179 m^2 Bare peat - 55 m^2 **Peat depth:** Outside peat probing zone **Description:** A few smaller gullies and small patch of bare peat in blanket bog far east of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 18 **Grid reference:** NN 07426 17648 **Areas:** Restoration Area - 13207 m^2 Gullies - 311 m^2 Bare peat - 269 m^2 **Peat depth:** Outside peat probing zone **Description:** A few moderately long gullies and patches of bare peat in blanket bog far east of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 19 **Grid reference:** NN 05783 17639 **Areas:** Restoration Area - 14226 m^2 Gullies - 313 m^2 Bare peat - 424 m^2 **Peat depth:** Outside peat probing zone **Description:** A few long gullies and larger patches of bare peat in blanket bog east of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	

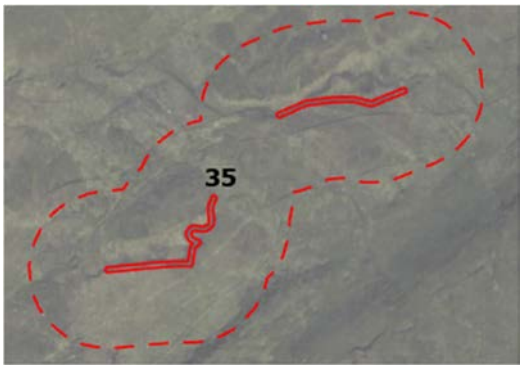
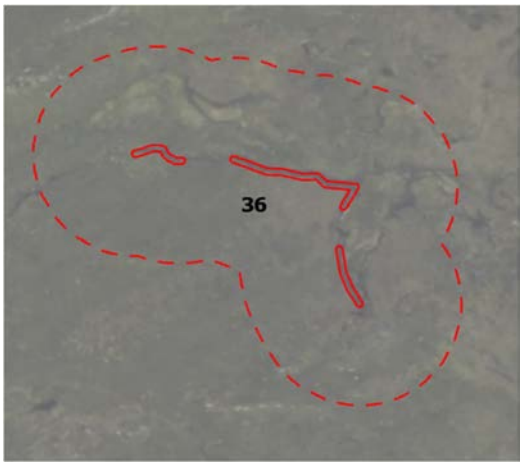
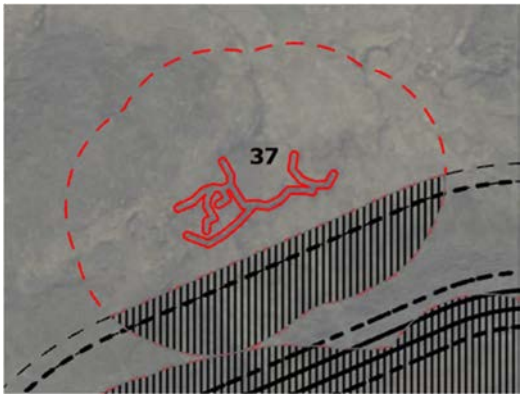
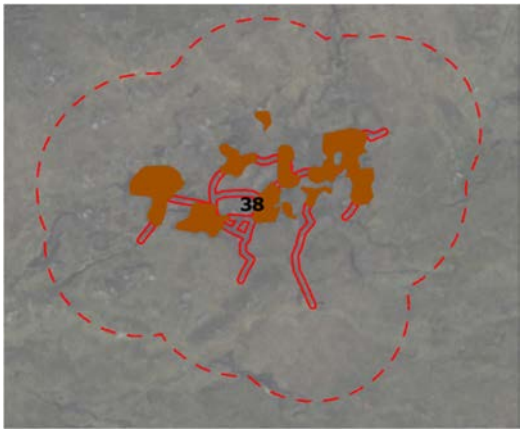
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 20 **Grid reference:** NN 03341 17552 **Areas:** Restoration Area - 12745 m^2 Gullies - 606 m^2 **Peat depth:** Outside peat probing zone **Description:** Several longer gullies in blanket bog on high ground west of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 21 **Grid reference:** NN 07505 17587 **Areas:** Restoration Area - 5495 m^2 Gullies - 70 m^2 Bare peat - 34 m^2 **Peat depth:** Outside peat probing zone **Description:** Small gully and bare peat patch in blanket bog far east of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 22 **Grid reference:** NN 05294 17451 **Areas:** Restoration Area - 51476 m^2 Gullies - 2009 m^2 Bare peat - 873 m^2 **Peat depth:** Mainly in the 1-3 m depth band, but a large north-west section has >3 m peat depth; there are also small areas of 0.5-1 m and rarely 0.3-0.5 m. **Description:** A larger area of many gullies and several medium to large flat bare peat patches shortly east of the Headpond and abutting the limit of 30 m habitat modification buffer on a permanent access track (part of the restoration area has been eliminated for this reason). This area is mainly M17b with a moderate proportion of M19.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is adjacent to a permanent access track and could easily be accessed from it.	

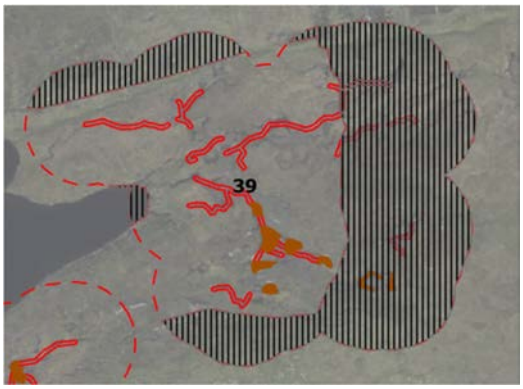
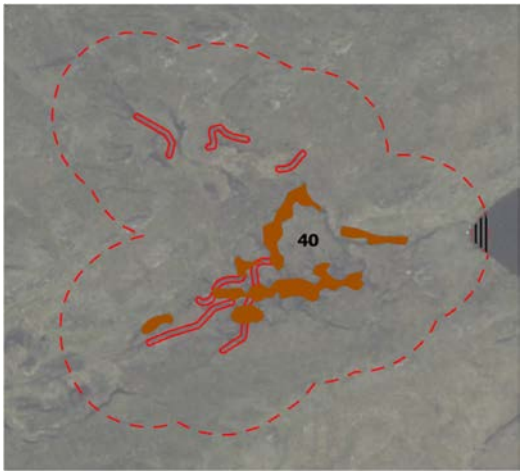
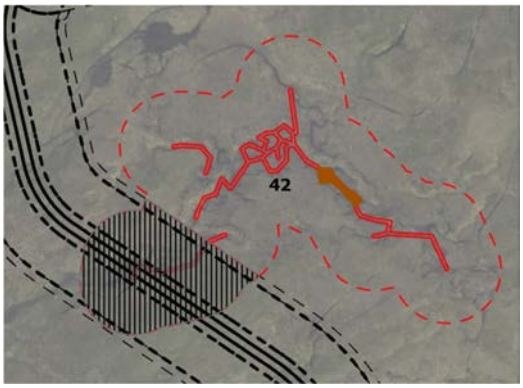
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 23 **Grid reference:** NN 05924 17511 **Areas:** Restoration Area - 7548 m^2 Gullies - 90 m^2 Bare peat - 217 m^2 **Peat depth:** Outside peat probing zone **Description:** Two smaller gullies and substantial bare peat area in blanket bog east of Headpond	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 24 **Grid reference:** NN 06525 17445 **Areas:** Restoration Area - 33259 m^2 Gullies - 670 m^2 Bare peat - 1157 m^2 **Peat depth:** Outside peat probing zone **Description:** A fairly large area with several gullies and large bare peat patches in blanket bog east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 25 **Grid reference:** NN 06136 17392 **Areas:** Restoration Area - 20585 m^2 Gullies - 525 m^2 Bare peat - 430 m^2 **Peat depth:** Outside peat probing zone **Description:** A fairly large area with several gullies and a few moderate bare peat patches in blanket bog east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	

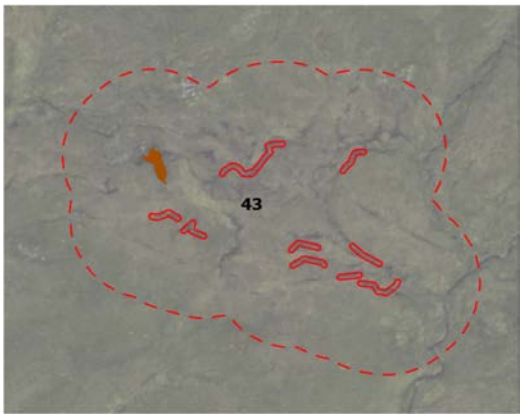
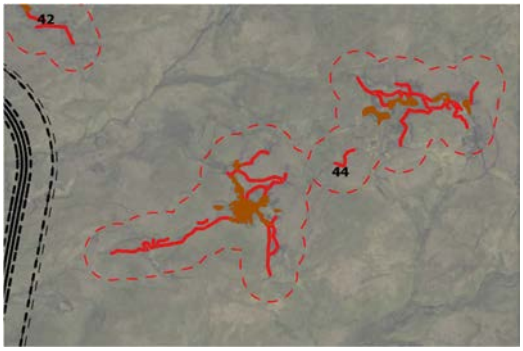
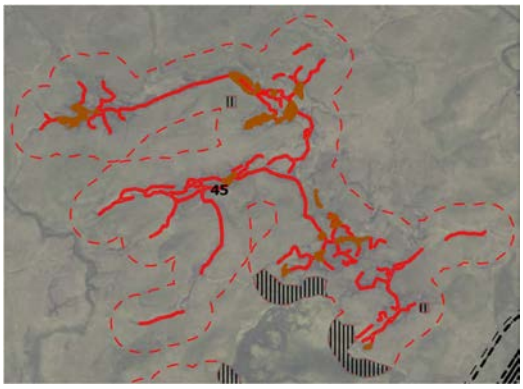
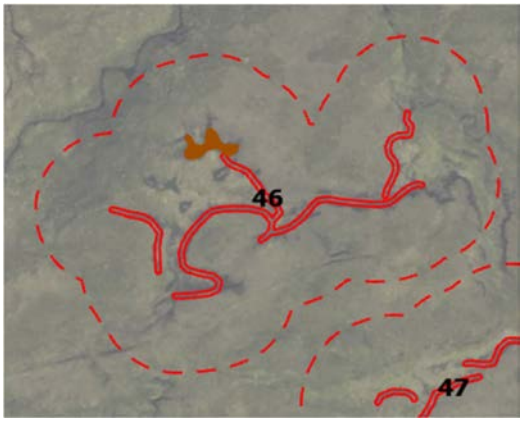
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 26 **Grid reference:** NN 07471 17436 **Areas:** Restoration Area - 7080 m^2 Gullies - 145 m^2 **Peat depth:** Outside peat probing zone **Description:** A small area with a single gully in blanket bog far east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 27 **Grid reference:** NN 04175 17281 **Areas:** Restoration Area - 27739 m^2 Gullies - 846 m^2 Bare peat - 457 m^2 **Peat depth:** Outside peat probing zone **Description:** A larger area of significantly damaged blanket bog with multiple gullies and moderate areas of flat bare peat on high ground just west of Headpond. This area abuts the habitat survey area and is mainly M17b.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is very close to a permanent access track and could easily be accessed from it.	
Area ID: 28 **Grid reference:** NN 04412 17274 **Areas:** Restoration Area - 45230 m^2 Gullies - 2003 m^2 Bare peat - 1502 m^2 **Peat depth:** Mainly in 1-3 m depth band, with local areas of >3 m and 0.5-1 m. **Description:** A larger area of many gullies and several small to large flat bare peat patches shortly east of the Headpond and abutting the limit of 30 m habitat modification buffers on permanent access tracks (parts of the restoration area have been eliminated for this reason). This area is mainly M17b with significant patches of poorly-vegetated M3.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area abuts permanent access tracks and could easily be accessed from them.	

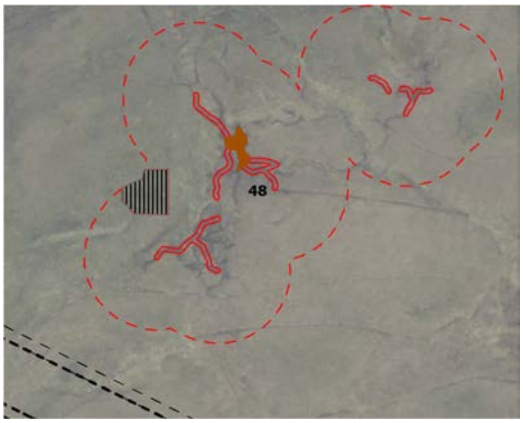
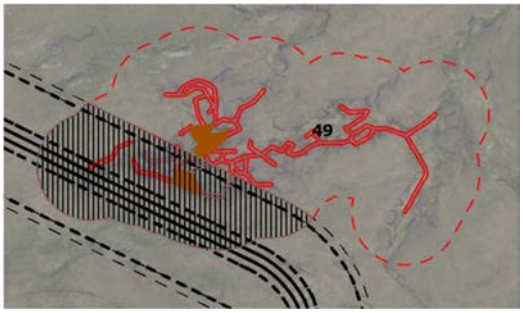
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 29 **Grid reference:** NN 07343 17298 **Areas:** Restoration Area - 10499 m^2 Gullies - 211 m^2 **Peat depth:** Outside peat probing zone **Description:** A smaller area with two gullies in blanket bog far east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 30 **Grid reference:** NN 05877 17294 **Areas:** Restoration Area - 11500 m^2 Gullies - 230 m^2 Bare peat - 398 m^2 **Peat depth:** Outside peat probing zone **Description:** A medium-sized area with a few gullies and some substantial flat bare peat in blanket bog east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 31 **Grid reference:** NN 06417 17248 **Areas:** Restoration Area - 24323 m^2 Gullies - 363 m^2 Bare peat - 310 m^2 **Peat depth:** Outside peat probing zone **Description:** A medium-sized area with a few gullies and some substantial flat bare peat in blanket bog east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	

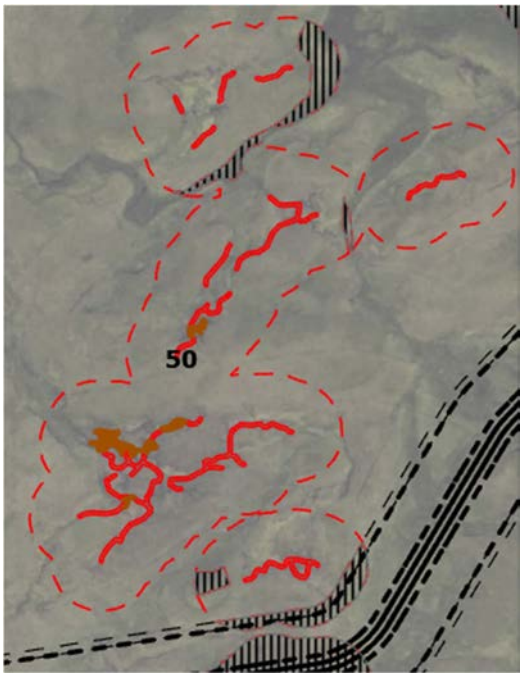
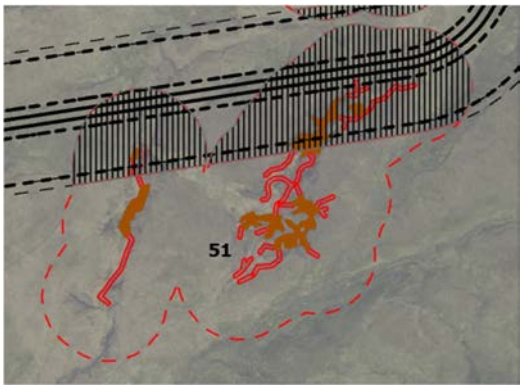
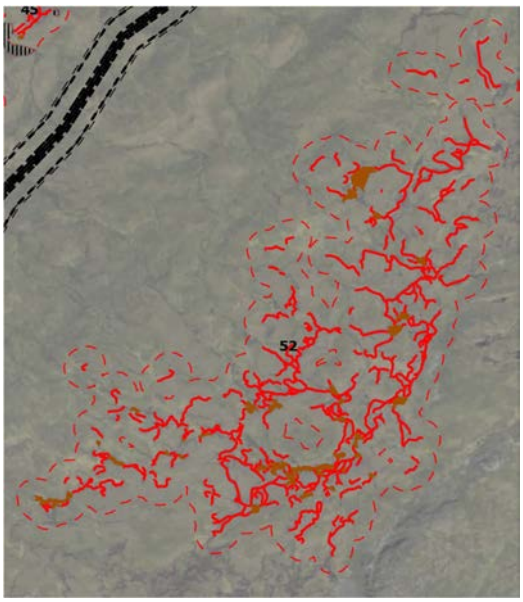
Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 32 **Grid reference:** NN 05208 16879 **Areas:** Restoration Area - 13577 m^2 Gullies - 734 m^2 Bare peat - 565 m^2 **Peat depth:** The gullied and bare peat areas mostly support >3 m peat depth, whilst the surrounding restoration zone is 1-3 m deep. **Description:** A moderately large area of several interconnected gullies with a substantial flat bare peat area, adjacent to east side of Headpond. The area is predominantly M17b with significant amounts of M19c and small amounts of poor M3.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is very near a permanent access track and could easily be accessed from it.	
Area ID: 33 **Grid reference:** NN 05372 16959 **Areas:** Restoration Area - 4453 m^2 Gullies - 184 m^2 **Peat depth:** Mostly 1-3 m deep, with a small central zone of >3 m. **Description:** A small area with a few gullies in blanket bog just east of Headpond. The area is mainly mixed M17b and M19c.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is very near a permanent access track and could easily be accessed from it.	
Area ID: 34 **Grid reference:** NN 06081 16955 **Areas:** Restoration Area - 98074 m^2 Gullies - 2274 m^2 Bare peat - 2668 m^2 **Peat depth:** Outside peat probing zone **Description:** A very large zone with many gullies and many flat bare peat areas, some large to very large, in extensive blanket bog east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	

Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 35 **Grid reference:** NN 05743 17125 **Areas:** Restoration Area - 12291 m^2 Gullies - 247 m^2 **Peat depth:** Outside peat probing zone **Description:** A small zone with two gullies, in blanket bog east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 36 **Grid reference:** NN 06394 17015 **Areas:** Restoration Area - 9354 m^2 Gullies - 168 m^2 **Peat depth:** Outside peat probing zone **Description:** A small zone with three gullies, in blanket bog east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary.	
Area ID: 37 **Grid reference:** NN 04056 17158 **Areas:** Restoration Area - 4957 m^2 Gullies - 229 m^2 **Peat depth:** Outside peat probing zone **Description:** A small zone with one branching gully, in blanket bog on high ground just east of Headpond. Very nearby habitat data indicates that this area is very likely M17b.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is very near a permanent access track and could easily be accessed from it.	
Area ID: 38 **Grid reference:** NN 03373 16605 **Areas:** Restoration Area - 13006 m^2 Gullies - 300 m^2 Bare peat - 792 m^2 **Peat depth:** Mostly outside peat probing zone; available data suggests at least 0.3 m of peat, and bare peat with gullies indicates more. **Description:** A fairly large zone with several gullies and several substantial flat bare peat areas, on high ground south-east of Headpond. The area is mainly M17b.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. Most easily accessed from permanent tracks on high ground to north-east or west.	

Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 39 **Grid reference:** NN 03560 16452 **Areas:** Restoration Area - 17254 m^2 Gullies - 680 m^2 Bare peat - 347 m^2 **Peat depth:** Mainly 0.5-1 m, partly 0.3-0.5 m. **Description:** Heavily gullied areas with small flat bare peat patches beside lochan on high ground south-east of Heappond. This area is mainly M17b with M19b and a little M17a.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. Most easily accessed from permanent tracks on high ground to north-east or west.	
Area ID: 40 **Grid reference:** NN 03167 16419 **Areas:** Restoration Area - 16835 m^2 Gullies - 290 m^2 Bare peat - 607 m^2 **Peat depth:** Outside peat probing zone **Description:** A medium-sized zone with several shorter gullies and substantial flat bare peat areas in blanket bog south-east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. Most easily accessed from permanent tracks on high ground to north-east or west.	
Area ID: 41 **Grid reference:** NN 05713 16335 **Areas:** Restoration Area - 15589 m^2 Gullies - 606 m^2 Bare peat - 119 m^2 **Peat depth:** Mainly 0.3-0.5 m, partly 0.5-1 m **Description:** A medium-sized zone with several gullies and two small flat bare peat areas in blanket bog south-east of Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. Most easily accessed from permanent tracks on high ground to north-east or west.	
Area ID: 42 **Grid reference:** NN 05447 16547 **Areas:** Restoration Area - 18703 m^2 Gullies - 729 m^2 Bare peat - 171 m^2 **Peat depth:** All in 1-3 m depth band **Description:** Medium-sized area with several gullies and one smaller flat bare peat area, just south-east of Headpond. This area is mainly M17b.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is very near a permanent access track and could easily be accessed from it.	

Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 43 **Grid reference:** NN 04988 16271 **Areas:** Restoration Area - 13987 m^2 Gullies - 283 m^2 Bare peat - 44 m^2 **Peat depth:** All in 1-3 m depth band **Description:** Smaller area with several short gullies, just south of Headpond. This area is mainly M17b with some M19c.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is fairly near a permanent access track and could easily be accessed from it, across a zone of drier bog with acid grassland.	
Area ID: 44 **Grid reference:** NN 05713 16335 **Areas:** Restoration Area - 51821 m^2 Gullies - 1897 m^2 Bare peat - 1682 m^2 **Peat depth:** About half of this area is within the peat probing area and is mainly 0.5-1 m. **Description:** A large zone with several long gullies and many patches of flat bare peat, some large, in blanket bog south-east of Headpond. The part within the habitat survey area is M17b and this is likely to dominate.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. The west end of this area is near a permanent access track and could be fairly easily accessed from it.	
Area ID: 45 **Grid reference:** NN 04835 15881 **Areas:** Restoration Area - 94395 m^2 Gullies - 4062 m^2 Bare peat - 2129 m^2 **Peat depth:** Nearly all in 1-3 m depth band, locally >3 m. **Description:** A large heavily-gullied zone with many often long gullies and several flat bare peat patches, some large, in blanket bog south of Headpond. This area is mainly M17b where most gullied, but includes M17a wet areas and M19 drier areas.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. The south-east end of this area is near a permanent access track and could be fairly easily accessed from it across an areas of drier M19 bog.	
Area ID: 46 **Grid reference:** NN 05708 15974 **Areas:** Restoration Area - 16978 m^2 Gullies - 579 m^2 **Peat depth:** Outside peat probing area **Description:** A fairly small area with a few gullies and a small bare peat area, in blanket bog south-east of the Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is fairly near a permanent access track to the west and could be relatively easily accessed from it across a zone mainly of drier M19.	

Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 47 **Grid reference:** NN 05776 15896 **Areas:** Restoration Area - 8680 m^2 Gullies - 204 m^2 **Peat depth:** Outside peat probing area **Description:** A fairly small area with a few gullies, in blanket bog south-east of the Headpond.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is fairly near a permanent access track to the west and could be relatively easily accessed from it across a zone mainly of drier M19.	
Area ID: 48 **Grid reference:** NN 04274 15778 **Areas:** Restoration Area - 15257 m^2 Gullies - 355 m^2 Bare Peat – 90 m^2 **Peat depth:** **Description:** A medium-sized area with a few shorter gullies and a small bare peat area. This area includes a substantial amount of wetter M17a as well as some drier M17b and M19.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is near a permanent access track to the south-west and could be relatively easily accessed from it across a zone mainly of drier M19.	
Area ID: 49 **Grid reference:** NN 04533 15606 **Areas:** Restoration Area - 18143 m^2 Gullies - 1283 m^2 Bare Peat – 240 m^2 **Peat depth:** Mostly in 1-3 m depth band, very locally >3 m, some 0.5-1 m **Description:** A fairly large zone with some long gullies and a moderate patch of flat bare peat in blanket bog south of the Headpond. The area is mainly mixed drier M19 and wetter M17a.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is very near a permanent access track to the south and could easily be accessed from it.	

Restoration Area ID and Description	Recommended Restoration Techniques	Image
Area ID: 50 **Grid reference:** NN 04759 15526 **Areas:** Restoration Area - 49345 m^2 Gullies - 1616 m^2 Bare Peat – 503 m^2 **Peat depth:** Mostly in 1-3 m depth band, locally >3 m. **Description:** A large zone with several short and long gullies and several patches of flat bare peat, in blanket bog south of the Headpond. This area is a mix of wetter M17a and drier M17b and M19.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is very near a permanent access track to the south and could easily be accessed from it, with swathes of drier M19 available for less damaging access.	
Area ID: 51 **Grid reference:** NN 04707 15202 **Areas:** Restoration Area - 15817 m^2 Gullies - 574 m^2 Bare Peat – 579 m^2 **Peat depth:** Mainly in 1-3 m depth band with small areas of 0.5-1 m and >3 m **Description:** A moderately large zone with several shorter gullies and several patches of flat bare peat, in blanket bog south of the Headpond. This area is mainly drier M17b and M19.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is very near a permanent access track to the north and could easily be accessed from it.	
Area ID: 52 **Grid reference:** NN 05458 15192 **Areas:** Restoration Area - 326074 m^2 Gullies - 17738 m^2 Bare Peat – 5409 m^2 **Peat depth:** Outside peat probing area. **Description:** An extremely large area with many interconnecting gullies and scattered flat bare peat patches, some large, in blanket bog far south-east of the Headpond. This area extends to the edge of land under the Applicant's control.	Restoration of eroded gullies using machine-based techniques such as reprofiling and blocking as necessary. This area is closest to a permanent access track to the north-east and could be accessed from it across drier M19 type bog which occurs in extensive swathes in the intervening vicinity.	

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3.5 Monitoring

3.5.1 The efficacy of peatland restoration measures and ongoing land management would be subject to monitoring, which will primarily focus on vegetation and plant communities. Monitoring is likely to be resource-intensive in initial years as the success and efficacy of restoration works will require close attention. The monitoring programme will ensure that appropriate measures are set out to remediate any measures that have failed or have suboptimal outcomes, and/or implement further management that may be necessary. This would be required for a long-term period that would be agreed with NatureScot.

3.5.2 Details of the monitoring would be confirmed post-consent and detailed in the final PRP that would be prepared for the Proposed Development. However, in outline, monitoring would refer to any relevant published methods (including those specified in the *Peatland Action Technical Compendium*[1]) and appropriate timescales would be devised. Proposed measures for monitoring may include, but would not necessarily be limited to, the following:

- Fixed point photography at key restoration locations;
- Monitoring of herbivore (both deer and livestock) impacts including any trampling / grazing pressure on restoration areas;
- Quadrats at sample locations, including, for example, assessment of:
  - NVC type (including whether a poor fit to published NVC types and if so why);
  - vegetation cover;
  - cover of key bog indicator species, including hare's-tail cottongrass *Eriophorum vaginatum*, ericoids such as heather *Calluna vulgaris* and cross-leaved heath *Erica tetralix*, and sphagna *Sphagnum* spp. (including the species of the latter, since some sphagna are typical of bog but others are not);
  - cover of undesirable species (which in quantity would include soft rush *Juncus effusus*, which can invade bare peat areas);
  - extent of bare peat; and
  - any damage, such as by herbivore pressure;
- Control plots outwith restoration areas, for comparison.

4. Conclusion

4.1.1 The Applicant is committed to achieving the objectives of the NatureScot peatland restoration guidance to stipulated or otherwise agreed extents, and is willing to engage diligently to achieve these outcomes.
The identified **on-site** minimum restoration amounts to **1.45 km^2,** leaving an **off-site** minimum restoration requirement of **10.21 km^2.**

Given the combination of on-site restoration outlined above, commitment to off-site restoration with discussions underway with landowners, and the extensive native woodland planting set out in **Appendix 5.4: Outline Landscape and Ecology Management Plan (Volume 5: Appendices)**[8] of the EIAR, there will be a substantial overall enhancement in the quality and diversity of habitats, both on-site and off-site, at a landscape scale, alongside a significant contribution to the restoration, preservation, and erosion prevention of carbon-storing peat.

[8] Note that the peatland restoration outlined in this document supersedes and replaces the blanket bog rehabilitation set out in Appendix 5.4 Landscape and Ecology Management Plan (Volume 5: Appendices) of the EIAR. The other aspects of Appendix 5.4 Landscape and Ecology Management Plan, such as the extensive native woodland planting, remain valid.

Annex A Figure

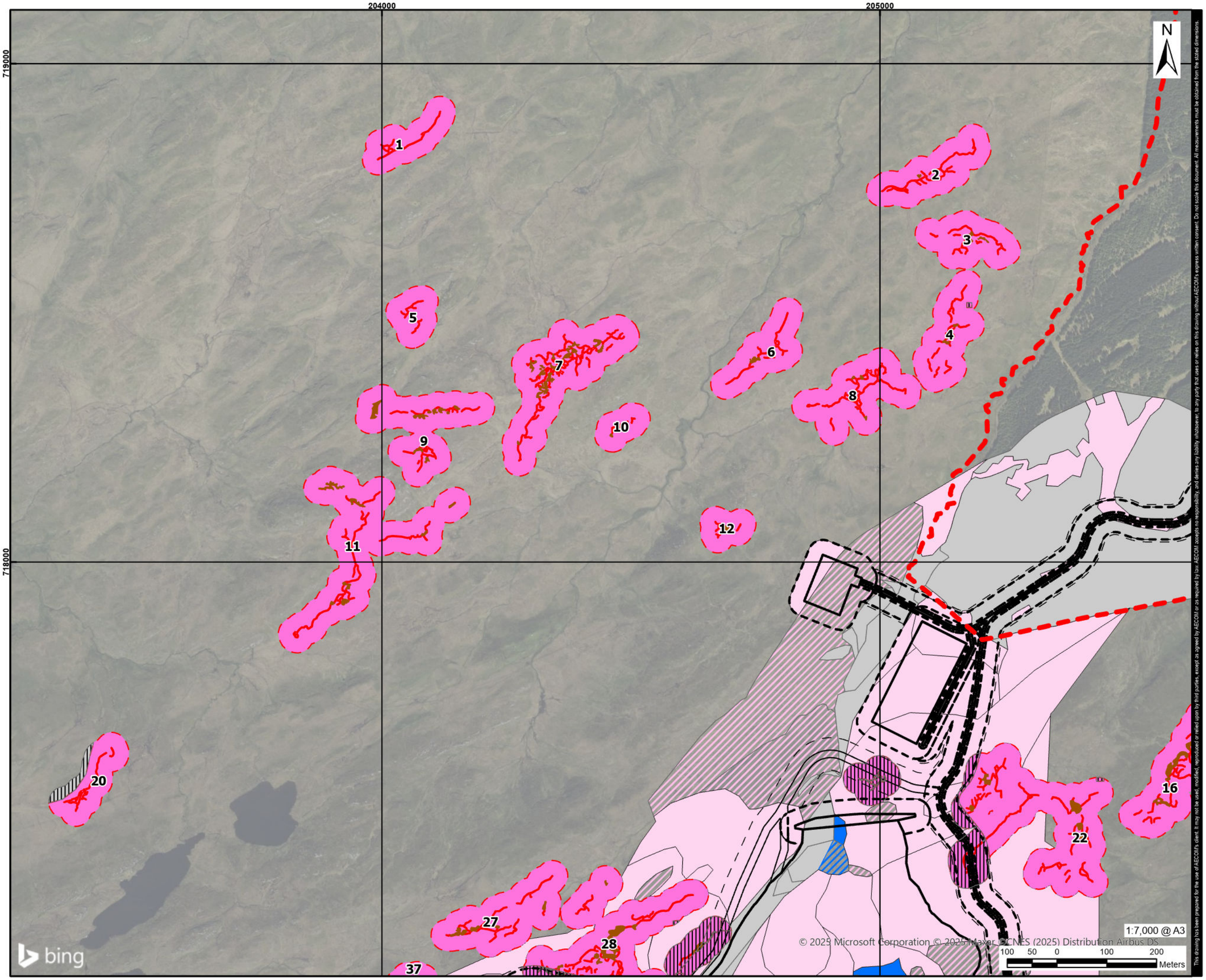
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LEGEND

- Estate boundary

Infrastructure effect

- Permanent direct loss
- Permanent indirect modification
- Permanent indirect + temporary direct loss
- Temporary direct
- Temporary indirect modification

Peatland Action category

- Gullies
- Bare peat
- Drained
- Modified
- Modified (partly; partly non-bog)
- Near natural
- Near natural (partly; partly Modified / non-bog)
- Non-bog habitat
- Non-feasible parts of restoration areas (within infrastructure footprint, non-peaty habitat, etc.)

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FIGURE TITLE

Outline Peatland Restoration Plan: Proposed On-site Restoration Areas and Peatland Action Habitat Categories

FIGURE NUMBER

Figure 1 Sheet 1 of 5

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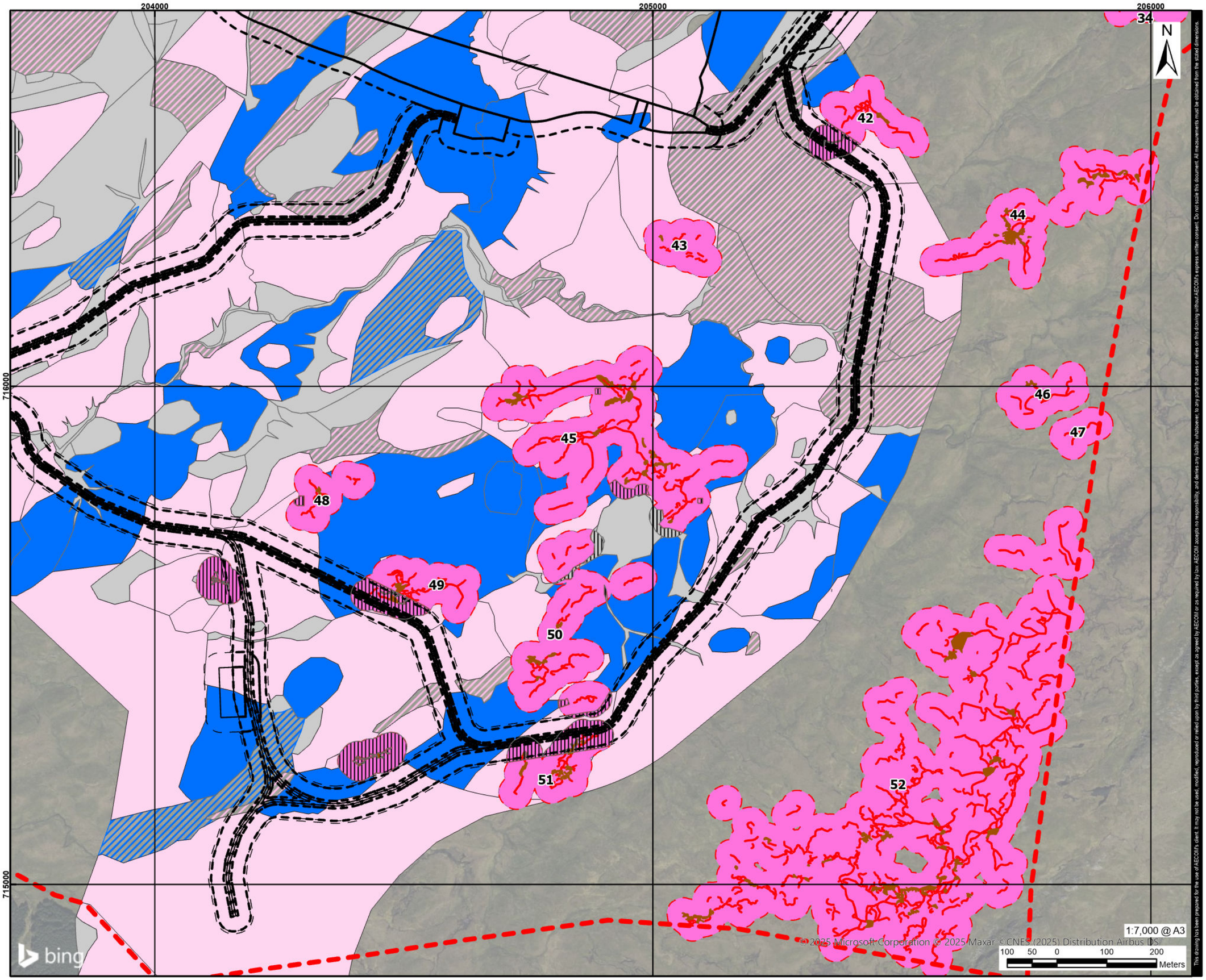
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Appendix H Water Resource and Flood Risk

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Balliemeanoch Pumped Storage Hydro Scheme

Appendix: Water Resources and Flood Risk Assessment

June 2025

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Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position

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1 Introduction

1.1 Objectives

The objective of this report is to assess the following issues in relation to water resources:

- Major water resource demand within the Development proximity;
- Potential impact on water resources as a result of the Development; and
- Appropriate mitigation measures to reduce the impact of the Development on water resources.

1.2 Sources of data

To inform this study, information has been obtained from the following sources:

- SEPA Gauge data, for five rivers in the Loch Awe catchment, covering 48% of the catchment area,
- HadUK-Grid rainfall dataset, for rainfall estimates over Loch Awe,
- Hydro-PE HadUK-Grid dataset, for evapotranspiration, converted to evaporation values over Loch Awe using Environment Agency guidance[2],
- Loch Awe level data provided by Drax,
- Loch Awe Barrage operating range targets, from the Cruachan 2 expansion application.

Date range for datasets (limiting date for modelling in bold)

Table H1 Period of gauged data used for assessment

Data	Start date	End date
Loch level	**01/01/2013**	31/12/2021
Loch level (hourly)	15/06/2019	14/06/2022
Gauged inflows	01/10/1981	**31/01/2025**
Rainfall (model)	01/01/1862	**31/01/2025**
Evaporation (model)	01/01/1969	**31/01/2025**

1.3 Development

The Development consists of a headpond impounded by two embankments with a volume of 14.68 Mm³. This is connected to Loch Awe (the tailpond) through underground tunnels and generating station. The scheme capacity assessed in this report is 900MW.

1.4 Basis of Assessment

The operational regime of the Development is governed by both water resource availability and the electricity market. This assessment considers the impact of cyclical operation on water resources and flood risk.

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/290579/sw6-043-hb-e-e.pdf

2 Baseline Conditions

2.1 Loch Awe Baseline

2.1.1 Existing Water Resource regimes

Loch Awe is a freshwater loch with an area of 38.5 km^2. The outflow from the loch is down the River Awe, flowing into Loch Etive near Taynuilt. The River Awe is dammed by the Loch Awe Barrage, which generates electricity off the compensation flow at the barrage and diverts water downstream to the Inverawe Power Station (25MW). Operations at the Loch Awe Barrage aim to maintain water levels within a seasonal range (see Table H1)[3]. The barrage contains a Borland fish pass, a freshet gate and two radial gates for passing flood flows. Detailed operation of flood release and compensation system and corresponding outflows from Loch Awe were not available for this assessment, however SSER has since provided some information on the operation of the radial gates for flood releases.

Table H2. Target water levels

Period	Target minimum (mAOD)	Target maximum (mAOD)
April-November (Summer)	36.27	37.06
December-March (Winter)	35.96	36.57

The Cruachan pumped storage hydro scheme (440MW) abstracts water from Loch Awe, generally operating on a daily cycle. No data was available for the operation of the Cruachan pumped storage hydro scheme. A daily dataset of loch level measured at the Cruachan intake was available for 2013 to 2021. For the period of available loch level data the operation of the scheme is already reflected in the level duration curves. Analysis of loch levels between 2013 to 2021 shows that the winter operating range is exceeded approximately 25% of the time, while summer levels drop below the range approximately 30% of the time (see Figure H2).

Four small hydro schemes also operate using water from Loch Awe tributaries; Allt Beochlich, Allt Blarghour, River Avich and Loch Nant.

SEPA gauging stations cover just over 50% of the Loch Awe catchment, as shown in Table H3 and Figure H1.

Table H3: Loch Awe Catchment areas

Catchment	Gauge ID	Area (km^2)
Total	N/A	815.9
Orchy	89003	251.2
Strae	89004	36.2
Lochy	89005	47.7
Avich	89006	32.1
Abhain a Bhealaich	89007	24.1
Loch Awe	N/A	38.5
Ungauged	N/A	386.1

[3] These levels are given in the Cruachan 2 EIA report.

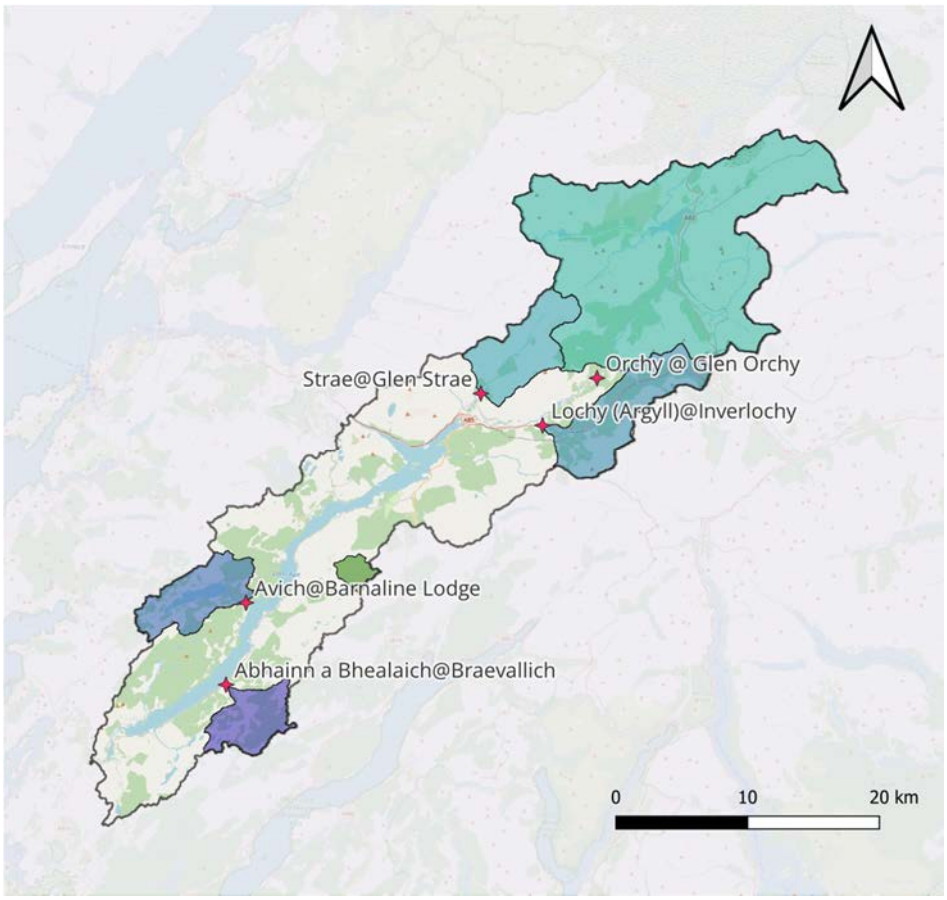


Figure H1: Location of gauges within the Loch Awe catchment.

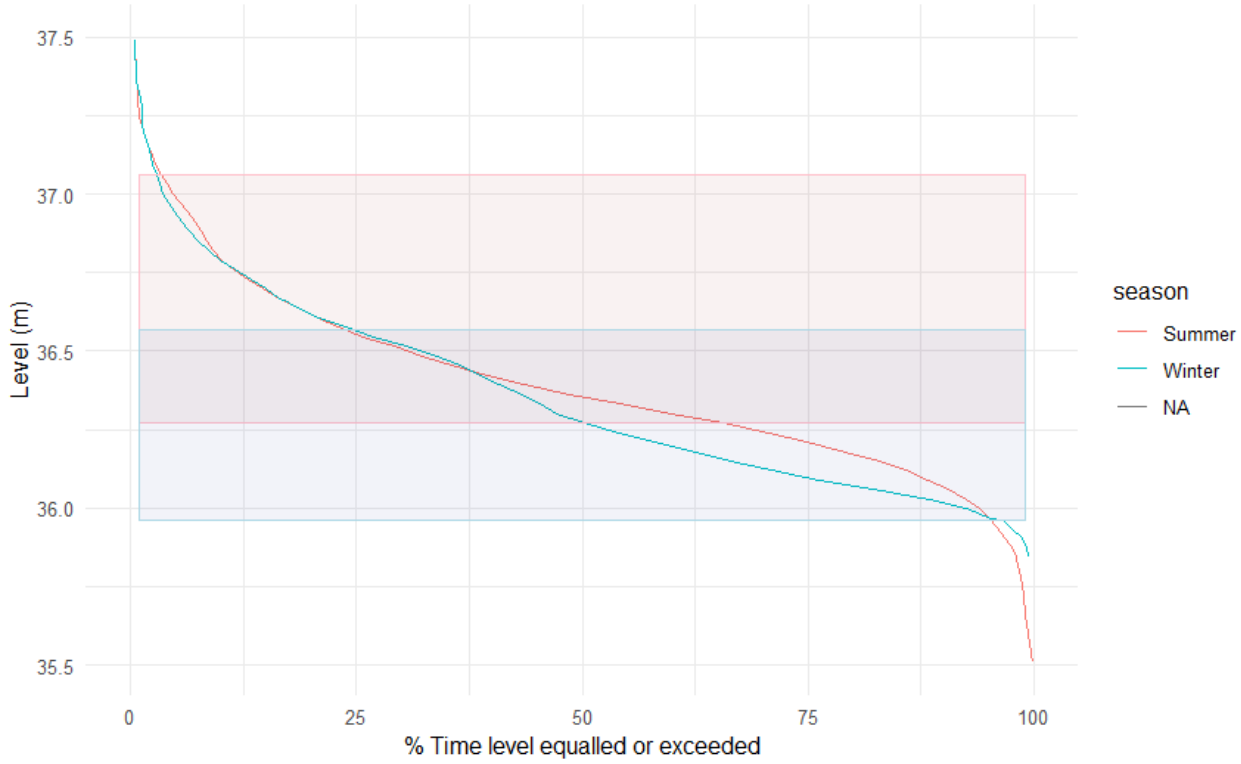


Figure H2: Water levels in Loch Awe (1/1/2013 - 31/12/2021)

2.2 Buinne Dhubh watercourse

The construction of the impoundment

No gauged data is available for the Buinne Dhubh catchment and therefore the flow duration curve has been derived using Low Flows 2 software. This flow duration curve provides an indication of the flows in the watercourse. The catchment area used to calculate the flow duration curve has been taken from the FEH webservice and has an area of 1.0 km^2 (catchment is shown below).

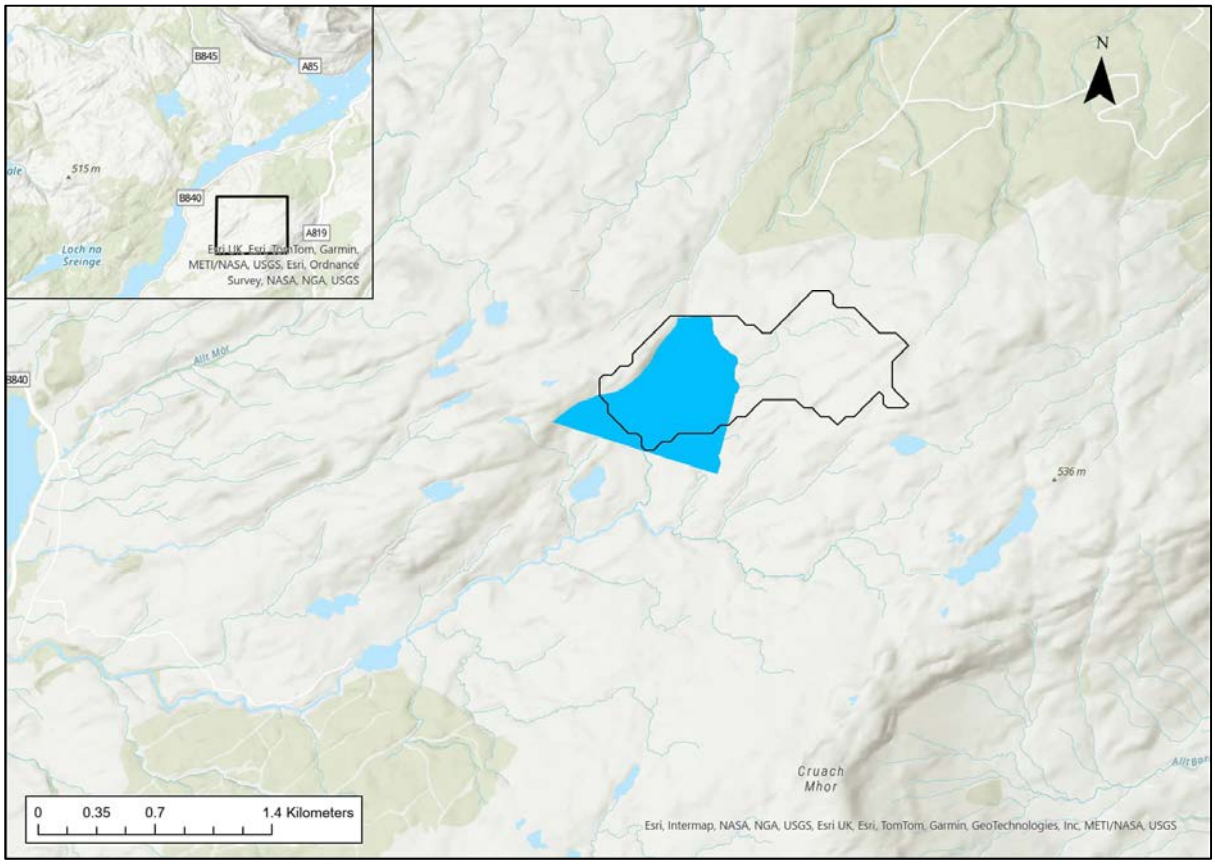


Figure H3: Buinne Dhubh Catchment Area Used in Low Flows 2

A conservative approach has been taken by estimating the flow duration curve at the confluence between the downstream watercourse of the confluence with the Buinne Dhubh.

Figure H4 shows the flow duration curve for the catchment shown above. This shows that the annual Q50 flow is 0.034 m^3/s, increasing to 0.120 m^3/s at the Q20, and decreasing to 0.006 m^3/s at the Q90.

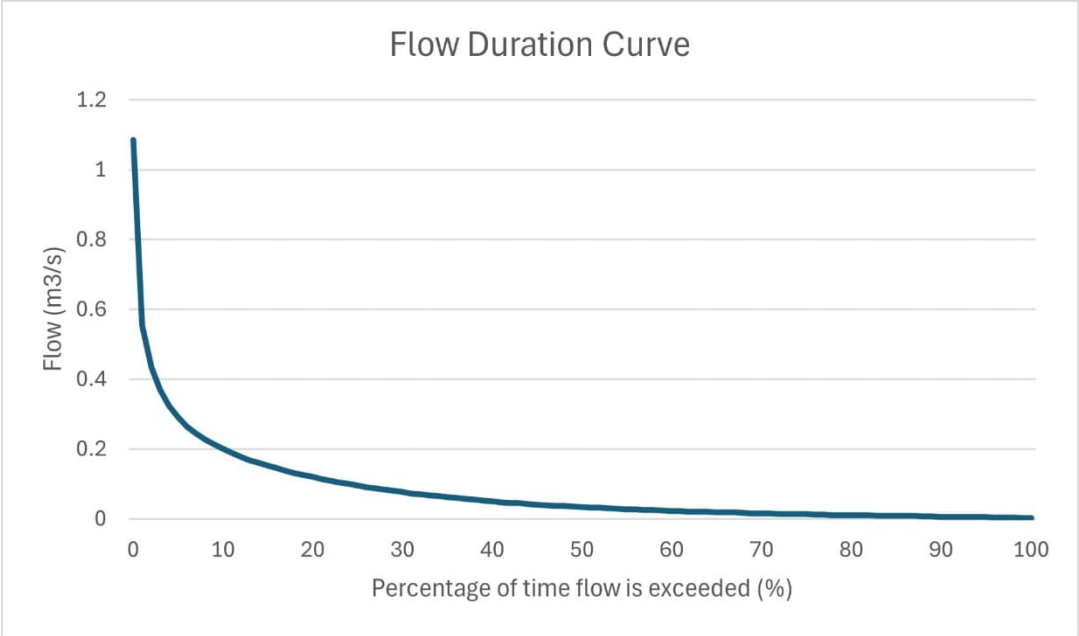


Figure H4: Buinne Dhubh Catchment Annual Flow Duration Curve

Full details of the Low Flows assessment can be found in Annex– Buinne Dhubh Low Flow where a full set of results are presented.

3 Assessment Methodology

3.1 Loch Awe Barrage Analysis

An understanding of the relationship between water level changes and outflows from Loch Awe is needed assess the impact of scheme operation on water resources. This relationship is determined by the operation of the Loch Awe Barrage. The barrage consists of three gates, a fish pass and two turbines. At the barrage water is abstracted to flow through pipes to Inverawe Power Station. The operation of these structures (opening or closing gates and abstracting water) determines the outflow from Loch Awe. Operation aims to keep water levels within specific ranges for the Summer (April-September) and Winter (October-March) periods. Because of these operating decisions, while higher loch levels generally correspond to higher outflow from the Loch, this is a statistical relationship rather than a definite relationship.

A water balance model was used to understand the statistical relationship between level and outflow by estimating the inflows to Loch Awe. This model provides a simplified understanding of the average outflow expected for a given water level, deriving a “rating curve” assigning an outflow for any given water level to allow the impact of the Development to be analysed.

Table H4: Water balance key terms

Change in Loch volume =	Inflows -	Outflows
	Gauged inflows	River Awe outflow and barrage abstraction
	Ungauged inflows	Evaporation
	Direct rainfall	

The water balance model was set up using data from the period 01/01/2013 to 31/09/2021. For ungauged inflows, flow was estimated by scaling the flow at the Orchy gauge based on catchment area. The model used a daily timestep. All variables are calculated as a daily volume. Outflow is then converted to m^3/s. Rearranging the water balance given in Table H4 gives the following equation for Loch Awe outflows:

outflow = gauged inflows + ungauged inflows + direct rainfall - Δ storage – evaporation

3.2 Water balance model results

Outflow results generated through the water balance model are plotted against loch level in Figure H5. The results are plotted for each day over the model period, divided based on the operating season. Smoothed curves produced using a generalized additive model show the average relation between level and outflow. The scatter of points around the trend line reflects model uncertainties (regarding inflows), and the control of outflows by the operation of the barrage.

The outflow from Loch Awe based on the change in volume of stored water together with inflows will take into account all outflows, including abstraction and discharges from the Cruchan PSH, the Awe Barrage hydro scheme and any compensation flows. The baseline scenario therefore captures existing hydroelectric and pump storage operations linked with Loch Awe.

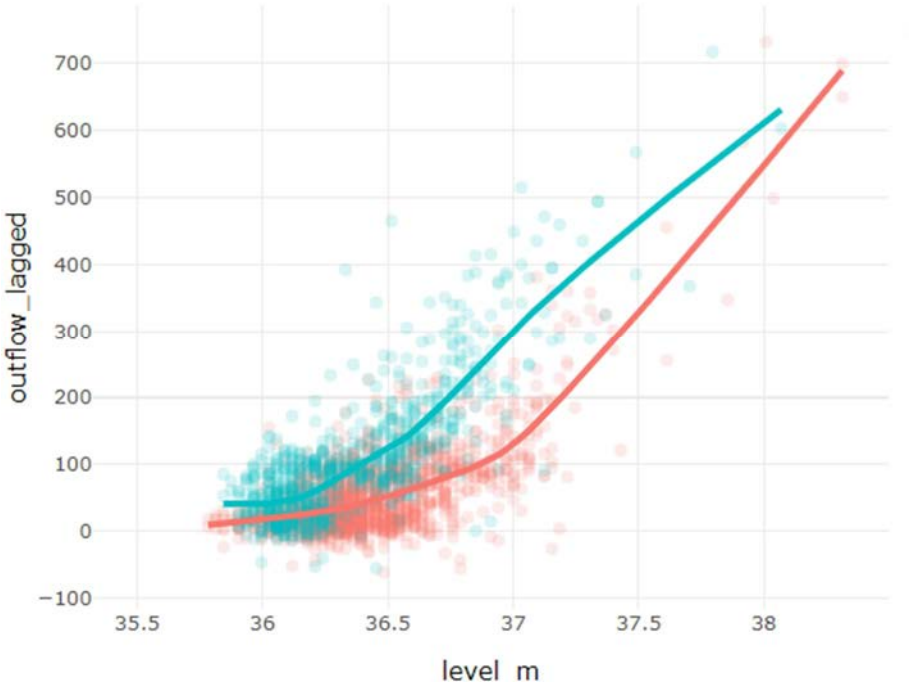


Figure H5: Loch level vs. outflow (summer in red, winter in blue)

3.3 Behaviour analysis model setup

A behaviour analysis model of Loch Awe was built. Similar to the analysis above, this is based on the principal of water balance i.e. for each time step,

$$\Delta \text{ storage} = \text{inflows} - \text{outflows}$$

Inflows and outflows are given in Table H4. A timestep of 1 hour was used. Inflows were derived for the period 01/01/2014 – 31/01/2025, based on gauged data together with ungauged inflows estimated by scaling the flow at the Orchy gauge based on catchment area, and direct rainfall added over the loch area. Evaporation is then subtracted to provide a net inflow record for the period of analysis.

Outflows from the loch are based on the rating curve derived as described in the previous section, using the loch level from the previous time step.

Change in storage is then calculated and converted to a change in loch level by dividing by the loch area to provide a new loch level at the end of the time step. The model assumes zero outflow below 35.5 mAOD as we have no information regarding the compensation outflow arrangements, although in reality there will likely be flow through the compensation outlet.

Figure H6 shows a comparison of the behaviour analysis model with observed levels. Levels tend to be slightly overestimated during the summer season and underestimated during the winter season. Sources of error for this model include Cruachan operation, barrage operation significantly different from assumed curve, localised inflows (at north or south of catchment), not captured by the gauge interpolation approach for ungauged catchments and inaccuracy of flow gauges. Nevertheless, it is considered to simulate the loch behaviour sufficiently closely to enable a meaningful analysis of the impact of the Development relative to baseline behaviour.

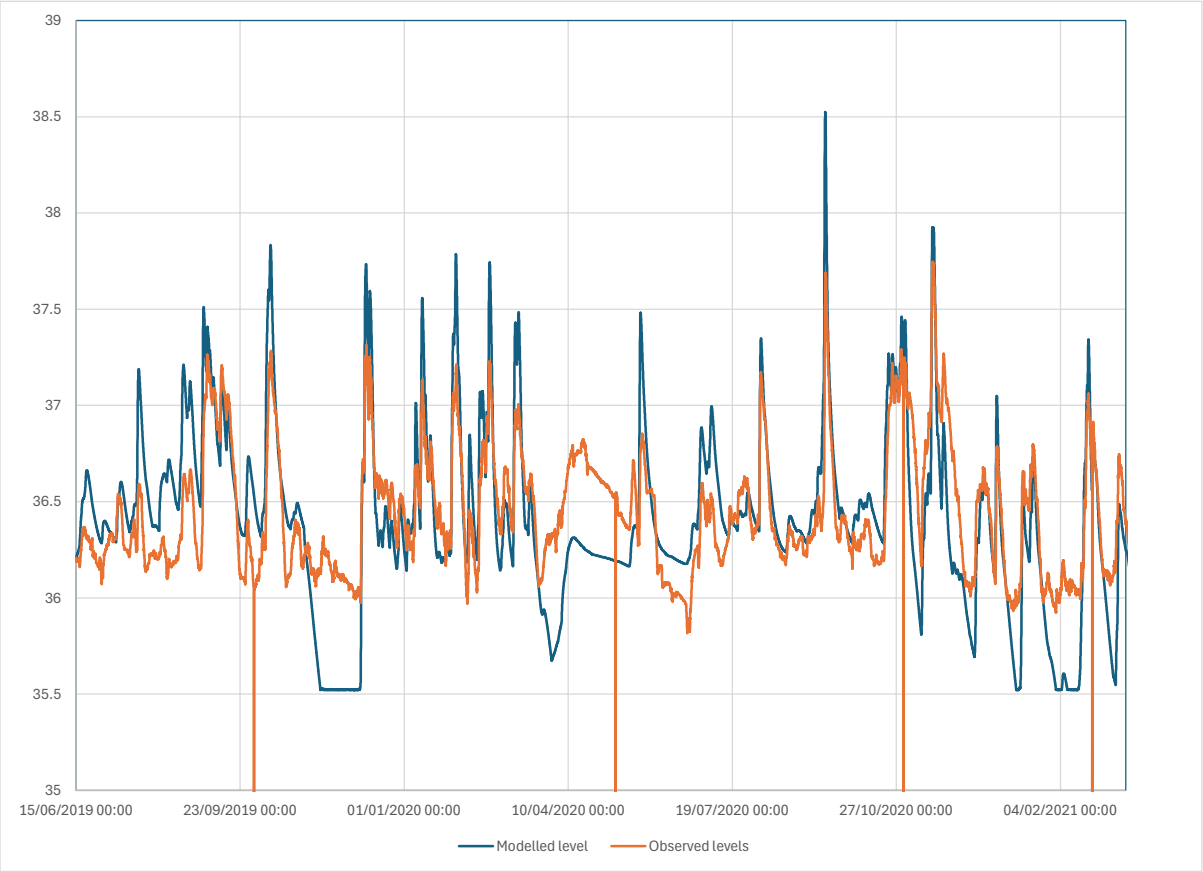


Figure H6: Comparison of modelled baseline levels vs observed loch levels

The model simulates the operation of the pump storage scheme based on the following thresholds:

Table H5: Proposed "hands off" thresholds

Season	Lower threshold (AOD)	Upper threshold (AOD)
April-Sep	35.87	37.2
Oct-March	35.56	37.2

These thresholds have been set based on the results of modelling a number of variations in threshold levels in order to balance minimising any detrimental impact during flood and drought events with reducing the curtailment of the Development.

In the absence of a more detailed generation profile linked to the energy market, a standard daily patter of generation and pumping was assumed (hereinafter 10 and10):

- 10 hours generation at 301 m³/s
- 10 hours pumping at 301 m³/s
- 2 hours pause between cycles

The generation profile is amended within the model to account for curtailment of generation either when loch levels exceed the upper threshold or when the Headpond is empty, and of pumping either when loch levels are below the lower thresholds or when the Headpond is full.

A theoretical weekly profile was also tested but found not to influence the results significantly.

4 Results on Loch Awe

The following section reports on the results of the behaviour analysis modelling, comparing the modelled baseline with the Development in operation for the period 01/01/2014 to 31/01/2025.

4.1 Impact on loch levels

The impact of the Development on water levels in the loch is shown in the stage duration curve in Figure H7. Note that the baseline stage duration curve is based on modelled rather than observed levels in order that it can be directly compared with the “With Development” modelled scenario.

This shows the percentage of time that the loch is at different levels. Because of the high and low “hands off” thresholds, the highest and lowest loch levels experienced are unchanged.

The mean or average loch level (i.e. exceeded 50% of the time) is slightly reduced from 36.36 to 36.33 mAOD. Lower loch levels are more affected, with a 150mm reduction in the loch level exceeded 90% of the time from 35.98 to 35.83mAOD.

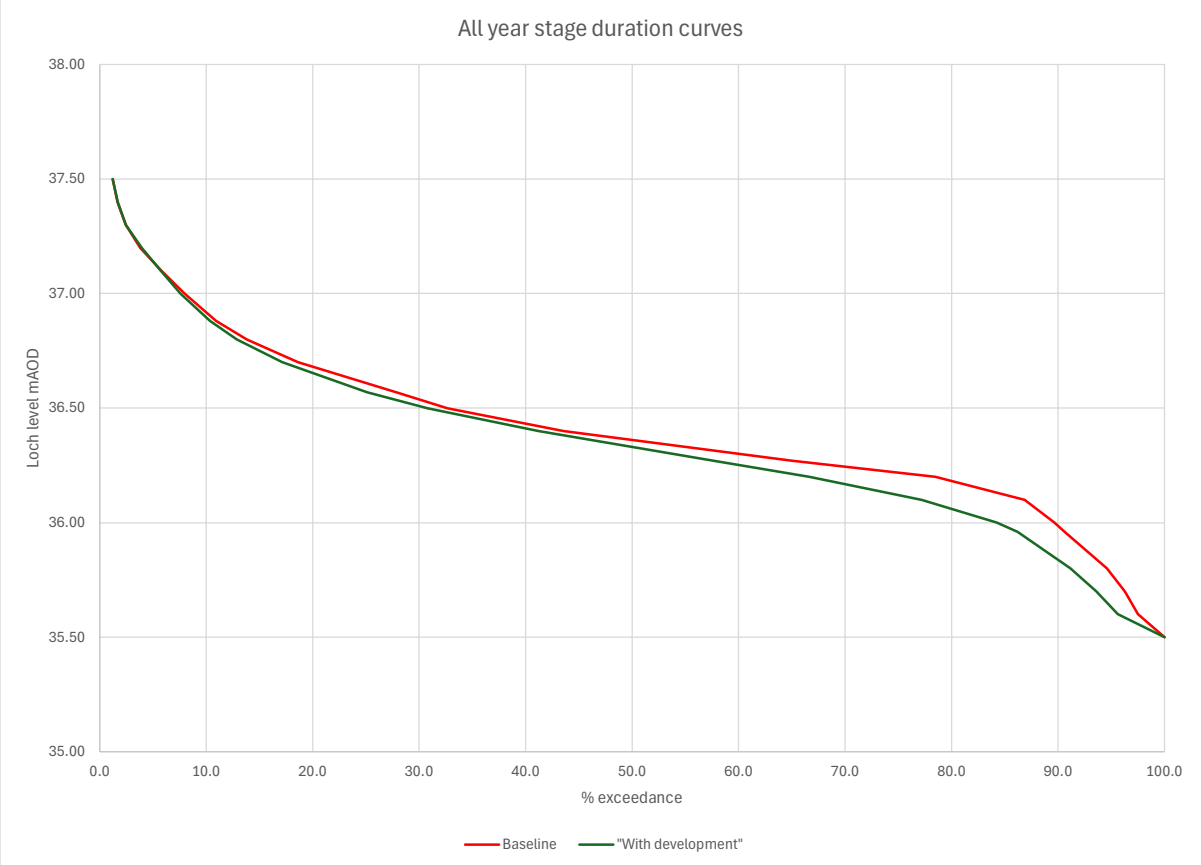


Figure H7: Stage duration curves: Baseline and with Development

4.2 Impact on flood events

The most severe 8 flood events within the period simulated were analysed. **Table H6** shows the impact on water levels in Loch Awe for each event.

It can be seen from the results in **Table H6** that with the exception of the 2014 event where levels remain the same, the impact of the Development is to reduce the peak loch level, and consequently the outflow. This is because during flood events the Development would stop generating and so is not actively adding water, and may only extract water, but also because the operation of the project creates different starting water levels before flood events occur. Figure H8 illustrates this impact for the December 2024 flood event.

The Development therefore does not exacerbate existing flood impacts and may provide a slight flood reduction benefit for some events. As such the proposals comply with bullet point 2 in Policy 22 of NPF4.

A number of significant flood events during the modelled period were assessed to see the impact the operation of the Development would have had on flood levels if operated as set out by the operational parameters as set out in Table H5. Table H6 summarises the modelled flood levels during these events with and without the scheme and the change in flood levels. The modelled results show that the proposed scheme does not have a detrimental impact on flood risk, and in most cases would have resulted in reduced peak flood levels.

Table H6: Impact of Development operation on Loch Awe levels during historic flood events

Rank	Flood event	Modelled flood level (no scheme) mAOD	Modelled flood level (propose scheme operating) mAOD	Change in peak flood levels (mm)
1	08/10/2023	39.047	39.044	-3
2	08/10/2018	38.906	38.889	-17
3	26/10/2014	38.797	38.797	0
4	06/03/2015	38.627	38.536	-91
5	31/12/2024	38.417	38.369	-48
6	05/12/2015	38.583	38.523	-60
7	12/09/2020	38.525	38.458	-67
8	29/03/2021	38.356	38.195	-161

The Development, therefore, does not exacerbate existing flood impacts, and may provide a slight flood reduction benefit for some events. As such the proposal complies with Policy 22 of NPF4.

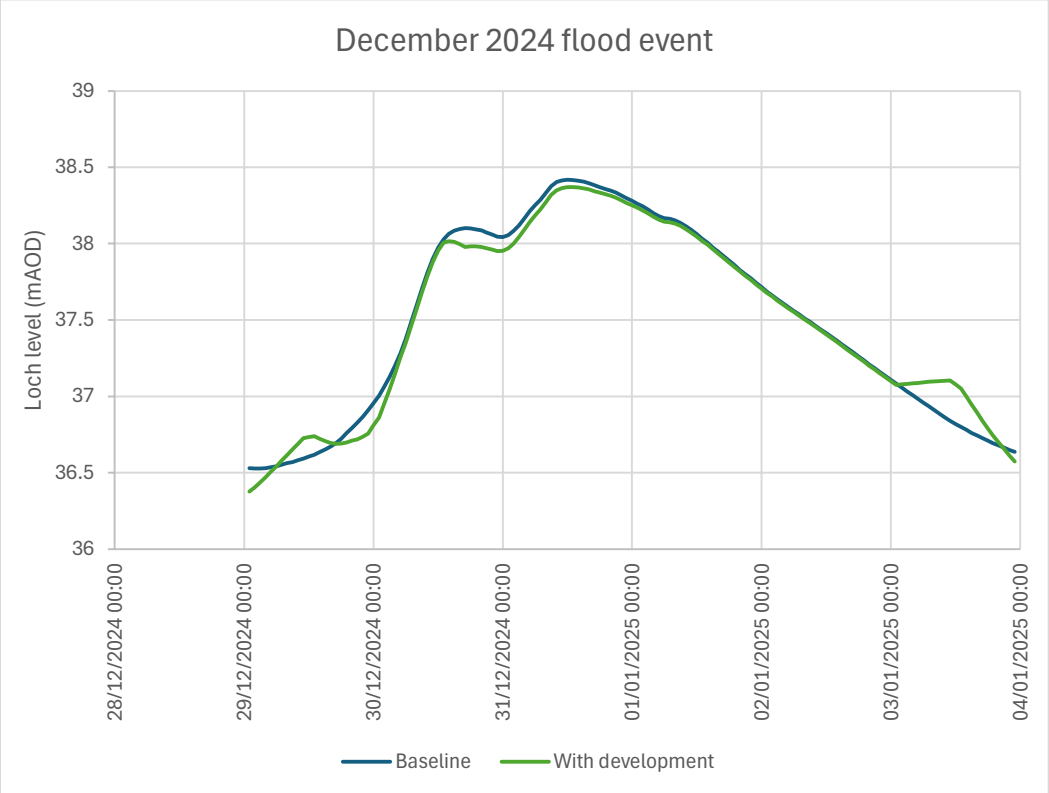


Figure H8: Loch levels during the December 2024 flood event: Baseline and with development

Further model results for the water balance model during high water scenarios can be found in the Annex to the Appendix.

4.3 Impact on barrage operation

It is understood that SSER operate the flood gates at Awe Barrage to release additional flow when loch levels exceed 37.06mAOD during April to September and 36.57mAOD during October to March. The impact of the Development under the proposed operating regime (Table H7) on the frequency of operation of the gates under these rules was analysed, comparing them to the existing baseline frequency of operation.

Table H7: Percentage time barrage operates and loch levels are within operational window

	Baseline	With Development
Barrage operation	12%	12%
% time within SSE operating window	57%	54%

With the Development in operation, the frequency of barrage operation is essentially unchanged and there is therefore no impact on SSER operations with regard to the barrage. The time within the SSER operational window reduces by around 3% which amounts to a small impact on SSER commercially. The impact is negligible from an environmental perspective.

4.4 Impact on low flows

We have assessed the impact of the Development on the basis of the lower limit proposed being 35.87mAOD during April to September and 35.56mAODmAOD from October to March.

Two of the most severe historic droughts in the record in March 2018 and February 2021 were analysed for the Development. We do not have details of the compensation arrangements at the Awe Barrage and have therefore assumed a minimum outflow level of 35.5mAOD. At this level and below, it is assumed there is zero outflow from the loch, although in reality there will likely be flow through the compensation outlet. Analysing the number of days that the loch level is at or below 35.5mAOD during these drought events in comparison to the baseline highlights the impact of the Development during low flow events. As seen in Table H8, the number of days that the loch falls below 35.5mAOD is actually reduced with Development operation. This is because the last operation prior to the drought event will be generation, not pumping, which raises water levels above the baseline. The Development therefore provides a benefit to SSER in terms of maintaining compensatory and freshet releases. Overall, there is a slight reduction in the percentage of time that the loch level hits this level over the period analysed from 2% to 1.4%.

Table H8: Number of days at or below 35.5mAOD

	Baseline	With development
February 2021	7.3	6.1
March 2018	6.6	4.6

Model results for the water balance model during low water scenarios can be found in the Annex to this report. Simulations showed that the operation of the proposed scheme with the operational rules as set out in Table H5 does not have a detrimental impact on low flow conditions.

4.5 Impact on rate of level change

The rate of change of loch level during both pumping and generation is 28 mm/hr. Over a 10 hour pumping or generating cycle, this equates to 0.28m change in loch level. Analysis of the observed hourly level data indicates that this rate of change in loch level lies within the range currently experienced, albeit at the more unusual end of the duration curve as shown in Figure H9. A falling rate of 28mm/hr is exceeded 1% of the time and a rising rate of 28mm/hr is exceeded 4% of the time.

The total volume of storage equates to 14-hour generation cycle. A full generation cycle utilising the full available storage would be by exception and not a regular occurrence. In such an event the total change in water level at Loch Awe would be 400mm.

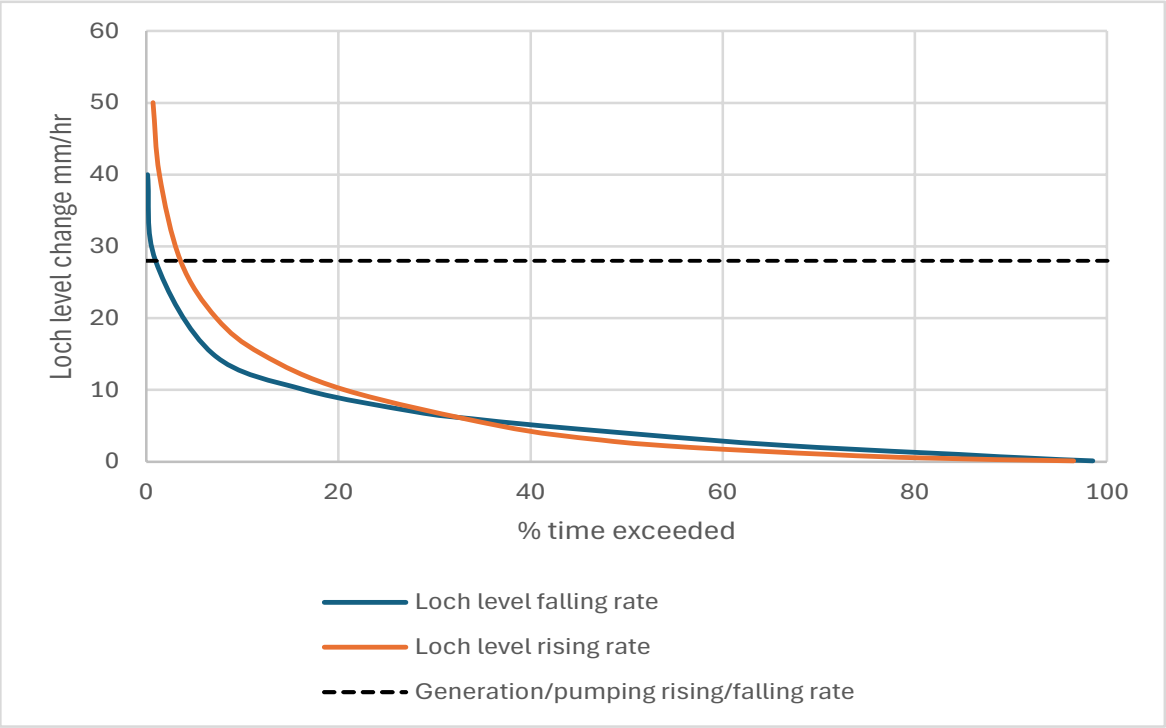


Figure H9: Rate of change of loch level duration curve (based on hourly observed level data)

The rate of change over a full generation and pumping cycle can be seen in Figure H10 below.

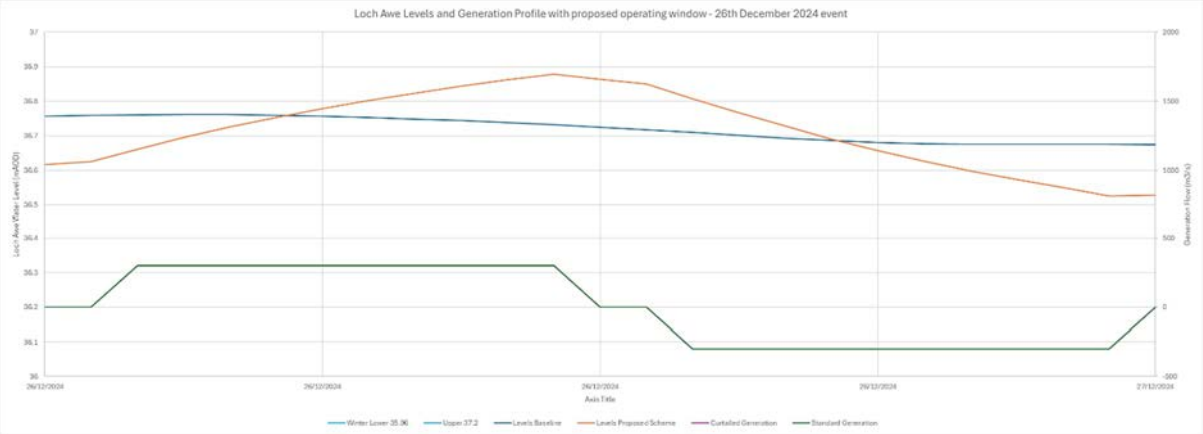


Figure H10: modelled and baseline water levels in Loch Awe based on scheme operation

5 Mitigation Measures

5.1 Introduction

The mitigation measures outlined below are required to reduce the impacts on water resources to a level which is considered to be Not Significant.

5.2 Operational Regime of Loch Awe

An effective operational regime is required to ensure the Proposed Development continues to operate effectively whilst ensuring that water resources are not impacted, and key receptors are not placed at risk.

To mitigate impacts on water resources and key receptors the operating levels for the Proposed Development, as modelled in this assessment, should be set as follows:

- Hands-off low level (stop pumping) 35.87 mAOD (April -Sept) and 35.56 mAOD (Oct-March)
- Hands-off high Level (stop generation) 37.20 mAOD

5.3 Compensation Flows

The construction of the Headpond would result in the upper part of the tributary of the Buinne Dhubh being impounded and the flow of water being impeded from passing downstream. A compensatory flow arrangement is included within the scheme as embedded mitigation and would maintain flows down this watercourse.

The compensatory flow arrangement would be based on a variable flow and head arrangement to take account of the continuous fluctuation in water levels in the Headpond and the seasonal variation in flows in the watercourse. A submerged discharge valve arrangement would provide the range of flows as calculated in the low flow assessment and for the range of water levels.

The seasonal variation would be based on the average monthly flows for each calendar month. The overall monthly volume of discharge would be maintained at the existing volume. In addition to the compensatory flow occasional higher flow would be released as part of the scour valve operation.

The assessment has been based on calculated flow parameters based on Low Flows, software widely used in the industry and by regulators. In line with good practice, flow monitoring would be undertaken over a number of years to confirm the monthly flow duration curves.

Table H9. Catchment Information

Catchment	OS NGR	Catchment (km^2)	Compensation flow (l/s)
Buinne Dhubh tributory	NN 04635 16674	1.0km^2	Monthly averaged flows (see Tables Table H10)

Table H10. Monthly Average Compensation Flows

Month	Annual	Jan	Feb	March	April	May	June
Q mean (l/s)	0.078	0.121	0.103	0.097	0.049	0.034	0.036
Month	Annual	July	Aug	Sept	Oct	Nov	Dec
Q mean (l/s)	0.041	0.054	0.081	0.101	0.1	0.116	0.041

6 Headpond

The Proposed Development includes the creation of a new Headpond through impounding of the tributary of Buinne Dhubh. As this structure will impound a significant volume of water, there is an inherent risk of flooding associated with it. However, the probability of flooding from the Headpond occurring is considered extremely low due to the high standard of design, management, and maintenance required under the Reservoirs (Scotland) Act 2011 and provided by any responsible operator.

The following Section looks at the risk associated with the creation of the Headpond and the significance of these risk.

6.1.1 Flood Risk to others from the Headpond

The Proposed Development includes the creation of a new Headpond through impounding and raising the water level along a length of the tributary of Buinne Dhubh. As this structure will impound a significant volume of water, there is an inherent risk of flooding associated with it. However, the probability of flooding from the Headpond occurring is considered extremely low due to the high standard of design, management, and maintenance required under law and provided by any responsible operator.

This section details the assessments which have been made to determine the risk associated with the Headpond and its associated Embankments and Spillway, and to provide a balanced assessment of the flood risk associated with the Proposed Development.

6.1.2 Reservoirs (Scotland) Act 2011

The Reservoirs (Scotland) Act 2011 (herein referred to as ‘the Act’ throughout this appendix) applies to reservoirs that hold more than 25,000 m³ of water.

The Act sets out a legal framework with regards to responsibilities and requirements for inspection and maintenance of reservoirs, in order to ensure the risk presented by such structures is acceptable.

Under the Act reservoir owners have ultimate responsibility for the safety of reservoirs. Reservoir owners must appoint a Panel Engineer to supervise the design and construction of the reservoir and to supervise inspection and maintenance of the reservoir, which is the Headpond for this Development.

The Headpond will be of a volume by which it is regulated under the Act. The proposed Embankments will be designed in accordance with the requirements of the Act. When in operation, inspection and maintenance will be undertaken in accordance with the requirements of the Act. An assessment of the areas at risk from the Headpond indicates it would be categorised as High Risk designation based on the SEPA reservoir risk designation process.

The design parameters for the conveyance of flood flows will be based on the guidance set out in the Flood and Reservoir Safety Guidance by the ICE. The Headpond will be classed as a Category A reservoir and therefore would be subject to the most stringent design standard with the capability to convey safely the Probable Maximum Flood (PMF) as a design flood.

Design, inspection and maintenance in accordance with the legislative framework of the Act will ensure that the risk of failure of the proposed Headpond remains low throughout its working life.

6.1.3 Breach Analysis and Flood Routing

The Headpond is classed as High Risk reservoir based on the consequence of an uncontrolled release of water and the effect that this could have on the surrounding area below the reservoir. As a result, the Headpond will be designed to the highest standards and regularly inspected in line with the Reservoirs (Scotland) Act 2011 to maintain that standard.

The required ability to convey flood flows for such a reservoir is significantly higher standard than those assessed regarding planning. The flood risk to others from the Headpond overtopping is regarded as being negligible based on the extremely low likelihood of occurrence.

The probability of a breach of the reservoir is again very low and orders of magnitude below the probability of occurrence defined as a flood risk area under NPF4 and Argyll and Bute and SEPA Guidance, an annual probability of being flooded of greater than 0.5%.

The flood risk to others from such an event is regarded as being negligible. A breach assessment will be undertaken as part of the reservoir registration process under the Reservoirs (Scotland) Act 2011 to aid emergency planning.

An emergency spillway has been located at the south east corner of the Headpond. The spillway sill level has been set 600 mm above the top water level in the Headpond based on operating levels.

An assessment of the potential flood lift in the reservoir during extreme flood events has been carried out taking account of the runoff from the catchment feeding directly into the Headpond and the direct rainfall on the Headpond over a 48 hours period. Based on a conservative assessment with all rainfall falling on the catchment entering the Headpond the volume of flood water entering the Headpond in a 1 in 200 year event with a 46% uplift for climate change is 333,000 $m^{3,}$ based on a rainfall depth of 333mm over 48 hour. This is based on the FEH DDF model. This equates to a flood lift of 570mm with no spill. This is below the spillway level of 420.6 mAOD.

This is a conservative assessment based on no other discharge from the Headpond over this period. In addition, Water levels in the Headpond will generally sit below the operational top water level based on ongoing operation of the scheme within the operational constraints set out based on Loch Awe water levels. The spillway

The results of the flood study indicate that peak inflow to the reservoir for the SCF is nominal when compared to the expected inflow should the pumps fail to shut off based on the small direct catchment area of the Headpond. Preliminary calculations show that the inflow into the Headpond if the pumps fail to shut off would be circa 300m3/s when the water is at Top Water Level (TWL). Therefore, the overflow was sized based on passing of over pumping into the reservoir rather than for the inflows from the SCF event.

An ogee profile was selected for the overflow weir due to the high discharge rates that it will need to convey if the pumps fail to shut off. During detail design a routing exercise will be carried out to optimise the length of the spillway length

The main overflow is proposed to be a straight, broad crested weir at a fixed crest level of 420.6 mAOD.

The spill weir has been represented in the model considering the weir length and coefficient shown in **Table H11**. The software uses the weir equation below to calculate the head/discharge relationship.

$$Q = C_D L H^{1.5}$$

where: Q = flow (m^3/s)
C_D = weir coefficient
L = effective length of weir (m)
H = head over weir (m)

Table H11. Spillway Weir characteristics

Level (mAOD)	Length (m)	Type of weir	Weir coefficient
420.6 mAOD	85m	Ogee	2.0

The Ogee weir level is set at a level of 420.6, the dam crest level (DCL) is 423.0mAOD. Based on a discharge rate of 300m3/s a flood lift of 1.5m would be experienced over the spillway. This would provide a freeboard of 0.9m. This would be greater than the minimum flood freeboard of 0.6m recommended for the design flood in Floods and Reservoir Safety 4th Edition (ICE 2015).

During detailed design stage the spillway design would be optimised to convey the flow based on a 3 hour over pumping scenario taking account of the routing effect of the Headpond and the available flood lift above TWL. This would be in line with the methodology adopted at Coire Glas pumped hydro scheme

6.1.4 Other Discharges from the Reservoir

In addition to uncontrolled discharge in the event of a breach, a controlled release arrangement is proposed into the catchment through the scour arrangement. This will allow the reservoir to be drawn down in the case of an emergency. Whilst the two Waterways between the Headpond and the Tailpond are the primary drawdown arrangement directly into Loch Awe a secondary arrangement is also included based on a low-level outlet via the Valve House.

In line with guidance as set out in the 'Guide to drawdown capacity for reservoir safety and emergency planning' the basic recommended standard for a Category A dam is the ability to draw down the water level by 1 m per day. This equates to a discharge of 0.58 Mm3 over a 24-hour period based on an outflow of 6.7 m3/s.

Given the size of the watercourse immediately downstream of the scour outlet, full operation of the drawdown facility would cause localised flooding and potential damage to infrastructure, including roads and access bridges together with an inlet structure. The scour arrangement will be based on a number of submersible valves. These valves will be operated in isolation during maintenance exercises to limit the pass forward flows.

Scour flows will be limited to the conveyance capacity of the downstream impoundment at the Beochlich hydroelectric scheme.

In the very unlikely event of an emergency and the need to drawdown the reservoir, localised flooding from the scour flows would be better than the far greater consequences of dam failure which may occur if the drawdown rate is restricted. The flood risk from other discharges from the Headpond are negligible.

7 Flood Risk from Loch Awe

Further to the consultation response by SEPA to the original sized proposed scheme has been re-assessed taking account of SEPA comments and the revised storage volume and flow rates.

This section responds specifically to the flooding and water resource issues raised by SEPA's in their consultation response dated 4th October 2024 with respect to Flood Risk (sections 1.1 to 1.5 of the letter) taking account of the revised Headpond volume, the operational flow rates and the updated operational window based on water levels in Loch Awe..

Paragraph 1.2

The ReFH2 method of estimating the flow is inappropriate for this location because of the low FARL (0.725) value in this catchment. SEPA's technical flood risk guidance does not recommend using ReFH2 when the FARL value is lower than 0.9. Therefore, we would recommend that the statistical or FEH Rainfall Runoff method be used at this location.

The 1 in 200 year + CC flood level calculated in this FRA is probably an underestimate. A more detailed FRA using the statistical method for hydrology conducted by DRAX for the Cruachan Expansion project calculated a 1 in 200 year + CC level of 42.32mAOD for Loch Awe.

AECOM believe that the method used is the most appropriate, as is justified below. The DRAX report opts to use statistical method flow estimates on the basis that the ReFH2 estimates are "extremely high". This gives a 200-year flow estimate of 735 m3/s and a 200 year + CC estimate of 1169 m3/s. In comparison, the ReFH2 estimate of the same event is 2965 m3/s. The statistical method has limitations in that it only provides a peak flow estimate, not a full hydrograph. The design flow hydrographs are shown in Figure 3 of the report; it is not made clear in the report how the peak statistical flow estimates have been fitted to this hydrograph shape, but it seems likely from the figure that a ReFH2 hydrograph shape has been used. To generate an ReFH2 hydrograph, a storm duration must be input. The assumed storm duration to produce the hydrograph shape has not been stated, but the hydrograph peaks occur at around 11 hours, suggesting an assumed storm duration of around 15 hours. The reason for this choice of this duration is unclear but the choice of storm duration affects the total flood volume.

The main issue with the DRAX FRA approach is that the attenuating effect of Loch Awe is only represented in a general way via the FARL descriptor to estimate the peak flood flows. The waterbody is not explicitly included in the HEC-RAS model, which only models a 5km reach of the channel between the barrage and the main body of the loch. The Environment Agency have published guidance on flood estimation, the latest version being LIT 11832 Flood Estimation Guidelines, July 2022. This states that factors favouring a design event (rainfall-runoff) approach include if there are reasons to think that the flood hazard is influenced by flood properties other than peak flow, such as the volume or timing of the flood hydrograph, for example, if the site of interest is downstream of a reservoir and there is no peak flow data that implicitly account for the effects of the storage. With a large waterbody the size of Loch Awe, the attenuating effect on peak flows will be significant and loch levels will be influenced by flood volume as well as peak flow.

The approach taken by AECOM includes Loch Awe in the hydraulic model as a storage area, as well as the approach channel to the Loch Awe Barrage. This explicitly models the impact of the loch. Model inflows have been generated using ReFH2, which allows full flood hydrographs of differing duration (and therefore differing volumes) to be estimated in order to determine the flood hydrograph that produces the critical combination of peak flow and hydrograph volume that results in the highest loch level. ReFH2 makes no use of the FARL descriptor so can be considered to ignore the attenuating influence of all waterbodies within the catchment, not just Loch Awe. It is therefore considered to be a conservative estimation of inflow to Loch Awe. Peak flows from ReFH2 were compared with statistical estimates assuming FARL = 1.0 (i.e. also ignoring the attenuating influence of all waterbodies) which was found to compare well with the ReFH2 recommended critical duration of the catchment of 7.5 hours (shown in the table below). Both exceed the DRAX 200-year flow estimate of 735 m3/s.

Table H12: Inflow estimates at Loch Awe

Column heading	200-year flow estimate
ReFH2 (D = 7.5hr)	2040
Statistical (FARL = 1.0)	2001

With the inclusion of Loch Awe as a storage area in the model, a critical storm duration of 72 hours was found to produce the highest loch level of 39.8mAOD at the 200 year +CC event, with a peak modelled outflow of 1067 m3/s, slightly lower but of a similar order to the DRAX peak flow estimate of 1169 m3/s. This then begs the question of why there is a difference of 2.5m in peak water level when the difference in outflow is less than 10%.

The Loch Awe Barrage is represented in the same way in both the DRAX model and AECOM model – AECOM used the geometry contained in the DRAX report to represent the gates and barrage spill crest, and the same hydraulic modelling software has been used. In both models, the gates were set to be fully open. Both results quote water levels in Loch Awe at the upstream end of approach channel to the barrage (i.e. account for the head loss along the approach channel).

The answer to why there is a difference of 2.5m in peak water level between the two models appears to be the different treatment of the downstream boundary. Flow through the barrage gates is controlled by the head difference between the upstream and downstream water level. The downstream boundary controls the water level at the downstream side of the gates, which in turn controls the water level required upstream of the barrage to discharge a specific flow through the gates. Both models use a normal depth downstream boundary. AECOM estimated the normal depth gradient to be 0.005 from inspection of the downstream channel gradient using 1m Lidar. The normal depth gradient assumed by DRAX is not stated in their report, but it is clear from the long profiles below that it results in a much higher water level downstream of the gates.

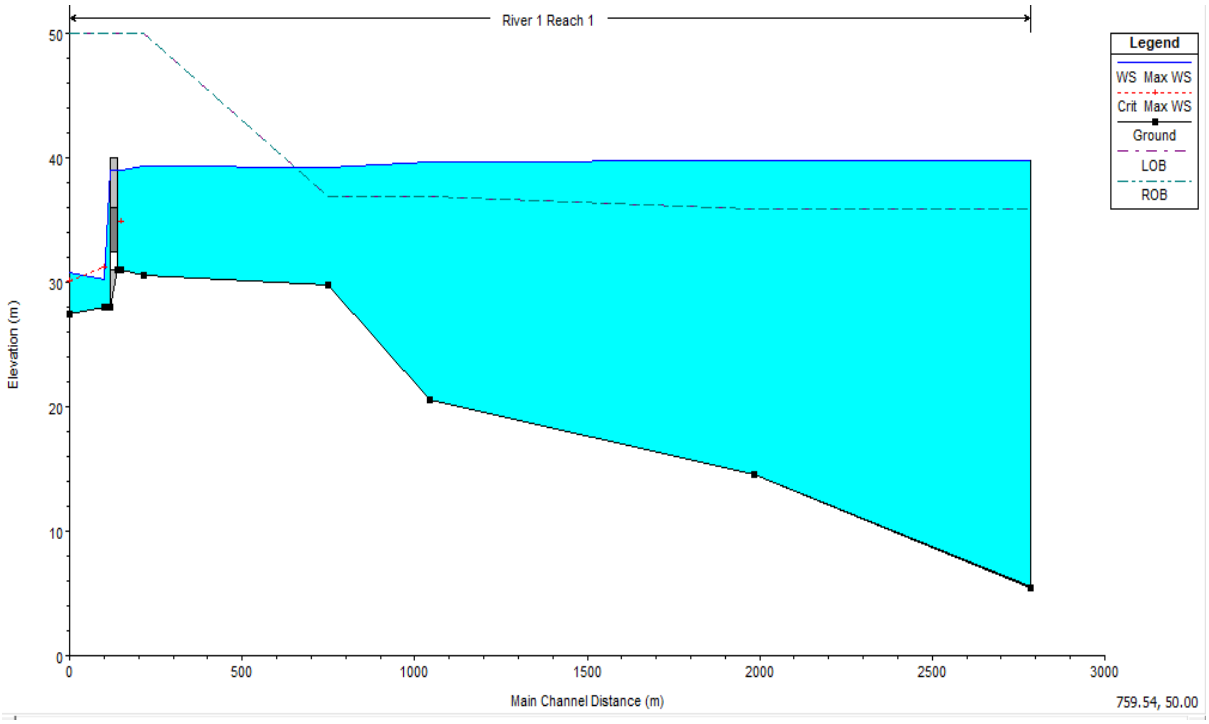


Figure H11: AECOM Modelled Water Level Profile

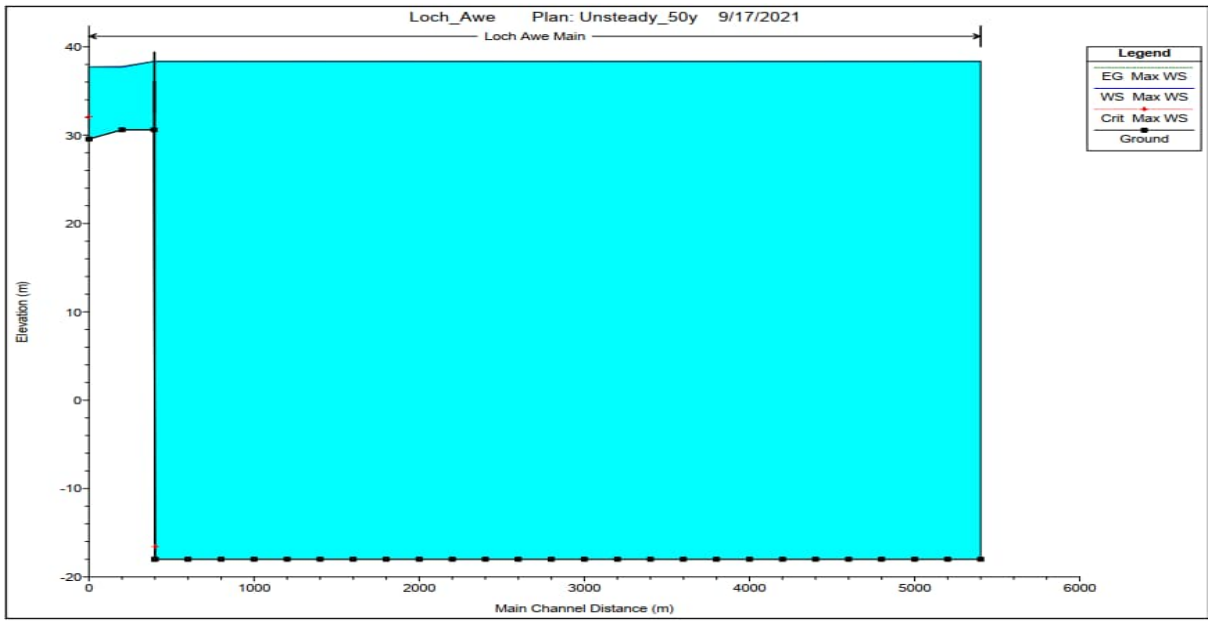


Figure H12: DRAX Cruachan Expansion flood risk assessment Water Level Profile

It is clear from this that the flow through the gates, and thus the water level in Loch Awe is sensitive to the water levels in the river channel downstream of the gates. AECOM has undertaken further analysis by including additional river sections generated using 1m lidar downstream of the gates along a reach of over 500m, just beyond where the channel invert drops sharply away. Flows in this steep section will be supercritical, ensuring that any assumption made for the downstream boundary will not affect water levels further upstream. Rerunning the 200 year + CC hydrograph through the updated model resulted in a peak water level in Loch Awe of 40.01mAOD. We consider this to be the best current estimate.

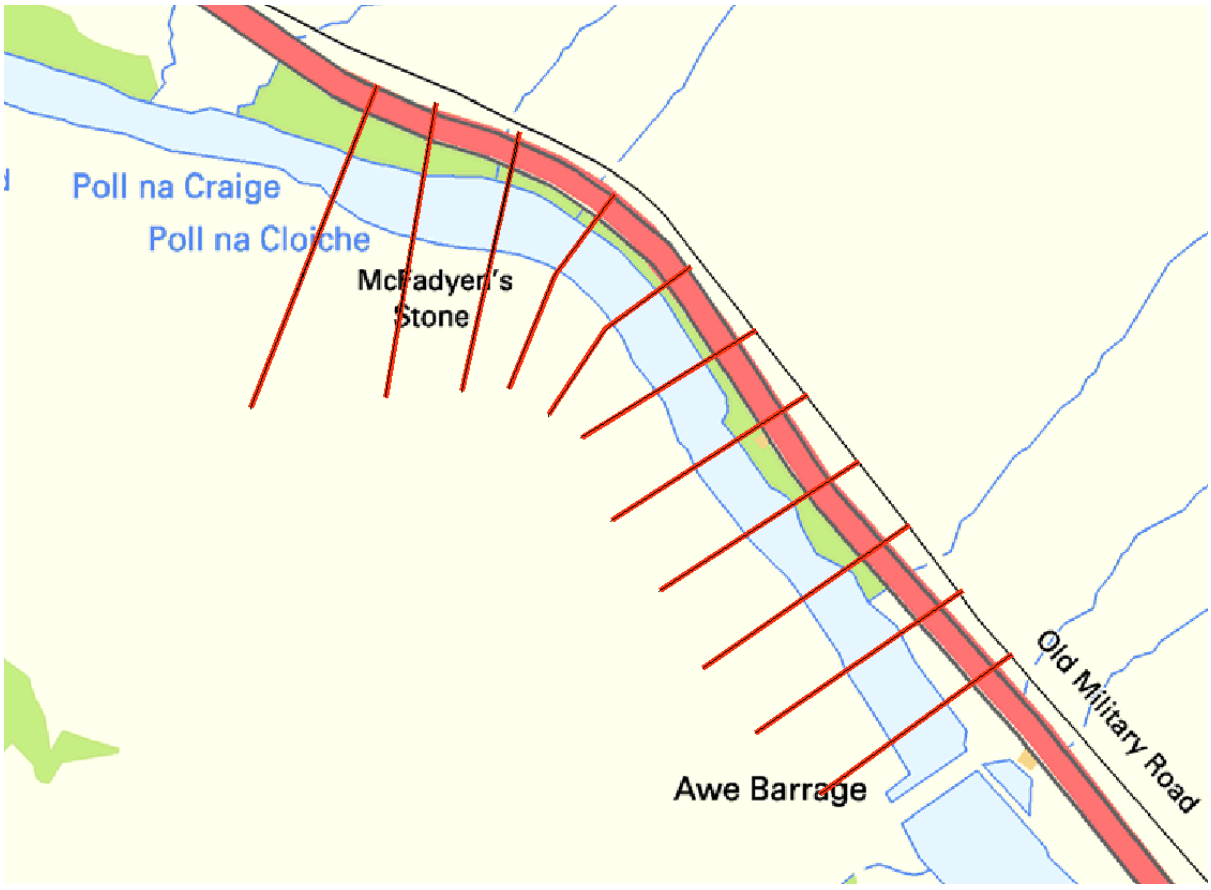


Figure H13: Additional River Sections Downstream of Awe Barrage

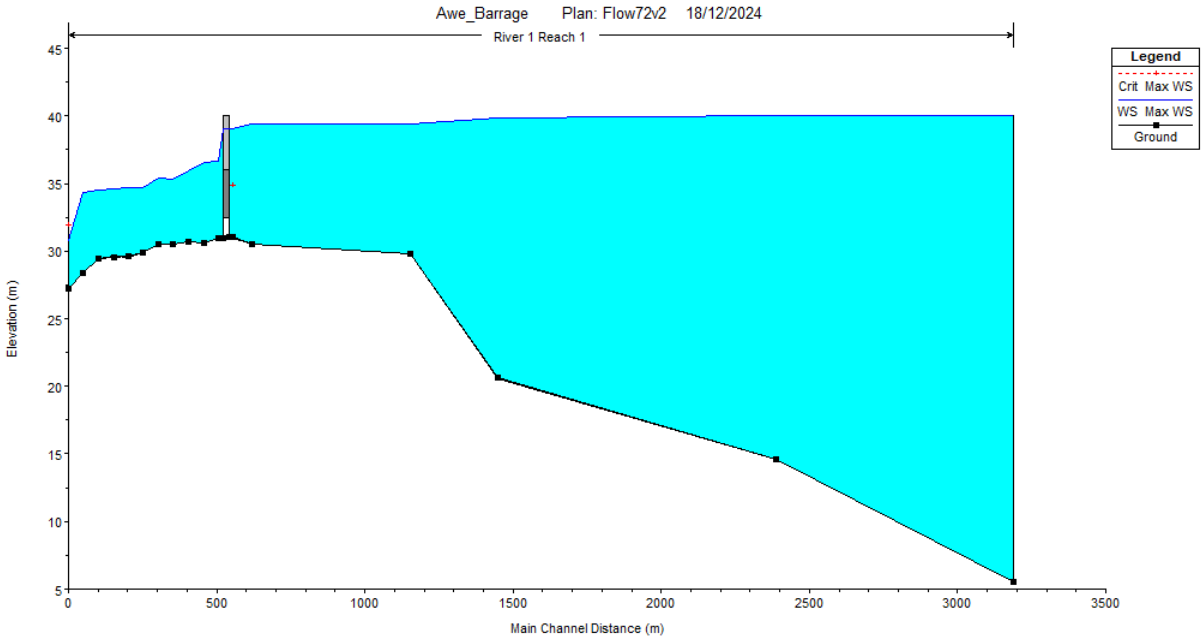


Figure H14: Updated AECOM Water Level Profile for 200 year + CC Event

Paragraph 1.3

Given the flood level may be underestimated, the proposed above ground infrastructure may well be within the flood risk area. We request a more detailed site plan clearly showing the exact size and locations of all proposed and nearby existing infrastructure beside Loch Awe.

We do not believe the flood level is underestimated – see response to para 1.2 above.

Paragraph 1.4 & 1.5

The primary objection regarding flooding relates to the proposed water level regime change. The application proposes a "hands off" level of 37.67mAOD, reduced to 37mAOD with a 10% AEP rainfall event forecast, which is higher than the current hands-off level for Cruachan PSH. Since flooding impacts already occur under the current regime, the proposed regime change would further increase these impacts.

In amending the proposed scheme, which reduces the working volume of water being moved around from 51.6 Mm3 to 14.68 Mm3, the Applicant also now proposes changes to their operating regime. This includes a reduction in their "hands off" upper level which is now 470mm lower than originally submitted. The Applicant has come to understand that the "hands off" level the existing Cruachan PSH usually operates to is 36.88mAOD in summer and 36.57mAOD in winter. However, these levels do not form part of any CAR Licence for the existing Cruachan scheme and are instead part of a commercial agreement between two private companies: Drax and SSE Renewables. These levels are therefore not fixed, and Cruachan is not limited to these operational levels via any statutory mechanism and so regularly operates out with these when called upon to do so. We have also assessed the assumption that because Loch Awe regularly experiences flooding impacts these impacts would increase as a result of the proposals, we have reassessed the proposed operational model against these notional thresholds to determine the actual impact of the updated Balliemeanoch scheme. Our analysis has therefore also included a further scenario with these upper and lower "hands off" levels, which are as follows:

Table H13. Operational Scenarios Tested

	Season	Lower threshold	Upper threshold	Description
Scenario 1a	April-Nov	36.27	36.88	Drax and SSE Renewables notional lower and upper thresholds
	Dec-March	35.96	36.57	
Scenario 3e	April-Nov	36.17	37.2	Proposed lower and upper thresholds.
	Dec-March	35.86	37.2	+>630mm

Peak levels in Loch Awe for these scenarios of scheme operation were compared to the baseline during the highest flood events occurring during the record of observed levels (2014-2024). Changing the lower thresholds made negligible difference to the peak levels, but has other benefits elsewhere as described in Section 4, so the table below reports only on the level difference in mm for different upper thresholds.

Table H14. Impact of Proposed Development on Loch Awe Levels during Historic Flood Events

Rank	Flood event	Modelled flood level (no scheme) mAOD	Modelled flood level (propose scheme operating) mAOD	Change in peak flood levels (mm)
1	08/10/2023	39.047	39.044	-3
2	08/10/2018	38.906	38.889	-17
3	26/10/2014	38.797	38.797	0
4	06/03/2015	38.627	38.536	-91
5	31/12/2024	38.417	38.369	-48
6	05/12/2015	38.583	38.523	-60
7	12/09/2020	38.525	38.458	-67
8	29/03/2021	38.356	38.195	-161

It can be seen from the results in Table H3 that apart from the 2014 event where levels remain the same, the impact of the scheme is to reduce the peak loch level, and consequently the outflow. This is because during flood events the scheme would stop generating and so is not actively adding water, and may only extract water, but also because the projects operation creates different starting water levels before flood events occur. The Applicant uses the analogy of a bathtub with water flowing in from a tap, before being switched off. Balliemeanoch is like a jug, scooping water out of the flowing bath and pouring it back in again. Scooping water out of the bath lowers the level of the water but pouring it back in cannot raise the level of water above what it would otherwise have been.

The revised scheme therefore does not exacerbate existing flood impacts and may provide a slight flood reduction benefit for some events. As such the proposals now comply with bullet point 2 in Policy 22 of NPF4. Note: There is also no longer a requirement to reduce the upper threshold beyond what is proposed to account for rainfall forecasts as the peak levels reached are lower as a result of the scheme.

8 Conclusion

The Proposed Development would introduce the ability to transfer large volumes of water between the Headpond and Loch Awe. The Headpond operating volume is 14.68 Mm^3 and the generation and pump flow rates are 301 and 301 m^3/s respectively.

The impact on Loch Awe levels due to the Development has been assessed based on proposed upper and lower “hands off” thresholds shown in Table H5. These thresholds have been set based on the results of modelling a number of variations in threshold levels in order to balance minimising any detrimental impact during flood and drought events with reducing the curtailment of the Development.

The analysis has been conducted using a behaviour analysis model, based on the principle of water balance. The analysis concludes the following:

- The impact of the Development on water levels in the is to slightly reduce the mean or average loch level 36.36 to 36.33 mAOD. Lower loch levels are more affected, with a 150mm reduction in the loch level exceeded 90% of the time from 35.98 to 35.83mAOD.
- The Development does not exacerbate existing flood impacts and may provide a slight flood reduction benefit for some events. This is because during flood events the last operation prior to the flood event will be pumping, which lowers water levels below the baseline and also because the operation of the Development creates different starting water levels before flood events occur. As such the proposals comply with bullet point 2 in Policy 22 of NPF4.
- With the Development in operation, the frequency of barrage operation is essentially unchanged
- The Development does not exacerbate loch levels during drought events and may provide a benefit. This is because the last operation prior to the drought event will be generation, not pumping, which raises water levels above the baseline. The Development therefore provides a benefit in terms of maintaining compensatory and freshet releases during low flow periods.
- The rate of change of loch level during both pumping and generation is 28 mm/hr. This rate of change in loch level lies within the range currently experienced, albeit at the more unusual end of the duration curve as shown in Figure H9.

The construction of the Headpond will result in the impoundment of the tributary of the tributary of Buinne Dhubh. To compensate for the impact of such impoundment on flows in the downstream channel a compensatory flow regie is proposed based on the provision of a seasonally varying flow.

The compensatory flow arrangement would be based on a variable flow and head arrangement to take account of the continuous fluctuation in water levels in the Headpond and the seasonal variation in flows in the watercourse. A submerged discharge valve arrangement would provide the range of flows as calculated in the low flow assessment and for the range of water levels.

The seasonal variation would be based on the average monthly flows for each calendar month. The overall monthly volume of discharge would be maintained at the existing volume. In addition to the compensatory flow occasional higher flow would be released as part of the scour valve operation.

The assessment has been based on calculated flow parameters based on Low Flows, software widely used in the industry and by regulators. In line with good practice, flow monitoring would be undertaken over a number of years to confirm the monthly flow duration curves.

The provision of the proposed compensatory flow regime would mitigate the impact of the proposed development on flows in the downstream watercourse. Whilst current assessment are based on Low Flow numerical analysis a detailed hydrometric survey will be undertaken based on a minimum of 12 months of flow gauging to confirm the baseline flow conditions in the watercourse. The final compensation flow provision will be based on the gauged data in line with the principle established based on the Low Flow analysis.

With 2 impounding structures flood waters could be released in several different directions. In the event of the Main Dam being breached flood water would travel west down the catchment of Allt Beochlich and enter Loch Awe. The area is sparsely populated with a small number of properties and the B840. The saddle dam would result in flood water heading north and down the catchment of Allt na Cuile Riabhaichie and to Loch Awe. Gain this is a sparsely populated area with limited number of receptors.

The likelihood of such an event is extremely remote, significantly beyond those considered under NPF4. This is reduced further based on the Headpond not being full most of the time. Fewer than 100 people would be affected with a very small increase in risk based on the very remote likelihood of such an event occurring. Based on these parameters the scale of the effect on human safety is regarded as being Very Small.

A further assessment of the return period flood levels at Loch Awe have confirmed that the calculated 1 in 200-year flood level with an appropriate allowance for increased flow rates because of climate change is 40.01 mAOD. This level is a small variation from the original level in the assessment undertaken to support the Balliemeanoch. This is based on a more detailed assessment of the downstream hydraulic capacity of the River Awe and the submergence factor at the outlet of the barrage. The development will not be at risk in such an event and the development will not exacerbate the flood levels in such and event.

Annex

- Low Flows Assessment results
- Water Balance model results.
    - Flood conditions
    - Low Water Level conditions

Annex A: Low Flow Results

	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Qmean	0.078	0.121	0.103	0.097	0.049	0.034	0.036	0.041	0.054	0.081	0.101	0.1	0.116
Q(0.1)	1.085	0.848	0.95	0.781	0.572	0.528	0.505	0.634	0.542	0.661	0.732	0.693	1.141
Q(1)	0.554	0.556	0.59	0.516	0.317	0.263	0.25	0.269	0.346	0.459	0.444	0.484	0.611
Q(2)	0.435	0.475	0.451	0.467	0.244	0.209	0.195	0.216	0.284	0.375	0.4	0.423	0.494
Q(3)	0.369	0.437	0.417	0.411	0.208	0.175	0.167	0.189	0.24	0.333	0.358	0.389	0.43
Q(4)	0.325	0.405	0.379	0.362	0.183	0.159	0.141	0.167	0.22	0.298	0.339	0.354	0.394
Q(5)	0.291	0.384	0.336	0.329	0.164	0.142	0.129	0.15	0.198	0.273	0.311	0.32	0.37
Q(6)	0.265	0.366	0.308	0.3	0.148	0.131	0.118	0.136	0.184	0.254	0.288	0.303	0.35
Q(7)	0.244	0.343	0.291	0.275	0.138	0.115	0.108	0.127	0.17	0.234	0.271	0.286	0.326
Q(8)	0.228	0.323	0.277	0.257	0.13	0.101	0.103	0.121	0.161	0.228	0.256	0.267	0.306
Q(9)	0.214	0.314	0.259	0.238	0.123	0.093	0.096	0.113	0.151	0.214	0.237	0.245	0.295
Q(10)	0.2	0.293	0.247	0.224	0.115	0.087	0.088	0.106	0.139	0.201	0.229	0.236	0.281
Q(11)	0.189	0.279	0.233	0.213	0.109	0.081	0.084	0.099	0.132	0.191	0.221	0.223	0.261
Q(12)	0.178	0.265	0.226	0.204	0.102	0.074	0.08	0.092	0.122	0.182	0.211	0.215	0.249
Q(13)	0.168	0.252	0.217	0.19	0.097	0.071	0.075	0.087	0.117	0.171	0.2	0.206	0.241
Q(14)	0.16	0.242	0.205	0.181	0.095	0.066	0.071	0.082	0.11	0.162	0.194	0.197	0.23
Q(15)	0.152	0.232	0.196	0.172	0.09	0.062	0.067	0.077	0.106	0.154	0.186	0.192	0.222
Q(16)	0.145	0.227	0.188	0.162	0.086	0.057	0.064	0.073	0.102	0.148	0.18	0.183	0.212
Q(17)	0.138	0.219	0.178	0.156	0.082	0.055	0.06	0.07	0.098	0.142	0.176	0.175	0.202
Q(18)	0.131	0.207	0.173	0.15	0.078	0.052	0.056	0.067	0.093	0.136	0.169	0.168	0.194

Q(19)	0.126	0.199	0.163	0.144	0.075	0.049	0.054	0.063	0.089	0.13	0.165	0.163	0.187
Q(20)	0.12	0.193	0.158	0.139	0.071	0.046	0.051	0.061	0.085	0.124	0.16	0.156	0.179
Q(21)	0.114	0.185	0.153	0.135	0.069	0.044	0.048	0.058	0.081	0.12	0.158	0.152	0.174
Q(22)	0.109	0.177	0.145	0.132	0.065	0.042	0.046	0.055	0.077	0.116	0.154	0.147	0.166
Q(23)	0.104	0.171	0.137	0.126	0.063	0.04	0.043	0.053	0.073	0.112	0.149	0.144	0.157
Q(24)	0.1	0.165	0.134	0.122	0.06	0.038	0.042	0.05	0.07	0.108	0.145	0.138	0.153
Q(25)	0.096	0.16	0.128	0.116	0.058	0.036	0.04	0.048	0.068	0.104	0.14	0.134	0.146
Q(26)	0.091	0.155	0.124	0.112	0.056	0.034	0.039	0.046	0.065	0.1	0.135	0.131	0.141
Q(27)	0.087	0.151	0.118	0.109	0.053	0.032	0.037	0.044	0.061	0.098	0.128	0.126	0.133
Q(28)	0.084	0.147	0.113	0.105	0.051	0.031	0.036	0.043	0.058	0.094	0.125	0.121	0.129
Q(29)	0.08	0.143	0.11	0.101	0.049	0.03	0.034	0.041	0.056	0.09	0.123	0.117	0.124
Q(30)	0.077	0.137	0.106	0.098	0.047	0.028	0.033	0.039	0.054	0.086	0.119	0.112	0.119
Q(31)	0.073	0.133	0.102	0.095	0.045	0.027	0.032	0.038	0.051	0.082	0.116	0.107	0.114
Q(32)	0.07	0.127	0.097	0.091	0.044	0.026	0.031	0.037	0.049	0.078	0.111	0.103	0.111
Q(33)	0.068	0.125	0.093	0.087	0.042	0.024	0.03	0.035	0.047	0.076	0.108	0.099	0.107
Q(34)	0.065	0.12	0.091	0.084	0.041	0.023	0.029	0.034	0.045	0.073	0.104	0.095	0.104
Q(35)	0.062	0.114	0.088	0.083	0.039	0.022	0.028	0.032	0.043	0.07	0.1	0.092	0.1
Q(36)	0.06	0.11	0.084	0.08	0.039	0.022	0.027	0.031	0.041	0.067	0.096	0.089	0.096
Q(37)	0.057	0.105	0.08	0.078	0.038	0.021	0.026	0.03	0.039	0.065	0.094	0.084	0.092
Q(38)	0.055	0.099	0.078	0.075	0.037	0.02	0.025	0.029	0.038	0.063	0.091	0.083	0.089
Q(39)	0.053	0.097	0.074	0.073	0.035	0.019	0.025	0.028	0.037	0.06	0.088	0.08	0.085
Q(40)	0.051	0.094	0.072	0.071	0.035	0.018	0.024	0.027	0.035	0.057	0.085	0.077	0.082
Q(41)	0.048	0.09	0.069	0.068	0.034	0.018	0.023	0.026	0.034	0.055	0.081	0.075	0.079
Q(42)	0.046	0.086	0.066	0.066	0.033	0.017	0.022	0.025	0.033	0.053	0.079	0.072	0.076
Q(43)	0.045	0.083	0.064	0.064	0.032	0.016	0.021	0.024	0.032	0.051	0.076	0.069	0.072

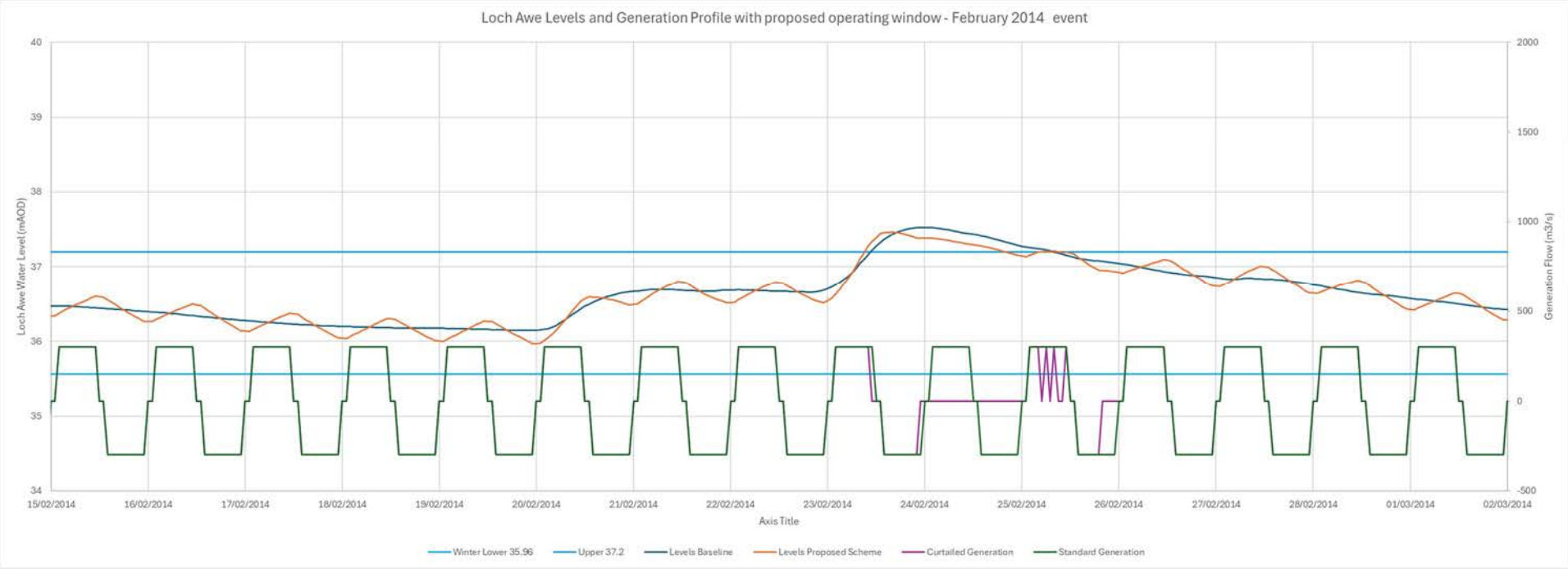
Q(44)	0.043	0.079	0.062	0.061	0.031	0.016	0.021	0.023	0.031	0.05	0.072	0.067	0.069
Q(45)	0.041	0.077	0.059	0.06	0.03	0.016	0.02	0.022	0.029	0.048	0.069	0.064	0.068
Q(46)	0.039	0.074	0.057	0.059	0.03	0.015	0.019	0.022	0.028	0.047	0.068	0.063	0.065
Q(47)	0.038	0.07	0.054	0.055	0.029	0.015	0.019	0.021	0.027	0.045	0.066	0.061	0.062
Q(48)	0.037	0.067	0.052	0.053	0.028	0.014	0.018	0.02	0.026	0.043	0.063	0.059	0.059
Q(49)	0.035	0.065	0.05	0.051	0.027	0.014	0.018	0.02	0.026	0.041	0.061	0.057	0.058
Q(50)	0.034	0.062	0.048	0.05	0.026	0.013	0.017	0.019	0.025	0.04	0.059	0.054	0.056
Q(51)	0.033	0.06	0.046	0.048	0.025	0.013	0.016	0.018	0.024	0.039	0.057	0.052	0.054
Q(52)	0.032	0.058	0.044	0.046	0.025	0.013	0.016	0.018	0.023	0.037	0.055	0.051	0.052
Q(53)	0.03	0.056	0.043	0.045	0.024	0.012	0.015	0.017	0.022	0.036	0.053	0.049	0.049
Q(54)	0.029	0.054	0.041	0.043	0.023	0.012	0.015	0.017	0.021	0.034	0.052	0.047	0.047
Q(55)	0.028	0.052	0.04	0.042	0.023	0.012	0.014	0.016	0.021	0.033	0.05	0.045	0.045
Q(56)	0.027	0.049	0.038	0.04	0.022	0.011	0.014	0.016	0.02	0.032	0.048	0.043	0.044
Q(57)	0.026	0.047	0.036	0.039	0.022	0.011	0.013	0.015	0.019	0.03	0.046	0.042	0.042
Q(58)	0.025	0.046	0.035	0.037	0.021	0.011	0.013	0.015	0.019	0.029	0.044	0.04	0.04
Q(59)	0.024	0.044	0.033	0.036	0.02	0.01	0.012	0.014	0.018	0.028	0.042	0.038	0.039
Q(60)	0.023	0.041	0.032	0.035	0.02	0.01	0.012	0.014	0.017	0.027	0.041	0.037	0.037
Q(61)	0.022	0.04	0.031	0.034	0.019	0.01	0.012	0.013	0.017	0.026	0.039	0.036	0.036
Q(62)	0.021	0.038	0.03	0.033	0.019	0.01	0.011	0.013	0.016	0.026	0.038	0.035	0.035
Q(63)	0.021	0.036	0.029	0.032	0.018	0.009	0.011	0.012	0.015	0.025	0.037	0.034	0.034
Q(64)	0.02	0.035	0.027	0.031	0.018	0.009	0.011	0.012	0.015	0.024	0.035	0.033	0.033
Q(65)	0.019	0.033	0.025	0.03	0.017	0.009	0.01	0.011	0.014	0.023	0.034	0.031	0.031
Q(66)	0.018	0.032	0.024	0.029	0.017	0.008	0.01	0.011	0.014	0.022	0.032	0.031	0.03
Q(67)	0.018	0.03	0.023	0.028	0.016	0.008	0.01	0.011	0.013	0.021	0.031	0.029	0.029
Q(68)	0.017	0.029	0.022	0.027	0.016	0.008	0.009	0.01	0.013	0.02	0.029	0.028	0.027

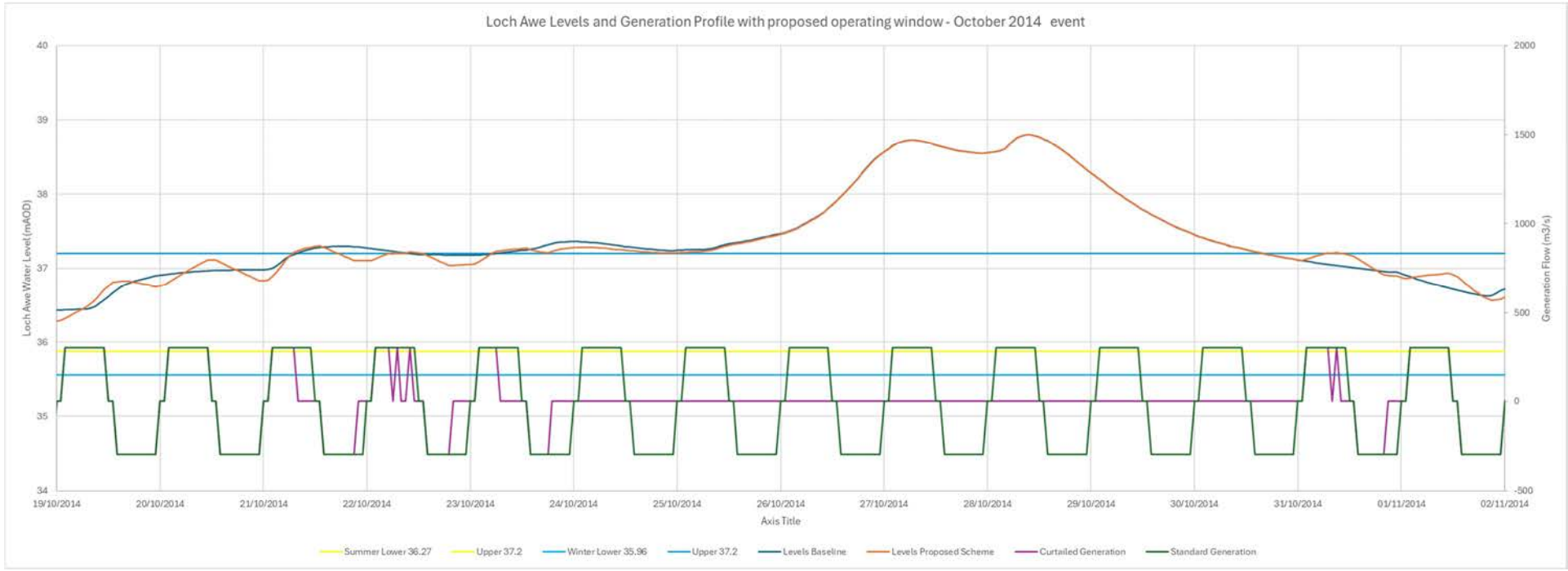
Q(69)	0.016	0.028	0.021	0.026	0.016	0.008	0.009	0.01	0.012	0.02	0.028	0.027	0.026
Q(70)	0.016	0.027	0.02	0.025	0.015	0.008	0.009	0.01	0.011	0.019	0.027	0.026	0.025
Q(71)	0.015	0.025	0.019	0.024	0.015	0.007	0.008	0.009	0.011	0.018	0.026	0.025	0.024
Q(72)	0.014	0.024	0.018	0.023	0.014	0.007	0.008	0.009	0.011	0.017	0.025	0.024	0.023
Q(73)	0.014	0.023	0.017	0.022	0.014	0.007	0.008	0.009	0.01	0.017	0.024	0.023	0.022
Q(74)	0.013	0.022	0.017	0.021	0.014	0.007	0.008	0.008	0.01	0.016	0.023	0.022	0.021
Q(75)	0.013	0.021	0.016	0.02	0.013	0.007	0.007	0.008	0.01	0.015	0.022	0.021	0.02
Q(76)	0.012	0.02	0.015	0.019	0.013	0.007	0.007	0.008	0.009	0.015	0.021	0.021	0.02
Q(77)	0.012	0.019	0.014	0.019	0.013	0.006	0.007	0.007	0.009	0.014	0.02	0.02	0.019
Q(78)	0.011	0.019	0.014	0.018	0.012	0.006	0.007	0.007	0.008	0.014	0.019	0.019	0.018
Q(79)	0.011	0.018	0.013	0.017	0.012	0.006	0.007	0.007	0.008	0.013	0.018	0.018	0.018
Q(80)	0.01	0.017	0.012	0.017	0.012	0.006	0.006	0.007	0.008	0.012	0.017	0.018	0.017
Q(81)	0.01	0.016	0.012	0.016	0.011	0.006	0.006	0.007	0.008	0.012	0.017	0.017	0.016
Q(82)	0.01	0.015	0.011	0.015	0.011	0.006	0.006	0.006	0.007	0.011	0.016	0.016	0.015
Q(83)	0.009	0.015	0.011	0.014	0.01	0.005	0.006	0.006	0.007	0.011	0.015	0.016	0.014
Q(84)	0.009	0.014	0.01	0.014	0.01	0.005	0.006	0.006	0.007	0.01	0.014	0.015	0.013
Q(85)	0.008	0.013	0.01	0.013	0.01	0.005	0.005	0.006	0.006	0.01	0.013	0.014	0.013
Q(86)	0.008	0.013	0.009	0.013	0.009	0.005	0.005	0.005	0.006	0.009	0.013	0.014	0.012
Q(87)	0.008	0.012	0.009	0.012	0.009	0.005	0.005	0.005	0.006	0.009	0.012	0.013	0.011
Q(88)	0.007	0.011	0.009	0.012	0.009	0.005	0.005	0.005	0.006	0.008	0.012	0.013	0.011
Q(89)	0.007	0.011	0.008	0.011	0.008	0.005	0.005	0.005	0.005	0.008	0.011	0.012	0.01
Q(90)	0.006	0.01	0.008	0.011	0.008	0.004	0.004	0.004	0.005	0.007	0.01	0.012	0.009
Q(91)	0.006	0.009	0.008	0.01	0.007	0.004	0.004	0.004	0.005	0.007	0.01	0.011	0.009
Q(92)	0.006	0.009	0.007	0.01	0.007	0.004	0.004	0.004	0.005	0.006	0.009	0.011	0.008
Q(93)	0.005	0.008	0.007	0.009	0.006	0.004	0.003	0.004	0.005	0.006	0.009	0.01	0.008

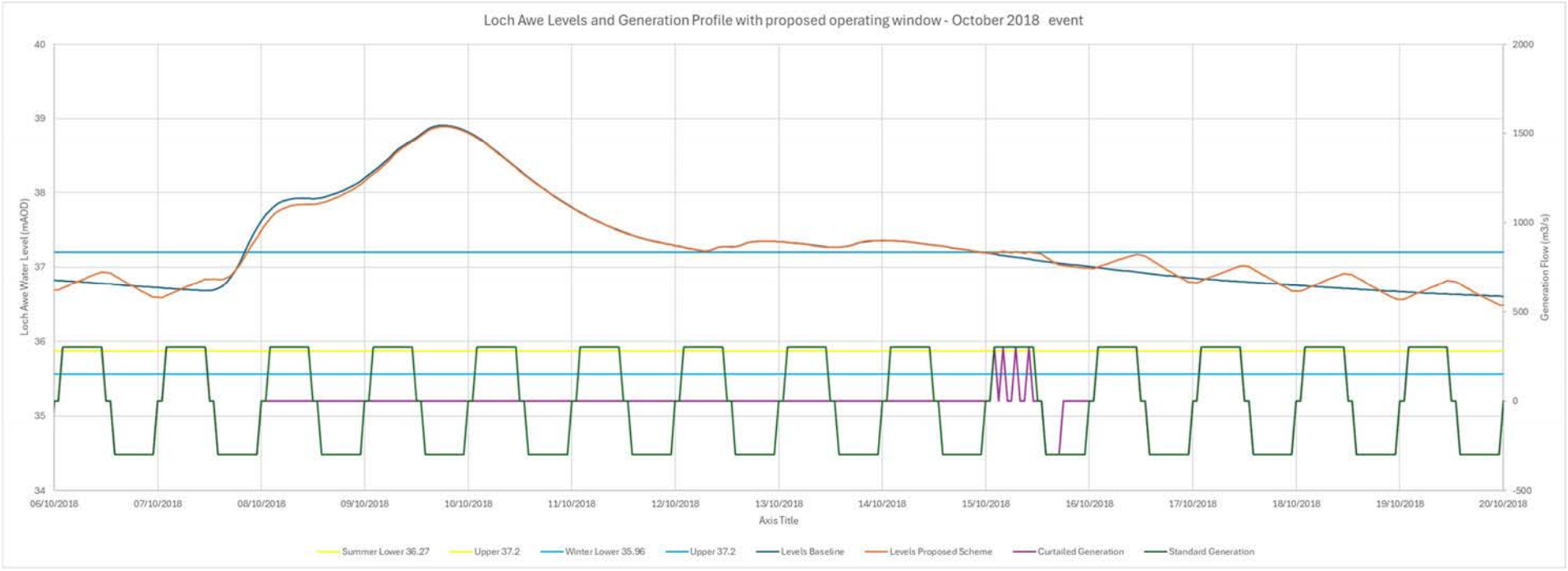
Q(94)	0.005	0.008	0.006	0.009	0.006	0.004	0.003	0.004	0.004	0.005	0.008	0.009	0.007
Q(95)	0.005	0.007	0.006	0.008	0.005	0.003	0.003	0.003	0.004	0.005	0.007	0.009	0.007
Q(96)	0.004	0.006	0.006	0.008	0.005	0.003	0.003	0.003	0.004	0.004	0.007	0.008	0.006
Q(97)	0.004	0.005	0.005	0.007	0.004	0.003	0.002	0.003	0.003	0.004	0.006	0.007	0.005
Q(98)	0.003	0.005	0.005	0.006	0.004	0.002	0.002	0.003	0.003	0.004	0.006	0.006	0.005
Q(99)	0.002	0.004	0.004	0.004	0.003	0.002	0.002	0.002	0.003	0.003	0.005	0.005	0.004
Q(99.9)	0.002	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.004	0.003

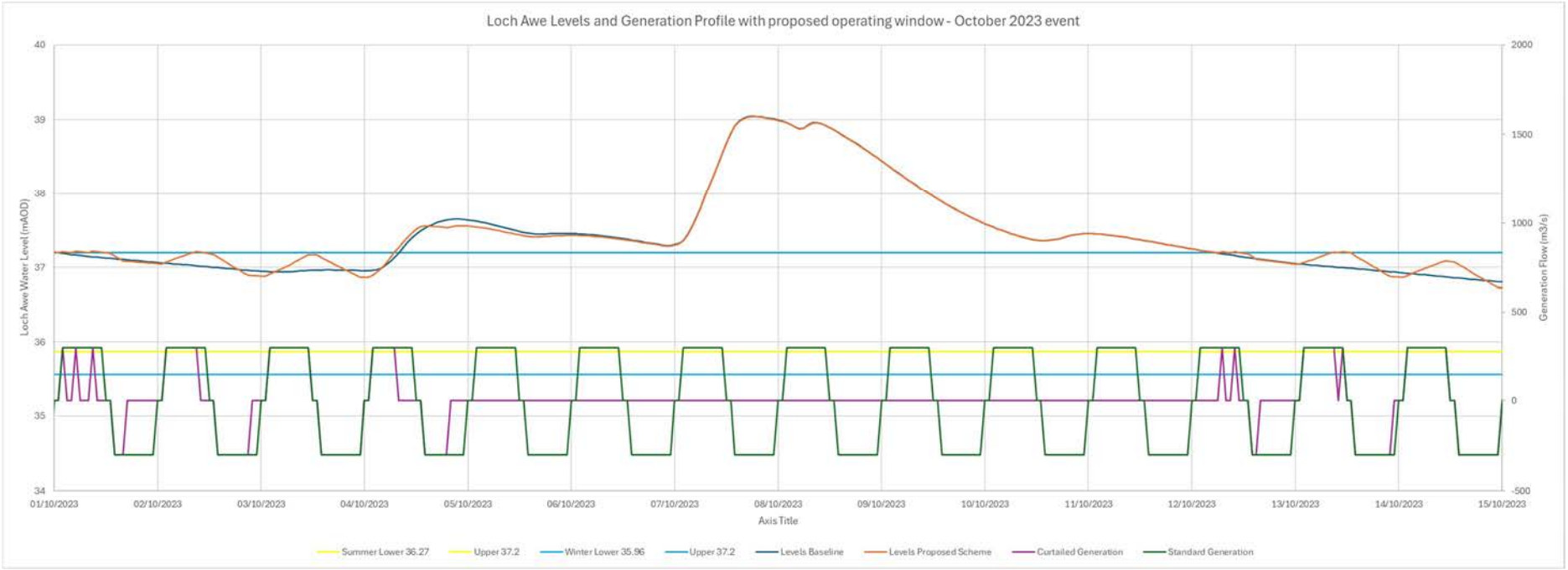
Annex B: Water Balance Model Extracts

Flood Events



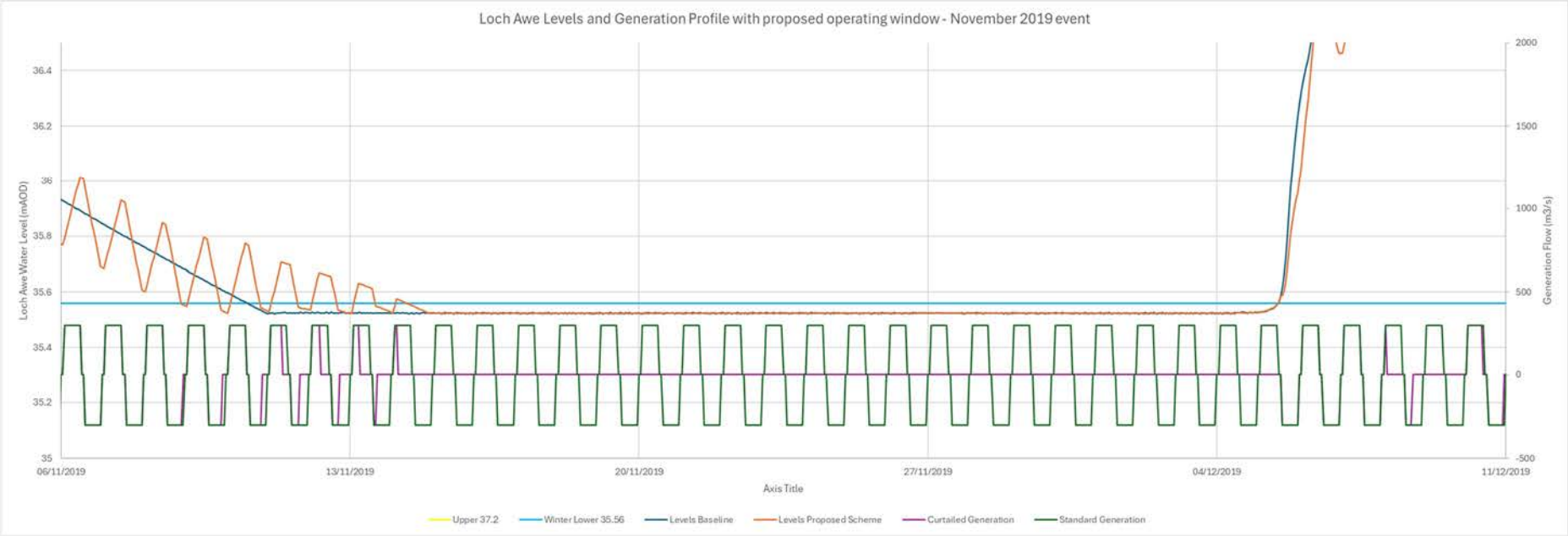

Loch Awe Levels and Generation Profile with proposed operating window - October 2014 event
Loch Awe Water Level (mAOD)
Generation Flow (m3/s)
40
39
38
37
36
35
34
2000
1500
1000
500
0
-500
19/10/2014
20/10/2014
21/10/2014
22/10/2014
23/10/2014
24/10/2014
25/10/2014
26/10/2014
27/10/2014
28/10/2014
29/10/2014
30/10/2014
31/10/2014
01/11/2014
02/11/2014
Axis Title
Summer Lower 36.27
Upper 37.2
Winter Lower 35.96
Upper 37.2
Levels Baseline
Levels Proposed Scheme
Curtailed Generation
Standard Generation


Loch Awe Levels and Generation Profile with proposed operating window - October 2018 event
Loch Awe Water Level (mAOD)
Generation Flow (m3/s)
40
39
38
37
36
35
34
2000
1500
1000
500
0
-500
06/10/2018
07/10/2018
08/10/2018
09/10/2018
10/10/2018
11/10/2018
12/10/2018
13/10/2018
14/10/2018
15/10/2018
16/10/2018
17/10/2018
18/10/2018
19/10/2018
20/10/2018
Axis Title
Summer Lower 36.27
Upper 37.2
Winter Lower 35.96
Upper 37.2
Levels Baseline
Levels Proposed Scheme
Curtailed Generation
Standard Generation

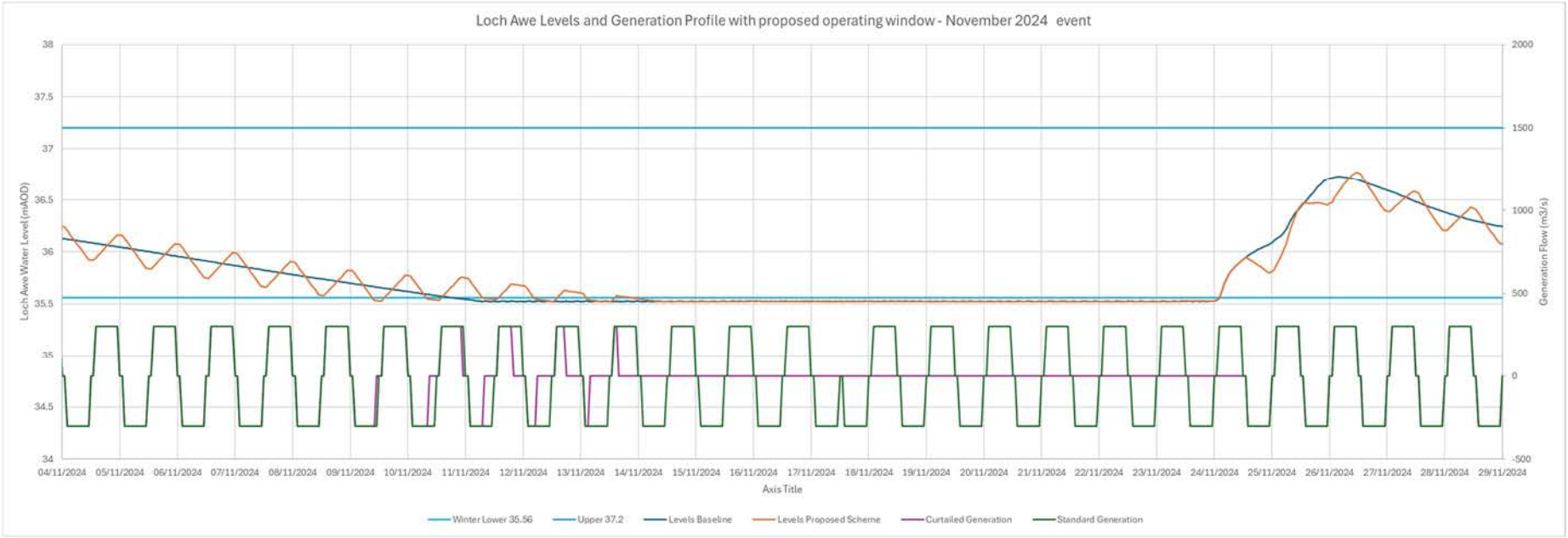

Loch Awe Levels and Generation Profile with proposed operating window - October 2023 event
Loch Awe Water Level (mAOD)
Generation Flow (m3/s)
40
39
38
37
36
35
34
2000
1500
1000
500
0
-500
01/10/2023
02/10/2023
03/10/2023
04/10/2023
05/10/2023
06/10/2023
07/10/2023
08/10/2023
09/10/2023
10/10/2023
11/10/2023
12/10/2023
13/10/2023
14/10/2023
15/10/2023
Axis Title
Summer Lower 36.27
Upper 37.2
Winter Lower 35.96
Upper 37.2
Levels Baseline
Levels Proposed Scheme
Curtailed Generation
Standard Generation


Loch Awe Levels and Generation Profile with proposed operating window - December 2024 event
Loch Awe Water Level (mAOD)
Generation Flow (m3/s)
40
39
38
37
36
35
34
2000
1500
1000
500
0
-500
24/12/2024
25/12/2024
26/12/2024
27/12/2024
28/12/2024
29/12/2024
30/12/2024
31/12/2024
01/01/2025
02/01/2025
03/01/2025
04/01/2025
05/01/2025
06/01/2025
07/01/2025
Axis Title
Summer Lower 36.27
Upper 37.2
Winter Lower 35.96
Upper 37.2
Levels Baseline
Levels Proposed Scheme
Curtailed Generation
Standard Generation

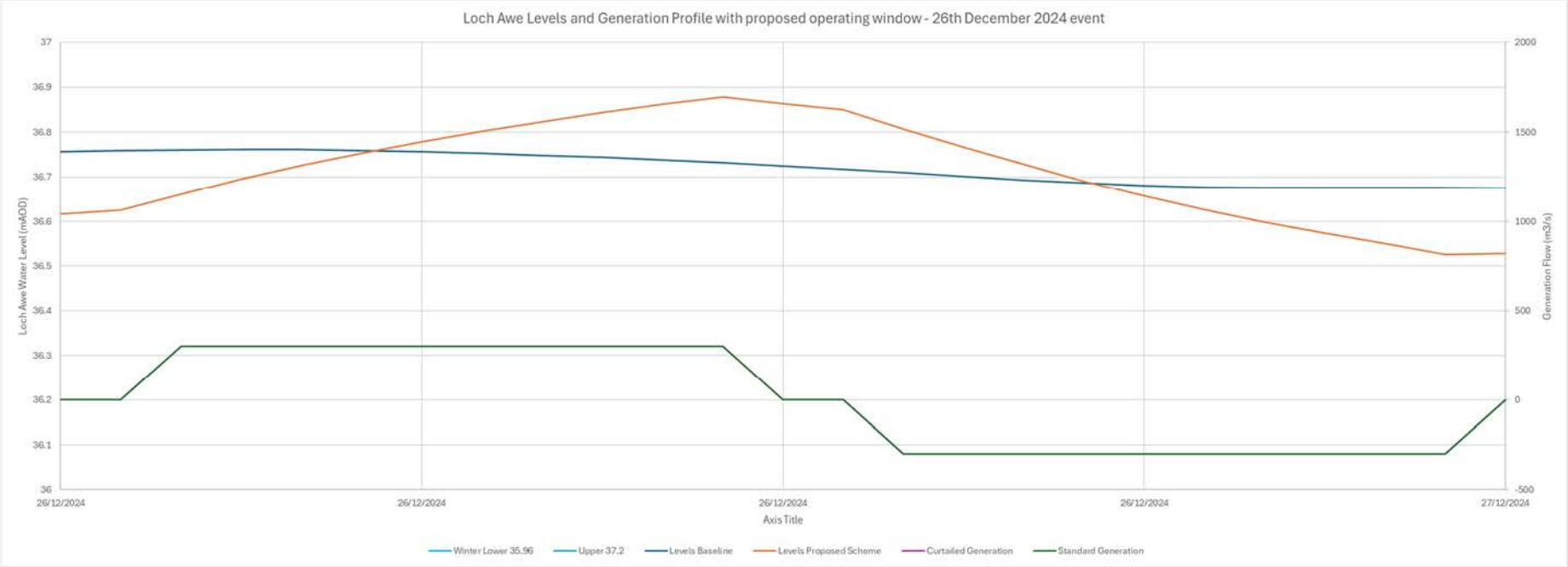
Drought Events



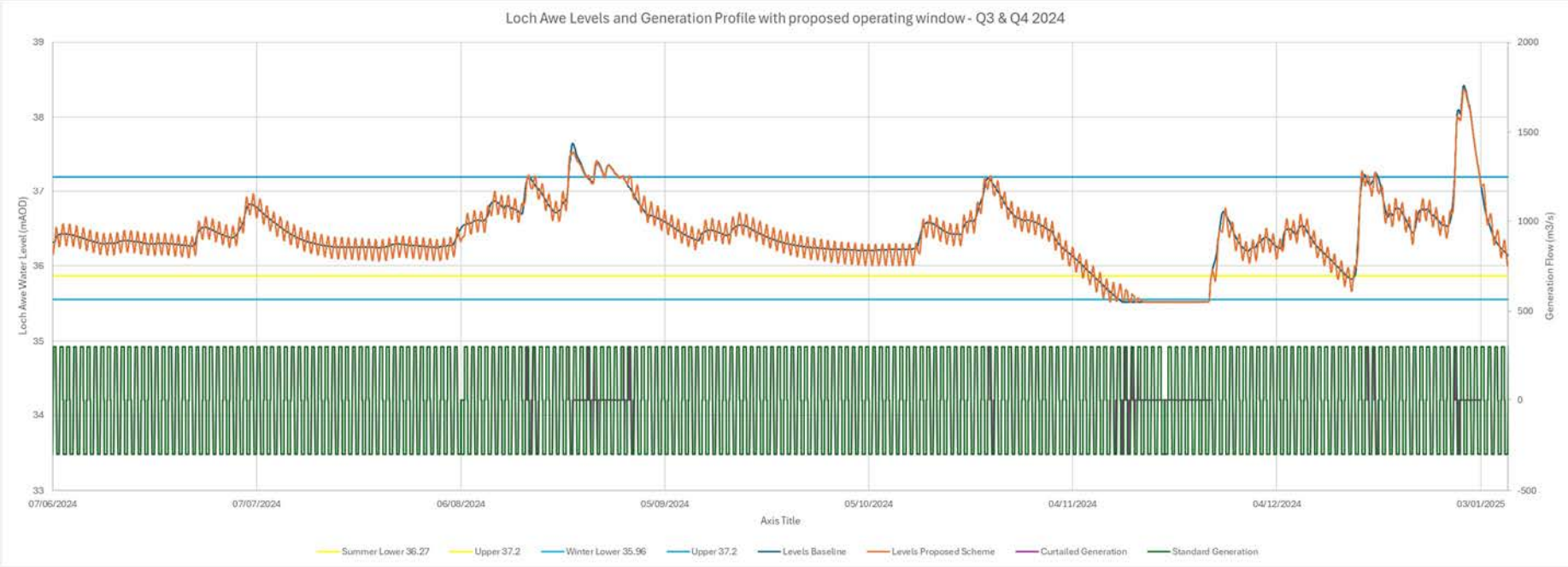

Loch Awe Levels and Generation Profile with proposed operating window - December 2023 event
Loch Awe Water Level (mAOD)
Generation Flow (m3/s)
38
37.5
37
36.5
36
35.5
35
34.5
34
2000
1500
1000
500
0
-500
30/11/2023
01/12/2023
02/12/2023
03/12/2023
04/12/2023
05/12/2023
06/12/2023
07/12/2023
08/12/2023
09/12/2023
10/12/2023
11/12/2023
12/12/2023
13/12/2023
14/12/2023
15/12/2023
16/12/2023
17/12/2023
18/12/2023
19/12/2023
20/12/2023
21/12/2023
Axis Title
Winter Lower 35.56
Upper 37.2
Levels Baseline
Levels Proposed Scheme
Curtailed Generation
Standard Generation


Loch Awe Levels and Generation Profile with proposed operating window - November 2024 event
Loch Awe Water Level (mAOD)
Generation Flow (m3/s)
38
37.5
37
36.5
36
35.5
35
34.5
34
2000
1500
1000
500
0
-500
04/11/2024 05/11/2024 06/11/2024 07/11/2024 08/11/2024 09/11/2024 10/11/2024 11/11/2024 12/11/2024 13/11/2024 14/11/2024 15/11/2024 16/11/2024 17/11/2024 18/11/2024 19/11/2024 20/11/2024 21/11/2024 22/11/2024 23/11/2024 24/11/2024 25/11/2024 26/11/2024 27/11/2024 28/11/2024 29/11/2024
Axis Title
Winter Lower 35.56
Upper 37.2
Levels Baseline
Levels Proposed Scheme
Curtailed Generation
Standard Generation

Short Term Impact showing rate of change



Long Term Assessment (6 months)



Appendix I Framework Construction Traffic Management Plan

Balliemeanoch Pumped Storage Hydro

Framework Construction Traffic Management Plan

ILI (Borders PSH) Ltd

June 2025

Delivering a better world

Quality information

Prepared by	Checked by	Verified by	Approved by
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Revision History

Revision	Revision date	Details	Authorized	Name	Position
01	03/06/2025	B840 Update	DD	David Dewar	Associate Director

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1. Framework Construction Traffic Management Plan

1.1 Introduction

1.1.1 This Framework Construction Traffic Management Plan (FCTMP) appendix supports Chapter 14: Access, Traffic and Transport (Volume 2: Main Report).

1.1.2 For a description of the Proposed Development and the Proposed Development Site, see EIAR Chapter 2: Project and Site Description (Volume 2: Main Report).

1.1.3 This appendix provides supporting data and background calculations for Chapter 14: Access, Traffic and Transport (Volume 2: Main Report).

1.2 Purpose

1.2.1 The purpose of this Framework CTMP is to provide a framework from which a finalised CTMP can be developed post-consent. This Framework outlines the measures which could be used during the construction of the Proposed Development to mitigate transport-related impacts. Access to the Proposed Development by HGVs and construction plant vehicles would be planned, managed, and executed by the applicant's appointed principal contractor to ensure the safety and reliability of deliveries to site, reduce congestion on the local road network and minimise the environmental impact generated by the temporary increase in traffic.

1.3 CTMP Development

1.3.1 The opportunity to develop, amend and enhance the finalised CTMP in response to comments received on this framework document and through the planning and consultation process should be recognised.

1.3.2 The CTMP would consider feedback from local residents and community groups and be developed in consultation with Argyll and Bute Council (ABC) to establish the appropriate methods in which the impact of traffic related to the Proposed Development's construction can be minimised.

1.3.3 This document would be updated as necessary with input from ABC Council following feedback from their consultation and planning process.

1.4 CTMP Objectives

1.4.1 The FCTMP details the mitigation measures which have been included within the design and would be implemented to mitigate, so far as is reasonably practical, the impact of traffic generated through the Pre-construction and Enabling Phase and Construction Phase of the proposed development.

1.4.2 The FCTMP will be incorporated into the construction contractors contract documentation.

1.4.3 The key objectives of the FCTMP are shown in **Table 1.1** below.

Table 1.1. CTMP Objectives

Objective	Description
A	Ensure that the movements of people, plant and materials are achieved in a safe, efficient, timely and sustainable manner
B	Ensure that the impact to the local communities is minimised

Objective	Description
C	Ensure construction traffic levels do not exceed an acceptable level during network peak periods
D	Minimise and control construction vehicle trips where practical
E	Ensure strategies and mitigation measures are implemented and adhered to through continued monitoring, review and improvement of the CTMP
F	Limits the impacts of construction traffic on the Local Road Network (LRN) and Strategic Road Network (SRN)
G	Ensure that safe access and egress to the site is maintained during construction for all users of all transport infrastructure

1.5 Construction Vehicle Classification

1.5.1 There would be a variety of vehicle types that would be used for the construction of Proposed Development. Vehicles would be required for transportation of materials, workers and equipment to the site as well as vehicles for exporting any excess material (i.e., soils).

1.5.2 For the construction of the development both Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) will be required to transport materials and personnel to and from the site. Following classifications in accordance with the Driver and Vehicle Standards Agency Lorry types and weights guide 1 the following classifications have been used for this Framework CTMP:

1.5.3 LGV = Vehicles 3.5 tonnes or below in gross weight; and

1.5.4 HGV = Vehicles above 3.5 tonnes in gross weight.

1.5.5 The classification of Abnormal Indivisible Loads are as per the Road Vehicles (Construction and Use) Regulations 1986 and the Special Types General Order (STGO) (2003) and are as follows:

- **Category 1:** Vehicles carrying loads up to 50,000 kg, requiring a minimum of 6 axles and specific notifications to authorities.
- **Category 2:** Vehicles carrying loads up to 80,000 kg, which must adhere to more stringent axle and speed restrictions.
- **Category 3:** Vehicles carrying loads up to 150,000 kg, where detailed planning and notification are critical.
- **Special Order Movements:** Vehicles must have a special order if they are more than 150,000kg or 16,500kg in weight per axle, 6.1 m wide or 30 m long in rigid length when loaded. These vehicles are required to give 5 working days' notice to highway and bridge authorities and 2 working days' notice to police.

1.6 Construction Traffic Routing

1.6.1 It will be a key responsibility of the Applicant or appointed contractor to ensure that each sub-contractor is aware of the route restrictions prior to any works taking place and to enforce the restrictions stated in the Development's CTMP.

1.6.2 The Site gates would be manned and controlled during normal Site working hours and any vehicle arriving on Site will be guided to the required location for loading or unloading.

1.6.3 The appointed contractor would also be responsible for mitigating, where possible, the cumulative impacts of other construction projects in the area through careful consideration of routing and access timings.

1.6.4 Likely routes that construction traffic will follow will be:

- A85
- A83
- A819
- Proposed Inveraray Bypass

1.6.5 It is considered that each of these routes can accommodate the additional construction traffic required for the Development. Staff will make their own way via a variety of routes depending on their home location but these movements will be subject to the site restrictions on local roads in the vicinity of the site as HGV construction traffic.

1.6.6 No construction traffic will use the B840 and construction traffic site access will be solely from the A819. The instruction not the use the B840 will apply to both HGV construction traffic and car / LGV traffic and no site access will be provided from the B840. There will be no facilities for car / LGV to park on the B840 and entrance to the site will not be possible.

1.6.7 Signage in accordance with the Traffic Signs Manual Chapter 8 will be installed at junctions with the B840 to ensure construction traffic does not turn onto it. An example of the signage which shall be erected at junctions with the B840 are shown in Appendix A.

1.6.8 **All contractors will be briefed that the B840 is not to be used and strict penalties will be enforced if any drivers disobey this routing. This will be enforced by cameras and / or mobile enforcers. Any construction related traffic arriving at the site from the B840 will be unable to access the site, will be turned away by on-site personnel and will have their details noted and penalties applied.**

1.6.9 Abnormal indivisible load (AIL) deliveries will also access the site from the A819. It is proposed to construction a pier facility on the A83 to the west of Inveraray. AIL will then be transported to the site via an upgraded track on Upper Avenue and the A819. The proposed traffic management at this location is contained within Appendix A.

1.6.10 HGV construction traffic routing to the site from the A83 (east) will follow a haul track allowing it to bypass the town of Inveraray. The haul track will connect to the A83 via an existing junction and route past Inveraray Castle, connecting to the A819 north of Inveraray. Signage will be in place in the vicinity of the junction between the A83 and haul track in accordance with Traffic Signs Manual Chapter 8. A drawing of the proposed junction and signage is contained within Appendix A.

1.7 Proposed Development Site Access

1.7.1 Access to the site will be via the A819. This will be the only access point to the site and there will be no site access from any other roads. The access will be used by HGV and car / LGV construction traffic and facilities including parking will be provided for vehicles via this access. The location of the site access is shown in Appendix B.

1.7.2 The Proposed Development Site would be secured manned gates at the access and during working hours would remain under control of an appointed person who would physically control entry to the Proposed Development Site. Traffic entering or exiting the Proposed Development Site would give way to road traffic on the public road network (when required). Vehicles would leave and access the site via the proposed site access tracks and no vehicles would be required to stop on the public highway itself when accessing the Proposed Development Site.

1.7.3 Warning signs would be established and maintained throughout the duration of construction works and would be situated at agreed locations to warn road users of the access.

1.8 Hours of Work

1.8.1 Working hours for construction activities related to the Proposed Development would be agreed with ABC, but are anticipated to be:

- 07:00 to 19:00 Monday to Friday.

- Saturday 08:00 to 13:00; and
- Only light surface construction works should be carried out on Sundays or bank holidays unless in exceptional circumstances.

1.8.2 Any work which is required or intended to take place outside of these hours, except for emergency situations, would be subject to prior agreement and/ or reasonable notice to ABC.

1.9 Deliveries

1.9.1 Due to the scale of the Proposed Development, the number of daily deliveries to the Proposed Development Site throughout the construction phases is anticipated to be high and the disruption imposed on other road users would be minimised by the scheduling of deliveries and material removal.

1.10 Enforcement

1.10.1 All contractors would be required to adhere to the CTMP. Compliance will be monitored by the applicant's site representative via spot checks to ensure that vehicles follow the measures set out in the CTMP.

1.11 Speed Limit

1.11.1 Traffic management methods would be used to enhance safety conditions on the local road network and where physical mitigation measures are impractical or cannot be accommodated during the construction period of the Proposed Development. Traffic Signs Manual Chapter 8 states:

- The complexity of traffic management arrangements varies from scheme to scheme, but the primary objective is always:
- To maximise the safety of the workforce and the travelling public.

1.11.2 The secondary objective is:

- To keep traffic flowing as freely as possible.

1.11.3 Traffic management on all highways and roads would comply with the UK Government's Code of Practice 'Safety at Streetworks and Roadworks' (DfT, 2013) and would be agreed with the relevant road authorities prior to the commencement of works.

1.11.4 Traffic Management signage would be in accordance with the Traffic Signs Regulations and General Directions (TSRGD) 2016 and Traffic Signs Manual Chapter 8.

1.11.5 Traffic management arrangements would be produced at the detailed design stage of the access junction. Detailed designs, site specific risk assessments and method statements would be produced and agreed with ABC for all traffic management and highways related construction activities.

1.11.6 All traffic management works are to be completed by trained competent personnel from specialist sub-contractor. All TTMS shall be designed and installed in accordance with Chapter 8. A risk assessment and method statement shall be completed for the installation of each TTMS and shall consider hazards associated with the scheme and necessary control measures.

1.11.7 Where reasonable and practicable, construction vehicles will avoid travelling in convoys on public roads.

1.11.8 Construction staff using private vehicles to travel to the site will park their vehicles in designated construction site car parks and not on public roads.

1.12 Proposed Mitigation Measures

1.12.1 In line with the objectives set out in **Table 1.1. CTMP Objectives**, a number of mitigation measures would be implemented as summarised in **Table 1.2. Proposed Traffic and Transport Mitigation Measures**.

Table 1.2. Proposed Traffic and Transport Mitigation Measures

Mitigation Measure	Ref	Objective
Prescribed HGV and LGV Construction Routes Only proposed construction traffic routes agreed with ABC and TS will be used.	1	A/B
Access Arrangements A road safety assessment and Road Safety Audit will be undertaken on the final layout and arrangements required for construction access to the site.	2	A
Workforce Travel Management Plan Opportunities for car sharing and other sustainable travel measures are included in the travel plan.	3	A
Community Engagement and Public Information Information regarding construction traffic activities and movements would be provided to the public. The means of communication could include online updates, letter drops, information boards and details of key contracts.	4	B/D
Traffic Management and Diversion Routes Where required, suitable traffic management would be implemented to ensure safe operation and to minimise the impact of construction vehicles on the SRN and LRN. Where road closures are required, diversions would be in place with suitable signage and monitoring. The B840 will not be used by construction traffic associated with the Proposed Development. This will be enforced by signage, cameras (if necessary) and mobile enforcers (if necessary). Strict penalties will be implemented to ensure no construction traffic uses this route.	5	A/B/F
Temporary Traffic Regulation Orders Temporary traffic regulation orders may be proposed to allow enforcement of reduced speed limits, road closures and parking restrictions.	6	A/B/F
Working Hours The core working hours would be 07.00 hours to 19.00 hours Monday to Friday and 08.00 hours to 13.00 hours on Saturday. There would be no working outside of these hours or on Sundays or Bank Holidays without prior agreement of ABC, as the local planning authority.	7	B/C/F
Wheel Cleaning Facilities Appropriate facilities would be installed at the site access location to allow removal of debris from construction vehicles prior to use of the LRN or the SRN.	8	F
Delivery Management System Delivery records would be kept at the site Compound. Delivery records would allow vehicular activities to be recorded, monitored and managed throughout the construction of the proposed development to ensure compliance with the CTMP.	9	All
HGV Traffic Movement & Timing Restrictions These could include: • Timing restrictions on routes with schools. • Timing restrictions linked to junction capacity results. • Restriction of movements to allow for local special events • CCTV to monitor movement at the Access	10	C/D/F
HGV Emissions and Safety Features	11	A/B

Mitigation Measure	Ref	Objective
All HGVs used in the construction of the Proposed Development would be to the required Euro Class and could have additional cycle friendly measures such as cameras, full length door windows, blind spot warning system and additional mirrors.		
Traffic Marshals Suitably qualified personnel would be present at key locations during construction to guide traffic, the public and to enhance safety.	12	A
Contractor Information Packs All contractors could be provided with: • Prescribed Construction routes • Code of Good Practice • Traffic Incident Management Plan • Project / Local Authority / Emergency Contact Details • Delivery Management Systems and Vehicle Monitoring • HGV Timing Restrictions.	13	All
Highway Condition Surveys, Maintenance and Repair An inspection, monitoring and repair strategy during the construction of the Proposed Development would be agreed with the LHA and included in the final CTMP	14	F
Traffic Safety and Control Officer (TSCO) Appointment of a TSCO for the duration of the construction of the Proposed Development to act as the main point of contact and undertake the following duties for example; Check all Traffic Management (TM) drawings for compliance prior to issue Ensure sufficient resource is available to maintain TM on site Monitor the TM schemes and layouts to ensure their effectiveness and safety to workers and public	15	A/B/F
Pedestrians and Cyclists Have a staff member present to direct traffic at the site access junction to ensure pedestrians and cyclists can safely negotiate the junction during the construction period.	16	B/G

1.13 Monitoring

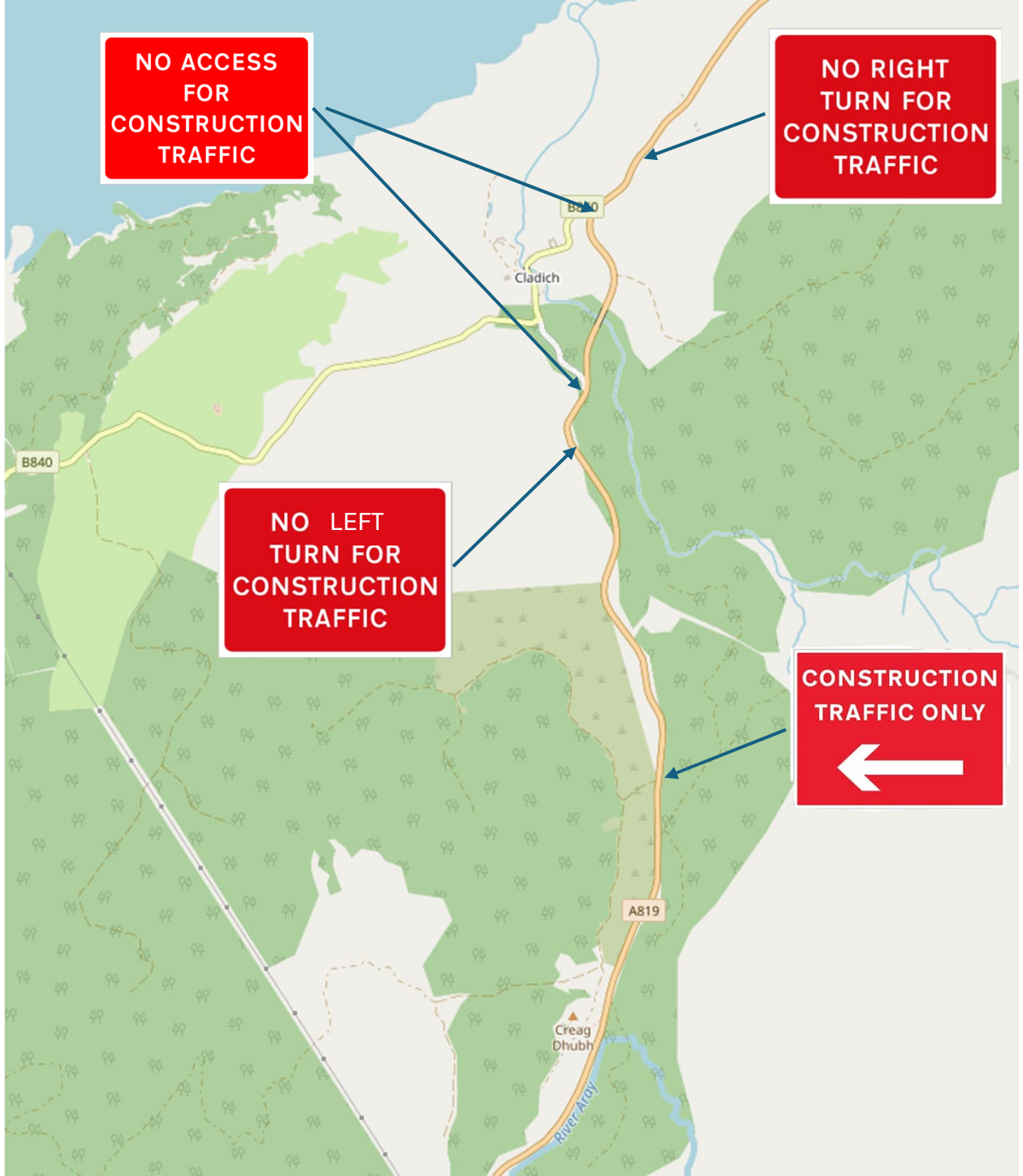
1.13.1 The final CTMP and compliance with it would likely be secured as a planning condition. It will be prepared in consultation with ABC.

1.13.2 The objectives and mitigation measures which are set out in the CTMP being met and managed will be the responsibility of the principal contractor with the following responsibilities:

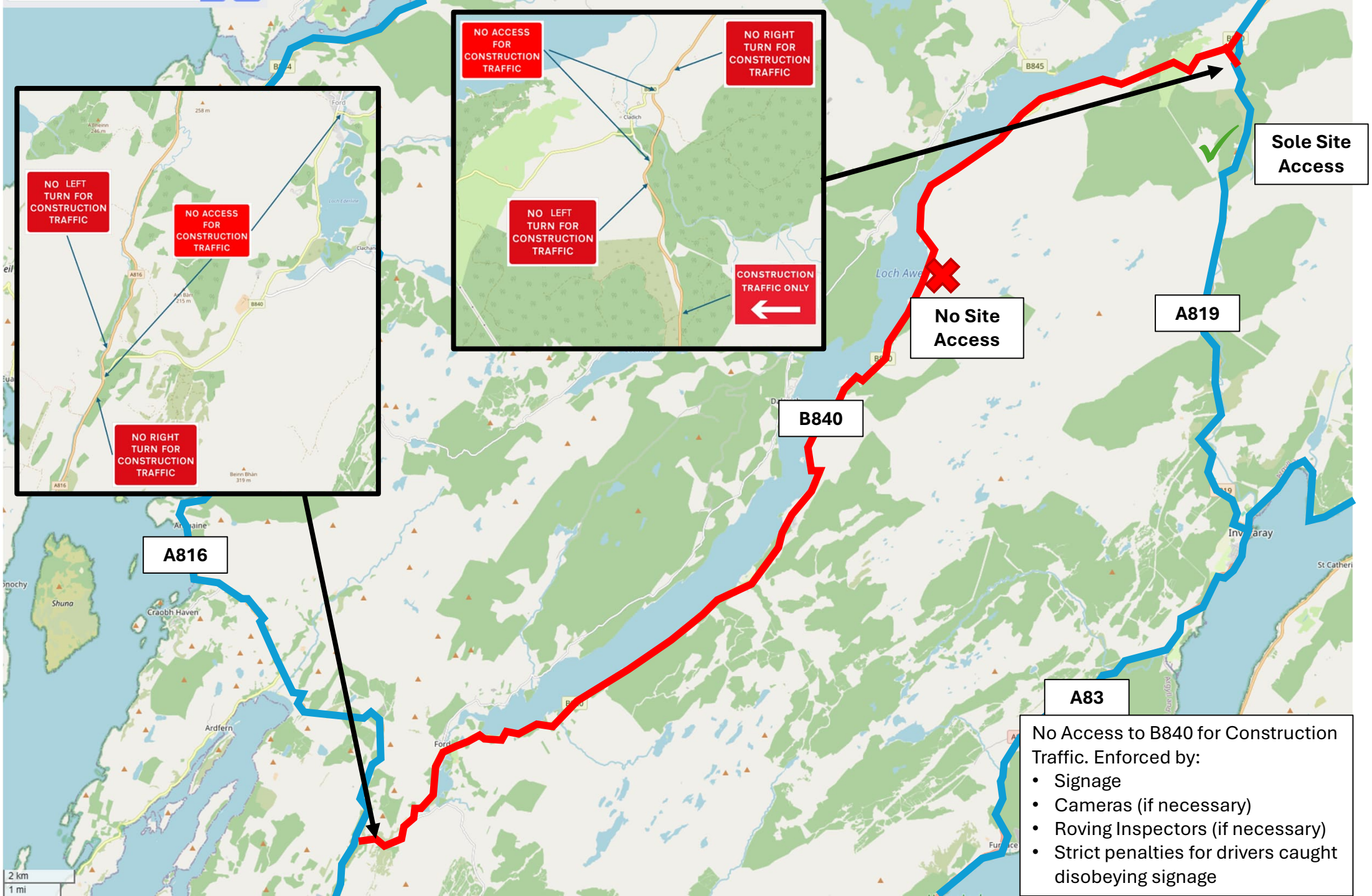
- Communicate and monitor the CTMP and its mitigation measures;
- Ensure records of HGV movements are maintained and reported;
- Install CCTV cameras at the entrance to the access to ensure compliance with HGV arrival and departure procedures;
- Be the first point of contact for the public, stakeholders and the Project contractors;
- Hold regular update meetings as required with the local highways authority and relevant stakeholders;
- Record near misses, incidents, hazards and resolve issues as informed by the contractors and the public; and
- Monitor, review and improve, where necessary the CTMP and associated mitigation measures.

1.13.3 The applicant would continue liaising with stakeholders throughout the construction of the Proposed Development. Regular contact would help to inform the levels of CTMP monitoring, review and improvement as necessary.

Appendix A Traffic Management Drawings


NO ACCESS FOR CONSTRUCTION TRAFFIC
NO RIGHT TURN FOR CONSTRUCTION TRAFFIC
NO LEFT TURN FOR CONSTRUCTION TRAFFIC
CONSTRUCTION TRAFFIC ONLY
Cladich
B840
A819
Creag Dhubh
River Aray

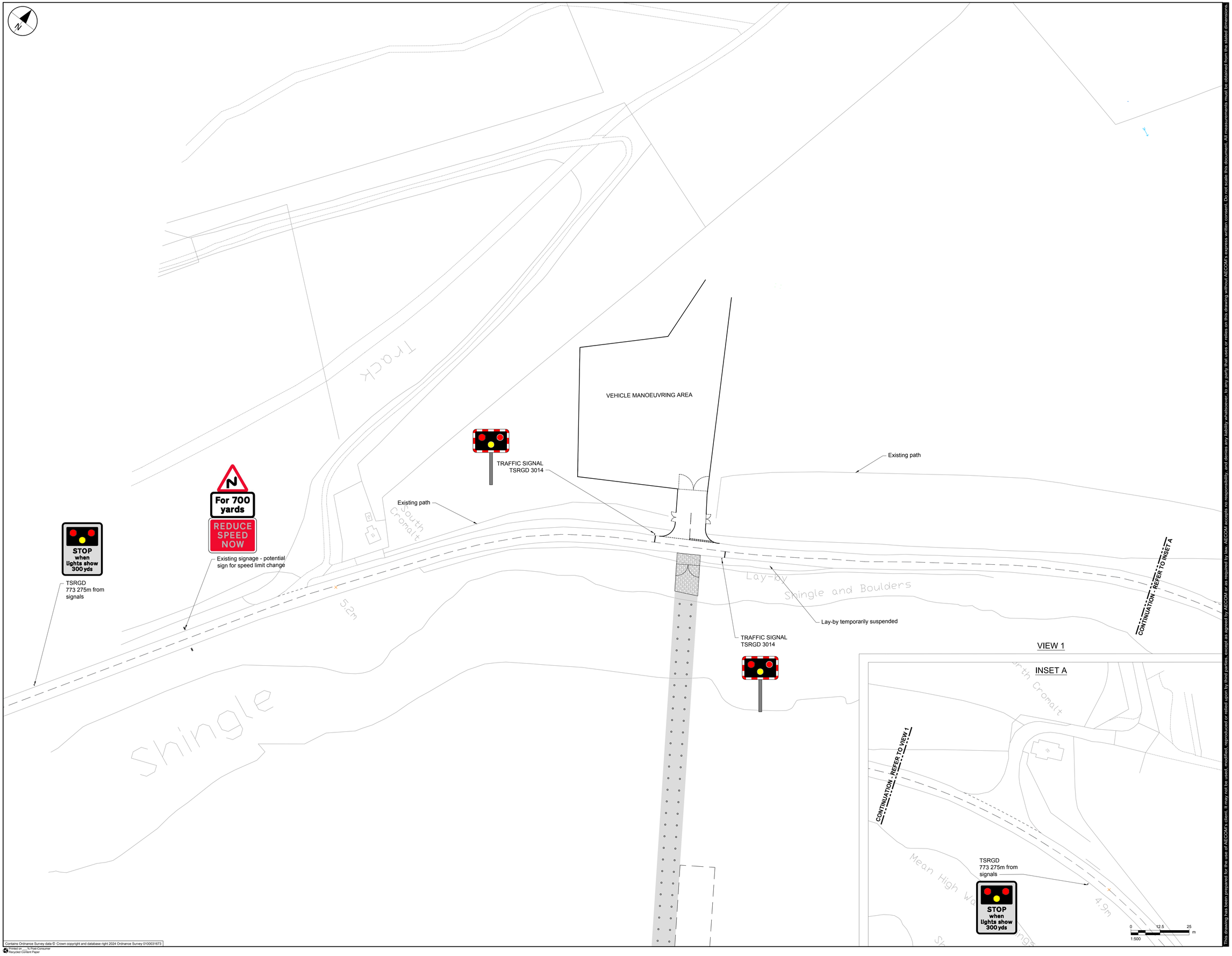

NO LEFT TURN FOR CONSTRUCTION TRAFFIC
NO ACCESS FOR CONSTRUCTION TRAFFIC
NO RIGHT TURN FOR CONSTRUCTION TRAFFIC
A'Bheinn 246 m
258 m
Ford
Loch Ederline
Clachandub
A816
B840
Beinn Bhàn 319 m



No Access to B840 for Construction Traffic. Enforced by:

- Signage
- Cameras (if necessary)
- Roving Inspectors (if necessary)
- Strict penalties for drivers caught disobeying signage

Project Management Initials: Designer: CH Checked: JG Approved: DD ISO A0 841mm x 1189mm
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I/R	DATE	DESCRIPTION
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SHEET TITLE

A83 PIER TRAFFIC MANAGEMENT

SHEET NUMBER

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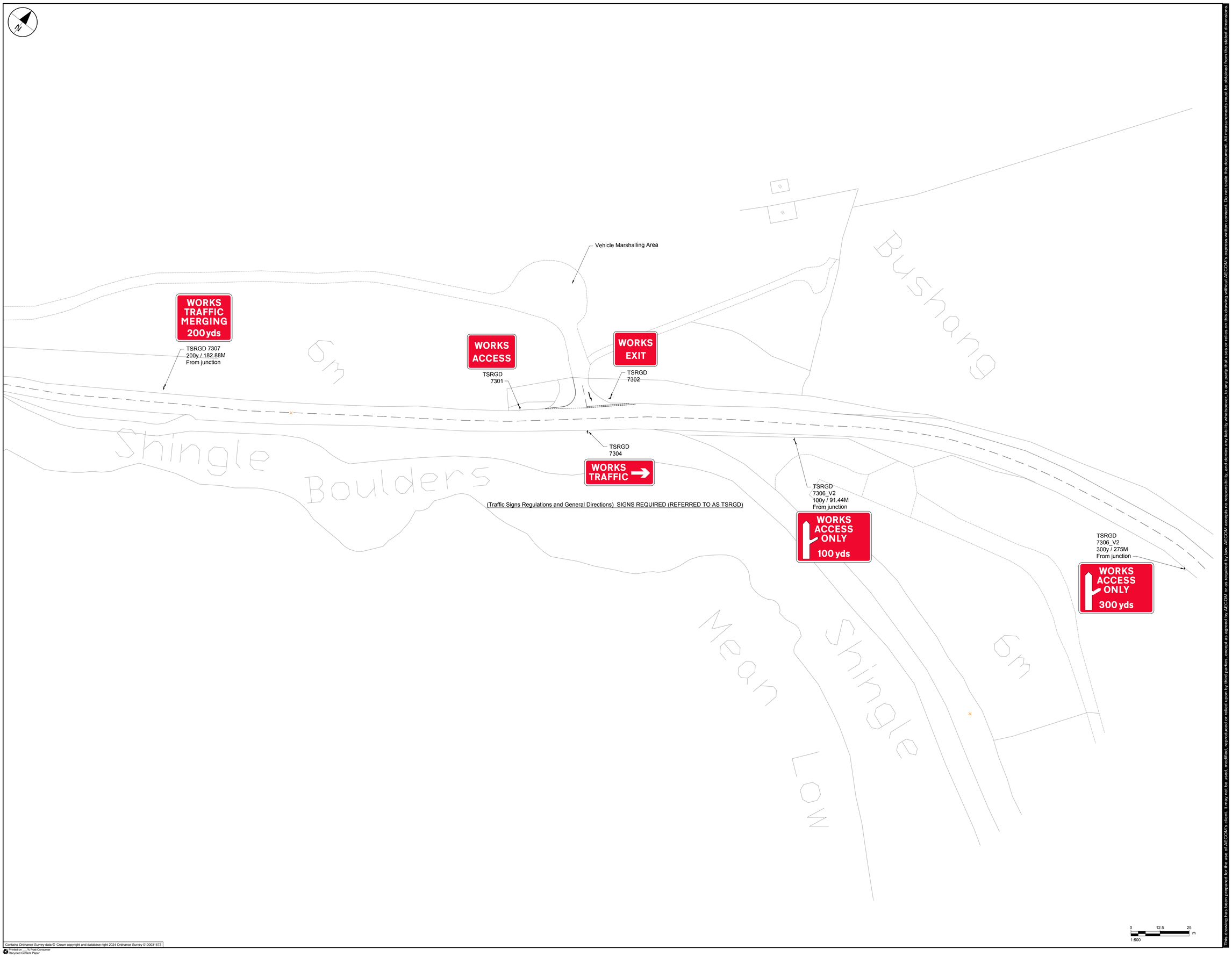
SHEET TITLE

A83 PIER TRAFFIC MANAGEMENT SPEED REDUCTION

SHEET NUMBER

S03-Z0-02-DR-TR-302214

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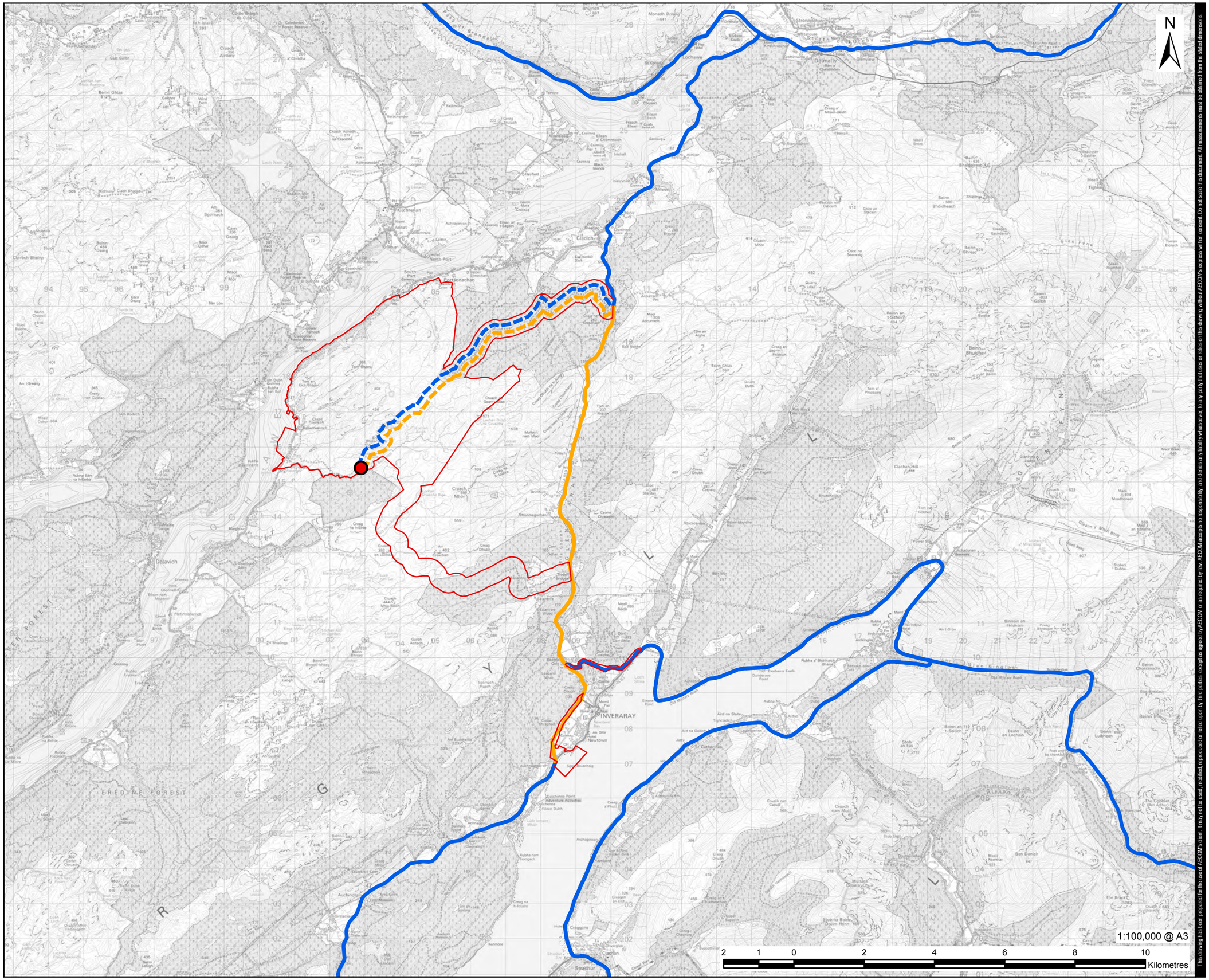
A83 HAUL ROUTE ACCESS

SHEET NUMBER

S03-Z0-02-DR-TR-302215

Appendix B Site Access Location

Revision: 0 Drawn: MH Checked: BM Approved: DD Date: 2024-05-14



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LEGEND

- Site
- Development Boundary
- Construction Traffic Route
- Abnormal Load & Construction Traffic Route
- Site Access Tracks

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Study Area Roads

FIGURE NUMBER

Figure 14.1

Appendix J Summary of EIA Residual Effects with FEI Changes

Table G1. Summary of changes to adverse residual effects

Discipline	EIA Ref	Residual Effect	Significance	FEI Update
Landscape and Visual Amenity	Table 5-8	**Construction** Effect on landscape character will be **Moderate Adverse** for the following landscape features: North Argyll LLA West Loch Fyne (Coast) LLA	**Significant**	No change
		Effect on landscape character will be **Minor Adverse** for the following landscape features: East Loch Fyne (Coast) LLA Inveraray Castle GDL WLA 09 Loch Etive Mountains	Not Significant	No change
		Effect on landscape character will be **Moderate Adverse** for the following landscape character types: LCT 35 Rugged Mountains LCT 40 Craggy Upland - Argyll LCT 53 Rocky Coastland - Argyll	**Significant**	No change
		Effect on landscape character will be **Minor Adverse** for the following landscape character types: LCT 34 Steep Ridges and Mountains LCT 39 Plateau Moor & Forest - Argyll	Not Significant	No change
		Effect on landscape character will be **Major Adverse** for the following viewpoints: Viewpoint 1 - Dun Na Cuaiche, Inveraray Viewpoint 5 - Loch shore off coastal road between Inverinan and Dalavich Viewpoint 6 - Inverinan Viewpoint 7 - Eilean na Moadail peninsula Viewpoint 8 - Ben Cruachan Viewpoint 12 - Stob Garbh Viewpoint 17 - Loch Awe watercraft Viewpoint 19 - A83 lay-by	**Significant**	No change
		Effect on visual amenity will be **Moderate Adverse** for the following viewpoints: Viewpoint 2 - Minor road - near A815 Viewpoint 4 - Dalavich Jetty Viewpoint 18 - A815 – St Catherines	**Significant**	No change
		Effect on visual amenity will be **Minor Adverse** for the following viewpoints: Viewpoint 3 - Kilmaha	Not Significant	No change

Discipline	EIA Ref	Residual Effect	Significance	FEI Update
		Viewpoint 10 - Ardanaiseig GDL Viewpoint 11 - A85 Viewpoint 13 - Ben Eunaich		
	Table 5-9	**Operation Year 1**		
		Effect on landscape character will be **Minor Adverse** for North Argyll LLA.	Not Significant	No change
		Effect on landscape character will be **Moderate Adverse** for the following landscape character types: LCT 40 Craggy Upland - Argyll LCT 53 Rocky Coastland - Argyll	**Significant**	No change
		Effect on landscape character will be **Minor Adverse** for the following landscape character type: '35 Rugged Mountains'.	Not Significant	No change
		Effect on landscape character will be **Major Adverse** for the following viewpoints: Viewpoint 5 - Loch shore off coastal road between Inverinan and Dalavich Viewpoint 17 - Loch Awe watercraft	**Significant**	No change
		Effect on visual amenity will be **Moderate Adverse** for the following viewpoints: Viewpoint 6 - Inverinan Viewpoint 7 - Eilean na Moadail peninsula Viewpoint 8 - Ben Cruachan Viewpoint 12 - Stob Garbh Viewpoint 19 - A83 lay-by	**Significant**	Viewpoint 4 now **Minor Adverse** and Not Significant
		Effect on visual amenity will be **Minor Adverse** for the following viewpoints: Viewpoint 1 - Dun Na Cuaiche, Inveraray Viewpoint 2 - Minor road - near A815 Viewpoint 3 - Kilmaha Viewpoint 4 – Dalavich Jetty Viewpoint 18 - A815 – St Catherines	Not Significant	Viewpoint 4 now **Minor Adverse** and Not Significant
	Table 5-10	**Operation Year 15**		
		Effect on landscape character will be **Minor Adverse** for North Argyll LLA	Not Significant	No change
		Effect on landscape character will be **Minor Adverse** for the following landscape character types: LCT 35 Rugged Mountains LCT 40 Craggy Upland - Argyll LCT 53 Rocky Coastland - Argyll	Not Significant	No change
		Effect on visual amenity will be **Moderate Adverse** for the following viewpoints: None	**Significant**	Viewpoint 4 now **Minor Adverse** and Not Significant

Discipline	EIA Ref	Residual Effect	Significance	FEI Update
		Effect on visual amenity will be **Minor Adverse** for the following viewpoints: Viewpoint 4 Dalavich Jetty Viewpoint 5 - Loch shore off coastal road between Inverinan and Dalavich Viewpoint 6 - Inverinan Viewpoint 7 - Eilean na Moadail peninsula Viewpoint 8 - Ben Cruachan Viewpoint 12 - Stob Garbh Viewpoint 17 - Loch Awe watercraft	Not Significant	Viewpoint 4 now **Minor Adverse** and Not Significant
Terrestrial Ecology	Table 6-7	**Construction**		
		Direct loss of ancient semi-natural woodland. With the expansion of native woodland with ecologically appropriate planting; translocation of ASNW turves from Tailpond to adjacent degraded ancient woodland with sympathetic adjacent planting of native trees as standards; protection of retained ASNW this is assessed to be a **permanent Adverse effect of local significance.**	Not Significant	No change
		Direct loss of blanket bog. With 3 km2 peatland / upland habitat rehabilitation zone with deer exclusion, conservation-level livestock grazing and no burning; and local restoration of bare peat and drainage grip filling, this is assessed to be a **medium-term temporary Adverse effect of regional significance; ameliorating to permanent Adverse effect of local significance in ~20 years**.	Initially **Significant**; ameliorating to **Not significant in ~20 years.**	No change
		Direct loss of Species-rich ledge / ravine. With Retained areas demarcated / signposted as needed under ECoW guidance to exclude any entry / damage, and monitored, this is assessed to be a **permanent Adverse effect** of **local significance**.	Not Significant	No change
		Direct loss of GWDTE. With Micro-siting Access Tracks / compounds as far as possible; tracks / compounds to be permeable where GWDTE affected; retained areas demarcated / signposted as needed under ECoW guidance to exclude any entry / damage, and monitored, this is assessed to be a **permanent Adverse effect** of **local significance**.	Not Significant	No change
		Direct loss of other notable habitat. With retained areas demarcated / signposted as needed under ECoW guidance to exclude any entry / damage, and monitored, this is assessed to be a **permanent Adverse effect** of local significance.	Not Significant	No change
		Direct loss of other notable flora is assessed to be a **permanent Adverse effect** of **local significance**.	Not Significant	No change
		Direct loss of habitat and refuges of otter. With ECoW survey / monitoring; preparation of species protection plan; licensing; appropriate design of watercourse crossings / construction lighting (plus embedded mitigation including pre-construction survey, best-practice protection measures during construction and low construction vehicle speeds), this is assessed to be a **permanent Adverse effect** of **local significance**.	Not Significant	No change
		Disturbance to otter. With ECoW survey / monitoring; preparation of species protection plan; licensing; appropriate design of watercourse crossings / construction lighting (plus embedded mitigation including pre-construction survey, best-practice protection measures during construction and low construction vehicle speeds), this is assessed to be a **temporary Adverse effect** of **local significance**.	Not Significant	No change

Discipline	EIA Ref	Residual Effect	Significance	FEI Update
		Direct loss of habitat and refuges to water vole. With watercourse crossing design; licensing and preparation of species protection plan to remove or displace water voles (plus embedded mitigation including pre-construction survey), this is assessed to be a **permanent Adverse effect** of **Local Significance.**	Not Significant	No change
	Table 6-8	**Operation**		
		Impact of loss of wild deer habitat on retained blanket bog will likely result in a **permanent Adverse effect** of **local significance**.	Not Significant	No change
		Impact of loss of wild deer habitat on retained GWDTE will likely result in a **permanent Adverse effect** of **local significance**.	Not Significant	No change
		Impact of loss of wild deer habitat on retained other notable habitat will likely result in a **permanent Adverse effect** of **local significance**.	Not Significant	No change
Aquatic Ecology	Table 7-8	**Construction**		
		Construction of the cofferdam on the shoreline of Loch Awe, including piling, de-watering, and substrate removal, with mitigation, will likely have a **Minor residual effect** on Loch Awe (Habitat) and high value fish assemblage in Loch Awe.	Not Significant	No change
		Watercourse crossings for temporary Access Tracks and temporary site compounds, including diversion and culverting of watercourses, with mitigation will likely have a **Minor residual effect** on the following: Watercourses throughout the Site are assessed as of medium value (Allt Criche (tributary of Erralich Water): BL-01, Erralich Water: BL02, River Aray: BL-22, Unnamed tributary of River Aray: BL-23) or otherwise Low value. Atlantic salmon present in Allt Criche (tributary of Erralich Water): BL-01, and brown/sea trout present in Allt Criche (tributary of Erralich Water): BL-01, Erralich Water: BL02, River Aray: BL-22, Unnamed tributary of River Aray: BL-23.	Not Significant	No change
		Construction of the Headpond and Headpond Embankments, including land take and transport of excavated material, with mitigation, will likely have a **Minor** residual effect on Lochan Airigh	Not Significant	No change
		Transport of excavated tunnel material to Headpond via dump trucks, and spoil management of material from tunnelling works will likely have a **Minor** residual effect on the following: Loch Awe (Habitats) Atlantic salmon present in Allt Criche (tributary of Erralich Water): BL-01, and brown/sea trout present in Allt Criche (tributary of Erralich Water): BL-01, Erralich Water: BL02, River Aray: BL-22, and Unnamed tributary of River Aray: BL-23	Not Significant	No change
		Potential spread or introduction of INNS will likely have a **Minor** residual effect on the following: Medium value watercourses Allt Criche (tributary of Erralich Water): BL-01, Erralich Water: BL02 River Aray: BL-22, and Unnamed tributary of River Aray: BL-23, and water bodies of medium value (Lochan Airigh and Lochan Breac-liath) Fish assemblage in Loch Awe (High value) Atlantic salmon (High value) in Allt Criche (tributary of Erralich Water): BL-01	Not Significant	No change
	Table	**Operation**		

Discipline	EIA Ref	Residual Effect	Significance	FEI Update
	7-9	Effects on water levels in Loch Awe, with mitigation, will likely have a **Moderate** residual effect on migratory fish species in Loch Awe and River Awe, including Atlantic salmon, brown/sea trout, European eel, and lamprey species.	**Significant**	Now **Minor** residual effect and Not Significant
		Effects on water levels in Loch Awe, with mitigation, will likely have a **Minor** residual effect on Loch Awe habitats.	Not Significant	No change
		Inlet / Outlet structure on Loch Awe shoreline, including Screen during operation will likely have a **Minor** residual effect on: Loch Awe (Habitats) Fish species of High value in Loch Awe (Atlantic salmon, brown/sea trout, arctic char, European eel, and lamprey species), including migratory species	Not Significant	No change
		Watercourse crossings for permanent Access Tracks, including culverting of watercourses, with mitigation, will likely have a **Minor** residual effect on: Medium value watercourses Allt Criche (tributary of Erralich Water): BL-01, Erralich Water: BL02 River Aray: BL-22, and Unnamed tributary of River Aray: BL-23 Atlantic salmon (High value) in Allt Criche (tributary of Erralich Water): BL-01	Not Significant	No change
Marine Ecology	Table 8-12	**Construction** Impacts on Benthic ecology will likely have a **Minor** adverse residual effect from: Permanent loss of benthic habitat due to installation of piles Habitat modification from introduction of artificial surfaces on the seabed Temporary disturbance of benthic habitats	Not Significant	No change
		Underwater sound from construction of the jetty within Loch Fyne will likely have **Minor** adverse impacts on fish and shellfish ecology	Not Significant	No change
		Impacts on marine mammal ecology will likely have **Minor** adverse residual effects from: Underwater sound during construction of the jetty within Loch Fyne Airborne sound and visual disturbance during construction of the jetty within Loch Fyne Vessel presence and collision risk during construction	Not Significant	No change
	Table 8-13	**Operation** No residual effects during operation on Marine Ecology	n/a	n/a
Ornithology	Table 9-8	**Construction**		
		Loss of suitable habitat is estimated to have the potential to result in the loss of two curlew breeding territories. This would represent approximately 1% of the NHZ 14 breeding population. With mitigation, this is identified as a residual effect of **Permanent Adverse effect of local significance.**	Not Significant	No change
		Curlew are considered to be highly sensitive to disturbance. Based on the distribution of this species at the Development Site, as identified by field survey, it is considered that two pairs could be subject to disturbance during the construction phase (assuming the loss of another territory within the footprint of the Headpond). This	Not Significant	No change

Discipline	EIA Ref	Residual Effect		Significance	FEI Update
		could lead to the temporary loss of two territories from the ZoI of the Development. With mitigation, this is identified as a residual effect of **Temporary Adverse effect of local significance.**			
		The loss of Golden eagle habitat (Details within **Confidential Appendix 9.1: Schedule 1 Birds, Volume 6: Confidential Appendices**) could have a residual effect of **Permanent Adverse effect of Regional Significance.**		**Significant**	Now Permanent Adverse effect of Local Significance, Not Significant
		The displacement of Golden eagles (Details within **Confidential Appendix 9.1: Schedule 1 Birds, Volume 6: Confidential Appendices**) could have a **Temporary Adverse effect of Regional Significance.**		**Significant**	No change
	Table 9-9	**Operation** No residual effects during operation on Ornithology		n/a	n/a
Geology and Soils	Table 10-7	Excavation for the Development Site above ground infrastructure, resulting in loss of peat and release of carbon into the atmosphere is likely to result in a **Minor** adverse residual effect.		Not Significant	No change
Water Environment	Table 11-34	**Construction**			
		Loch Airigh	**Water Quality – Sediment Runoff** Potential contamination associated with: Sediment-laden runoff associated to nearby earthworks; and Effect identified as: **Negligible Adverse**	Not applicable – new receptor as now retained	Not Significant
			Water Quality – Contaminated Runoff Potential contamination associated with runoff of chemical spillages from nearby Dam construction. Effect identified as: **Negligible Adverse**	Not applicable – new receptor as now retained	Not Significant
		Loch Awe	**Water Quality – Sediment Runoff** Potential contamination associated with: Sediment-laden runoff associated to earthworks; and Sediment washing downstream from Allt Beochlich and other water courses within the catchment. Effect identified as: **Minor Adverse**	Not Significant	No change
			Water Quality – Contaminated Runoff Potential contamination associated with runoff of chemical spillages from PC03 and TC01. Pollutants also associated to Allt Beochlich and other water courses within the catchment which wash downstream. Effect identified as: **Minor Adverse**	Not Significant	No change
		Loch Fyne	**Water Quality – Sediment Runoff** Increased areas of hardstanding/bare earth could lead to an inflow of sediment. Effect identified as: **Minor Adverse**	Not Significant	No change
			Water Quality – Contaminated Runoff	Not Significant	No change

Discipline	EIA Ref	Residual Effect		Significance	FEI Update
			Works associated with the jetty may involve various fuels and construction chemicals which could be at risk of entering Loch Fyne. Effect identified as: **Minor Adverse**		
		River Aray and tributaries (LF1)	**Water Quality - Sediment Runoff** Potential contamination sediment-laden runoff from Inveraray bypass. Effect identified as: **Minor Adverse**	Not Significant	No change
		Allt Beochlich and tributaries (LA6)	**Water Quality – Sediment Runoff** Potential sediment inflow could be associated with the following: The Access Tracks; Increased hardstanding areas from compounds (PC06, TC07, TC08, PC09, TC16, PC17, PC18, PC19 and TC11) increasing runoff; Inflow of sediment laden runoff from Headpond excavations Effect identified as: **Minor Adverse**	Not Significant	No change
			Water Quality – Contaminated Runoff Potential contamination could be associated with the following: Contaminated runoff from compound PC06, TC07, TC08, PC09, TC16, PC17, PC18, PC19 and TC11; and Contaminated runoff from Access Tracks. Effect identified as: **Minor Adverse**	Not Significant	No change
			Hydromorphology Construction of Embankment and Headpond. Effect identified as: **Minor Adverse**	Not Significant	No change
			Hydromorphology Creation of 2 no. additional watercourse crossings in addition to the new crossing already proposed and potential for disruption of sediment transport processes. Effect identified as: **Negligible**	Not Significant	No change
			Hydromorphology Diversion or over pumping of river during construction resulting in disruption to sediment transport. Effect identified as: **Minor Adverse**	Not Significant	No change
		Lochan Beochlich (LA8)	**Water Quality – Sediment Runoff** Potential sediment inflow associated to run-off from works associated to Headpond and Embankment construction. This also includes works being carried out at TC07 and PC09. Effect identified as: **Minor Adverse**	Not Significant	No change
			Water Quality – Contaminated Runoff Contaminated run-off from spillages associated to Embankment and Headpond construction. Effect identified as: **Minor Adverse**	Not Significant	No change
		Operation			

Discipline	EIA Ref	Residual Effect		Significance	FEI Update
	Table 11-35	**Loch Airigh**	**Loss of feature** Inundation by the Headpond Effect identified as: **Moderate Adverse**	Significant	No impact as feature now retained
		Loch Awe	**Water Quality** Changes in water level leading to a concentration of pollutants in a still water body. Effect identified as: **Minor Adverse**	Not Significant	No change
			Water Quality Thermal Stratification. Effect identified as: **Moderate Adverse**	**Significant**	No change
			Water Quality Headpond discharges (temperature). Effect identified as: **Minor Adverse**	Not Significant	No change
			Water Quality Discharge of concrete residues from Headpond. Effect identified as: **Minor Adverse**	Not Significant	No change
			Water Quality Potential risk of algal blooms. Effect identified as: **Minor Adverse**	Not Significant	No change
		Allt Beochlich and tributaries (LA6)	**Hydromorphology** Creation of 2 no. additional watercourse crossings in addition to the new crossing already proposed and potential for disruption of sediment transport processes in long term	Not Significant	No change
			Hydromorphology Loss of 5.4 km^2 of catchment with numerous tributaries, resulting in changes to the downstream flow regime due to the dam. Reduction in sediment transport downstream due to the dam and inundation of reaches. Effect identified as: **Minor Adverse**	Not Significant	No change
Water Resources and Flood Risk	Table 12-4	**Construction Effects:**			
		Loch Awe, River Awe and Awe barrage operation- High	Fluctuation of water level within Loch Awe. Effect identified as: **Low Adverse**	Not Significant	No change
		Offsite properties – High	Fluctuation of water level within Loch Awe Effect identified as: **Low Adverse**	Not Significant	No change
		Development- Low	Fluctuation of water level within Loch Awe Effect identified as: **Low Adverse**	Not Significant	No change
		Loch Awe and River Awe water level – High	Reduction in water levels in Loch Awe during low flows Effect identified as: **Low Adverse**	Not Significant	No change
		Development - Low	Reduction in water levels in Loch Awe during low flows Effect identified as: **Low Adverse**	Not Significant	No change

Discipline	EIA Ref	Residual Effect		Significance	FEI Update
Cultural Heritage	Table 13-6	**Construction**			
		Potential physical impacts on the following heritage assets were originally identified in the original assessment as likely result in a **Minor Adverse** effect: Loch Airigh Shielings (WoSAS 44155) Possible Shieling/Area of Agricultural Activity (AECOM 003) However, these assets will now be avoided and as a result the impact is now assessed as 'no change'.		Not Significant	No change
	Table 13-7	Potential physical impacts on heritage asset: Possible standing stone (AECOM 001) was originally assessed as being likely result in a **Moderate Adverse** effect. It should be noted that this is a worst-case scenario based on the asset being a prehistoric standing stone, and further detailed investigations may find this not to be the case. However, these assets will now be avoided and as a result the impact is now assessed as 'Not Significant'.		**Significant**	Not Significant
		Temporary impacts on the setting of Inveraray Garden and Designed Landscape (GDL00223) has been identified to likely result in a **Minor Adverse** effect.		Not Significant	No change
		Operation			
		The potential permanent impact on the setting of the following assets has been identified to have a **Minor Adverse** effect: Ballimeanoch Chapel (SM4227) Carn Dubh Crannog (SM4175) Keppochan Cup Marked Stone (SM4186)		Not Significant	No change
Access, Traffic and Transport	Table 14-22	Severance of Communities	In terms of severance, the significance of effects for most road links would be negligible. One public road link is forecast to have a direct temporary **Minor Adverse** effect: B840 Cladich – this will not carry HGV construction traffic.	Not Significant	No change
		Road User and Pedestrian Safety	The magnitude of change for most road links is considered to be low as accidents for Development traffic are forecast to be substantially less than 1 'slight' injury accident and substantially less than 1 'serious' injury accident per annum on study area roads. Study Area roads that are proposed to carry HGV construction traffic are low or negligible in terms of sensitivity of receptors, therefore the effect on severance following mitigation will remain a **direct temporary Minor Adverse**	Not Significant	No change
		Non-motorised User Amenity	In terms of non-motorised amenity, the significance of effects for most road links would be negligible. One public road link is forecast to have a direct temporary **Minor Adverse** effects: B840 Cladich – this will not carry HGV construction traffic.	Not Significant	No change
		Non-motorised User Delay	In terms of non-motorised user delay, the significance of effects for most road links would be negligible. One public road link is forecast to have a direct temporary **Minor Adverse** effects: B840 Cladich – this will not carry HGV construction traffic.	Not Significant	No change

Discipline	EIA Ref	Residual Effect		Significance	FEI Update
		Driver Delay	In terms of driver delay, the significance of effects for most road links would be negligible. One public road link is forecast to have a direct temporary **Minor Adverse** effects: B840 Cladich – this will not carry HGV construction traffic.	Not Significant	No change
Noise and Vibration	Table 15-32	**Construction**			
		Surface Plant Noise will likely have a **Minor Adverse** effect on NSR376/ NSR378		Not Significant	No change
		Access Track Upgrade/ Construction will have a **Minor** (at worst) effect on NSR216, NSR424, NSR090, and NSR220.		Not Significant	No change
		Access Track Upgrade/ Construction will have a **Moderate** at worst effect on NSR278 for a short temporary period, but **Minor** at worst for the majority of the time.		Not Significant	No change
		Temporary Jetty Impact Piling Noise will have a Negligible to **Minor** effect on NSR440 and NSR041.		Not Significant	No change
		Temporary Jetty Impact Piling Vibration will have a **Minor** effect on NSR440.		Not Significant	No change
		Cofferdam Piling will have a **Minor** effect on all NSRs		Not Significant	No change
		Road Traffic Noise will likely have a Negligible **to Minor Adverse** effect on NSRs near Links 1-3, 11, 13-15,17,18		Not Significant	No change
		Haul road traffic noise using southern track “exit” only will likely have a **Negligible to Minor Adverse** effect on NSRs near Link 8		Not Significant	No change
		Haul road traffic noise on Link 12 will likely have a **Minor Adverse** on NSRs near Link 12 (except NSR220)		Not Significant	No change
		Haul road traffic noise on Link 12 will likely have a **Minor Adverse** on NSR220		Not Significant	No change
		Temporary Jetty Impact Piling will likely have a Negligible to **Minor Adverse** effect on NSR041 and NSR440		Not Significant	No change
		Blasting will likely have a **Minor Adverse** effect on all NSRs		Not Significant	No change
		Road Traffic Noise on northern and southern routes to site will likely have a **Minor Adverse** effect on all NSRs near Link 5, 9, 10, and 16.		Not Significant	No change
	Table 15-33	**Operation** No residual effects during operation on noise sensitive receptors		n/a	No change
Socio-economics and Tourism	Table 16-9	**Construction**			
		Limited access around and within construction works areas for health and safety reasons. The core Development Site is situated away from the local transport network, limiting the potential for effects. The residual effect is **negligible**.		Not Significant	No change
		Job creation and local expenditure by the developer and contractors within the study area throughout construction period. The residual effect is **moderate** beneficial.		Significant Beneficial	No change

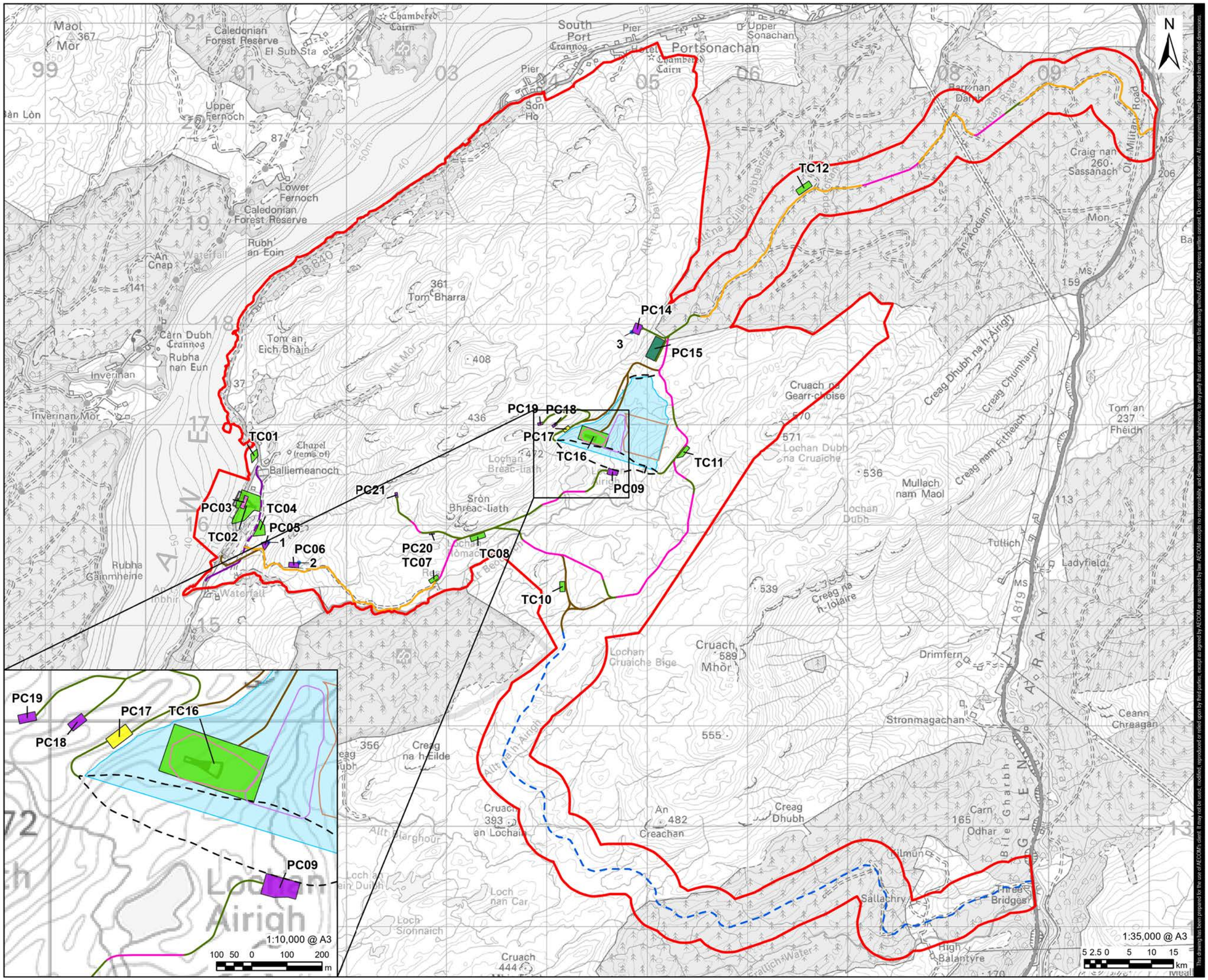
Discipline	EIA Ref	Residual Effect	Significance	FEI Update
		Potential for construction activities to cause nuisance to certain community receptors. The residual effect is minor beneficial.	Not Significant	No change
		Construction activities causing changes to setting of certain visitor attractions. The residual effect is **negligible**.	Not Significant	No change
		Impacts from construction workers being accommodated in tourist accommodation. The residual effect is **negligible**.	Not Significant	No change
		Diversions to certain recreational routes and forestry paths falling within the Development Site boundary. The residual effect is **negligible**.	Not Significant	No change
		Local amenity impacts. The residual effect is **negligible**.	Not Significant	No change
		Marine facility and Tailpond inlet / outlet construction at Loch Fyne and Loch Awe respectively, restricting access to and recreational use of these areas of the lochs. The residual effect is **negligible**.	Not Significant	No change
	Table 16-10	**Operation**		
		Access to areas around Headpond and Tailpond will be restricted to general public. The residual effect is **negligible**.	Not Significant	No change
		Potential for setting of historic attractions to be altered by proposed Development. The residual effect is **minor** beneficial.	Not Significant	No change
		Impacts on recreational paths and provision of new paths. The residual effect is **minor** beneficial.	Not Significant	No change
		Displacement of fishing activities as a result of obstructed access to fishing. The residual effect is **negligible**.	Not Significant	No change
Climate	Table 17-23	**Construction**		
		During the pre-construction and construction of the Development, there will be unavoidable GHG emissions due to the use of materials, energy, fuel, and transportation. However, additional GHG savings are expected to be achieved by implementing the GHG Mitigation Measures listed in the Embedded Mitigation Section. Impacts on global atmosphere during construction are likely to therefore be **Minor Adverse**	Not Significant	No change
		The impact of projected future climate change on the Development Is likely to have **Low to Medium** effects with mitigation.	Not Significant	No change
		The combined impact of future climate conditions and the Development on various receptors as identified by each discipline in their assessment, is likely to result in **Negligible to Low** effects with mitigation measures detailed within the technical chapters that identified ICCIs.	Not Significant	No change
	Table 17-24	**Operation**		No change
		Impact of GHG emissions arising during the operation of the Development on the climate are likely to have **Beneficial** effects on GHG emissions during operation.	**Significant Beneficial**	
		The impact of projected future climate change is likely to have **Low to Medium** effects on the Development.	Not Significant	

Discipline	EIA Ref	Residual Effect	Significance	FEI Update
		The combined impact of future climate conditions and the Development on various receptors as identified by each discipline in their assessment, is likely to result in **Negligible to Low** effects with mitigation measures detailed within the technical chapters that identified ICCIs.	Not Significant	
Marine Physical Environment and Coastal Processes	Table 18-5	**Construction**		
		The direct loss of 6 m^2 of intertidal area due to the footprint of pile structures will likely have a **Minor Adverse** effect on intertidal habitats.	Not Significant	No change
		The direct loss of 22 m^2 of subtidal area due to the footprint of pile structures will likely have a **Minor Adverse** effect on subtidal habitat.	Not Significant	No change
		Short-term disturbance of bed material due to the installation of piles will likely have a **Minor Adverse** effect on water quality within Loch Fyne.	Not Significant	No change
	Table 18-6	**Operation**		
		Change in currents or water levels are likely to have a **Minor Adverse** effect on navigation and/or flood issues impacted by changes in hydrodynamic conditions within Loch Fyne.	Not Significant	No change
		Impacts on the sedimentary regime may result from a change in sediment transport which are likely to result in **Minor Adverse** effects due to modified seabed morphology.	Not Significant	No change
		Impacts on coastal morphology may include erosion or accretion of sediment unrelated to natural processes with **Minor Adverse** effects from unnatural accumulation of sediments along the coast of Loch Fyne.	Not Significant	No change
		Blockages of coastal outfall structures may result in **Minor Adverse** effects from local sediment accumulation.	Not Significant	No change
Shipping and Navigation	Table 19-10 & Table 9-11	Due to the 'Broadly Acceptable' (low risk) significance of the various potential effects identified, no requirement for additional mitigation has been identified in which case all residual effects remain **Broadly Acceptable** for all receptors during construction and operation of the Development .	Not Significant	No change
Commercial Fisheries	Section 20.9	The likely effects of the Marine Facility on commercial fisheries receptors are not significant in EIA terms. As such, specific mitigation and monitoring in relation to commercial fisheries is not considered necessary and all effects remain as **Negligible** adverse significance.	Not Significant	No change

Appendix K Updated EIAR Figures

Revision: 0 Drawn: BM Checked: CC Approved: RH Date: 2025-05-13

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PROJECT

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CLIENT

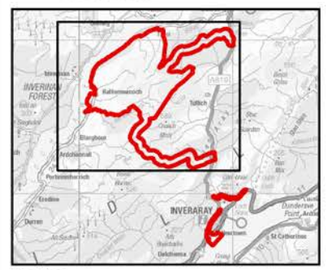
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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments
- Switching Station
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House
- Lower Gate House
- B840 Diversion - Permanent, New, Excavated
- B840 Diversion - Permanent, Upgrade, Excavated
- Access Track - Temporary, New, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Proposed Blarghour wind farm access track
- Inlet/Outlet Structure
- Tunnel Portals
- Upper Control Works
- Basin
- Borrow Area



NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Above Ground Infrastructure

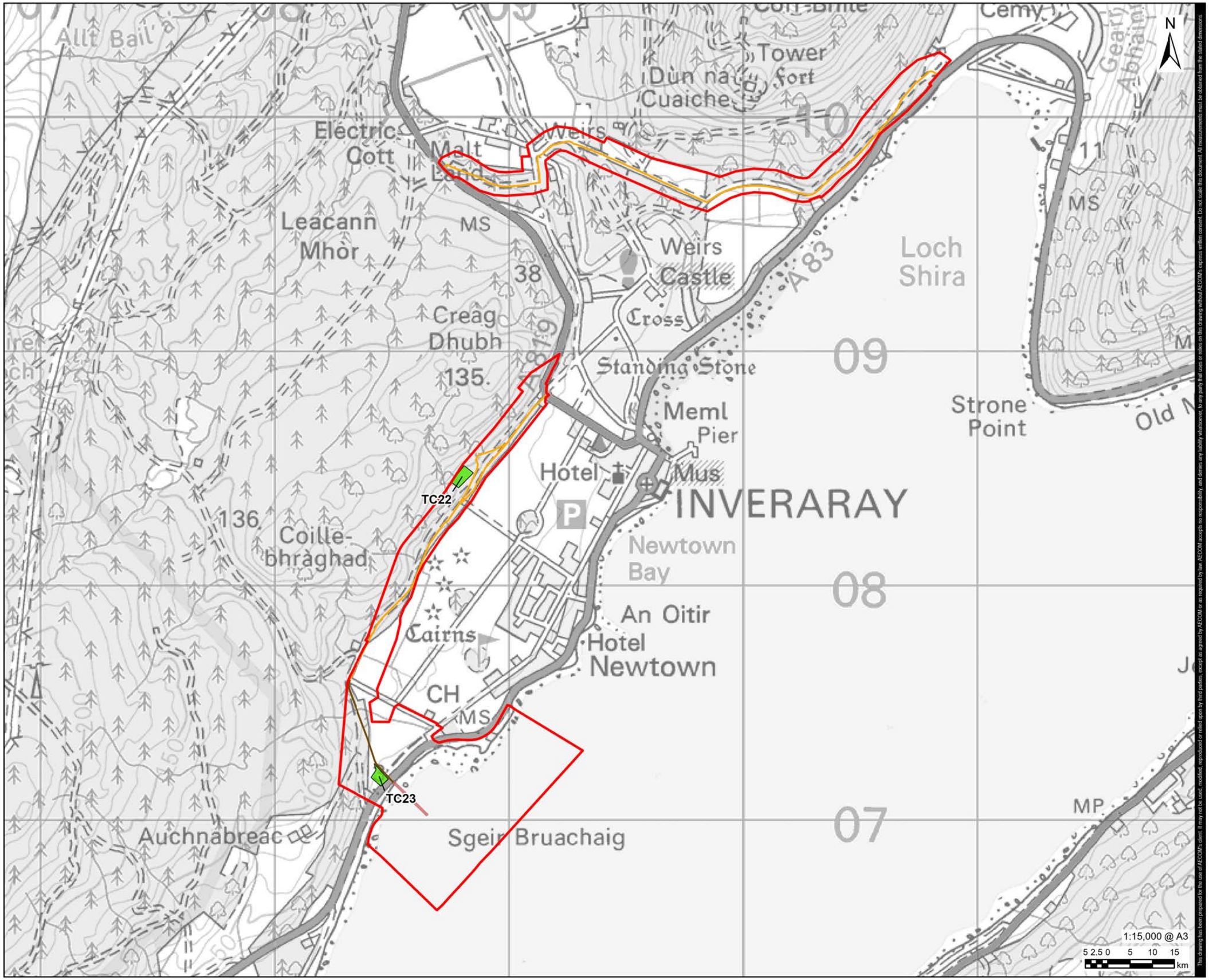
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Figure 2.3 (Sheet 1 of 2)

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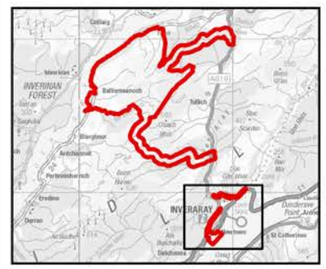
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LEGEND

- Development Boundary
- Temporary Construction Compound
- Marine Facility
- Access Track - Temporary, New, Excavated
- Access Track - Permanent, Upgrade, Excavated



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FIGURE TITLE

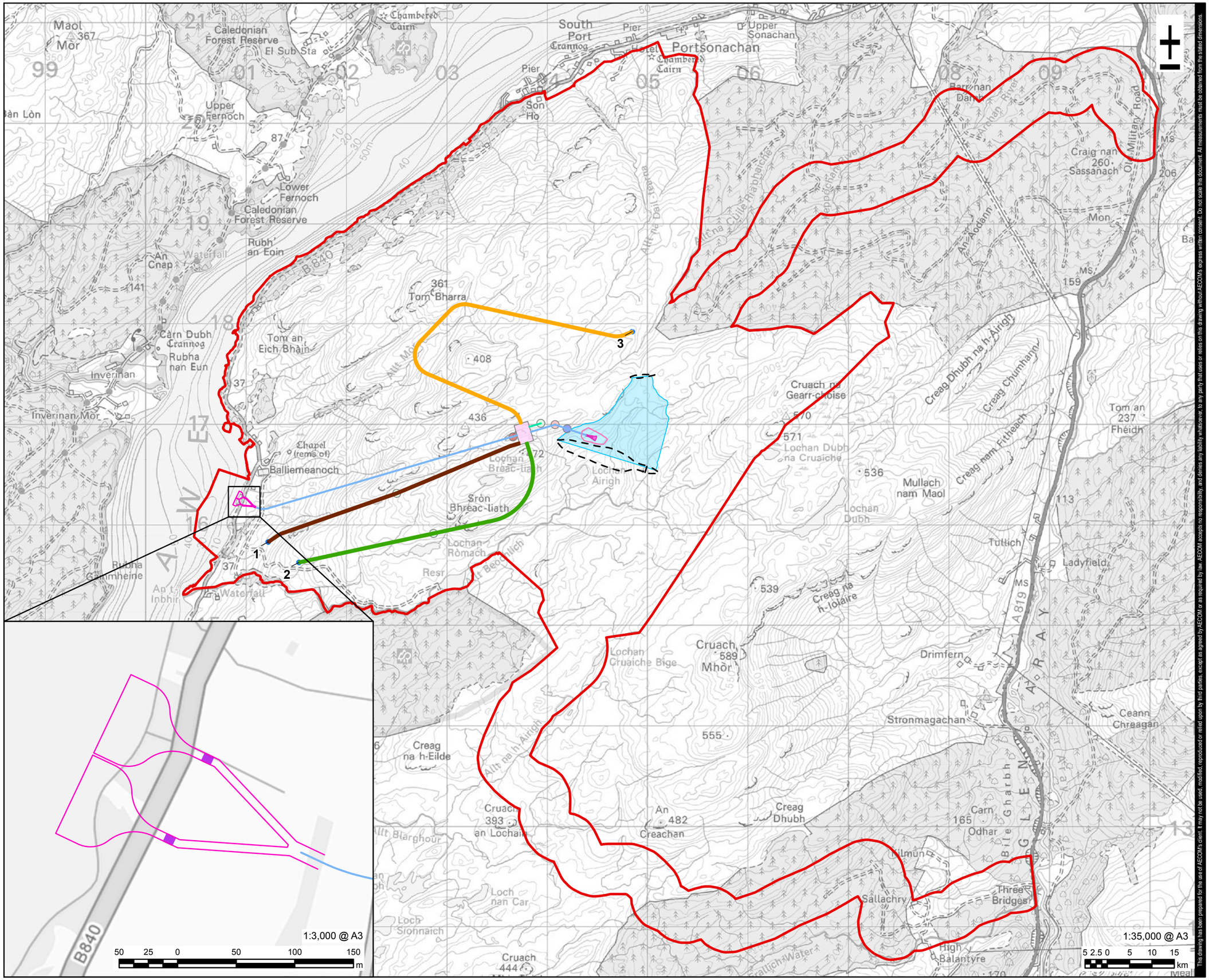
Above Ground Infrastructure

FIGURE NUMBER

Figure 2.3 (Sheet 2 of 2)

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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments
- Access Tunnel
- Construction Tunnel
- Power Tunnel
- Powerhouse Overlay
- Headrace
- Tailrace
- Outfall
- Vent Tunnel
- Upper Control Works
- Powerhouse
- Tunnel Portals
- Outfall
- Surge Shaft Lower
- Surge Shaft Upper
- Upper Gate Shaft
- Lower Gate Shaft
- Vent Shaft

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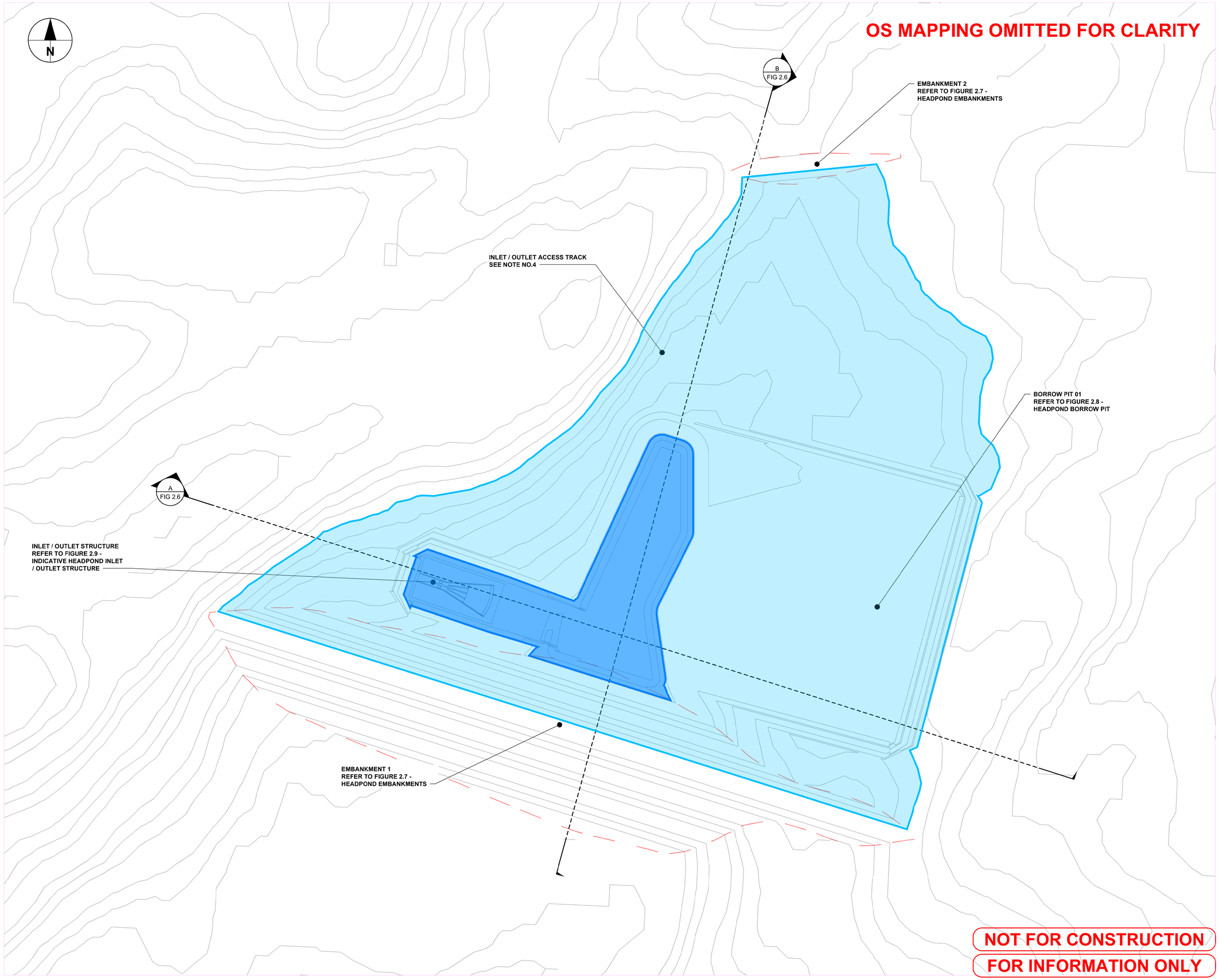
Below Ground Infrastructure

FIGURE NUMBER

Figure 2.4

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Filename: C:\PWWORKING\AECOM_DS09_UK_2020\D633929\FIGURE 2.5 HEADPOND - INDICATIVE ARRANGEMENT.DWG



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Balliemeanoch
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LEGEND

- EMBANKMENT EXTENTS
- TOP WATER LEVEL (TWL)
- BOTTOM WATER LEVEL (BWL)

NOTES

1. DRAWING IS FOR INDICATIVE PURPOSES ONLY
2. SUPPORTING INFRASTRUCTURE HAS BEEN OMITTED FOR CLARITY PURPOSES. SEE RELEVANT DRAWINGS FOR DETAILS
3. EATHWORKS SHOWN ARE BASED ON 5m DIGITAL TERRAIN MODEL (DTM)
4. INLET/OUTLET ACCESS TRACK EARTHWORKS SHOWN INDICATIVELY FOR REFERENCE. TRACK TO BE USED FOR CONSTRUCTION PRIMARILY AND LEFT IN-SITU POST CONSTRUCTION AND FLOODED. OPERATIONAL ACCESS TO INLET/OUTLET WHEN HEADPOND IS DRAWN DOWN TO BOTTOM WATER LEVEL
5. 5m CONTOURS SHOWN BASED ON 5m DTM
6. REFER TO FIGURE 2.6 - HEADPOND CROSS SECTIONS

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APPROVED FOR ISSUE

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A	AC	DL	JIG
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ISSUE/REVISION

B	MAY 2025	FEI UPDATE
A	JULY 2024	FINAL
I/R	DATE	DESCRIPTION

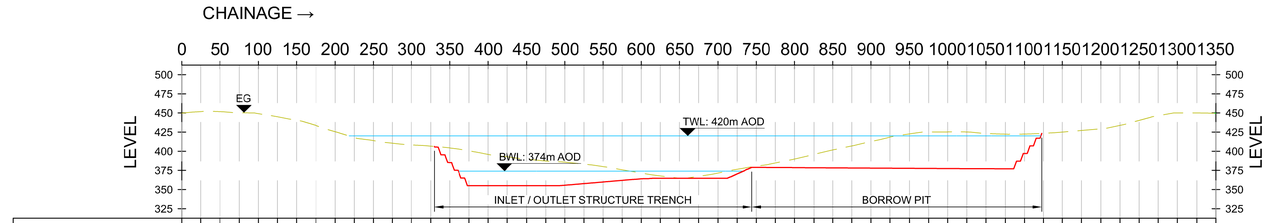
SHEET TITLE

HEADPOND - INDICATIVE ARRANGEMENT

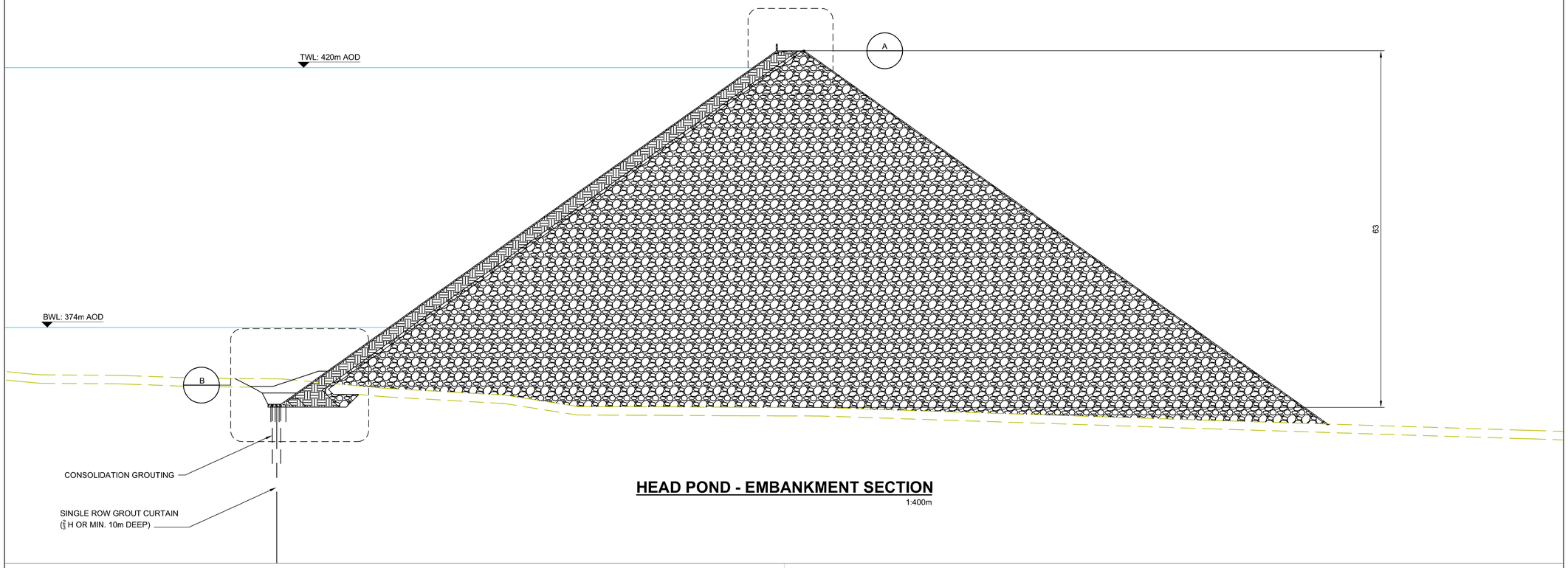
FIGURE NUMBER

FIGURE 2.5

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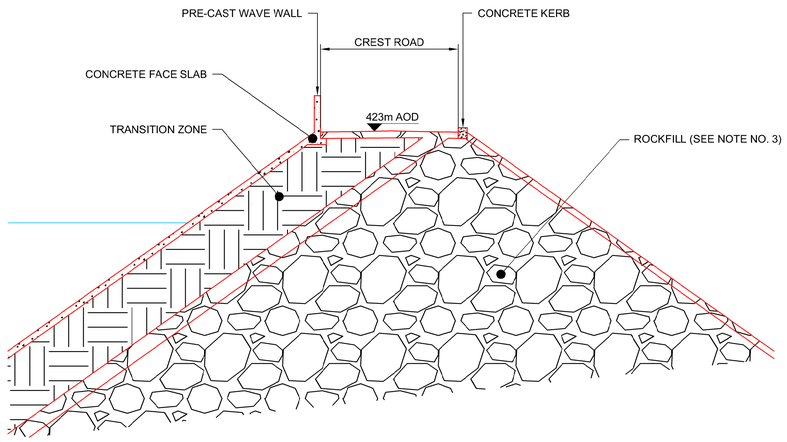

CHAINAGE →
0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200 1250 1300 1350
LEVEL
500 475 450 425 400 375 350 325
EG
TWL: 420m AOD
BWL: 374m AOD
INLET / OUTLET STRUCTURE TRENCH
BORROW PIT

| | | |



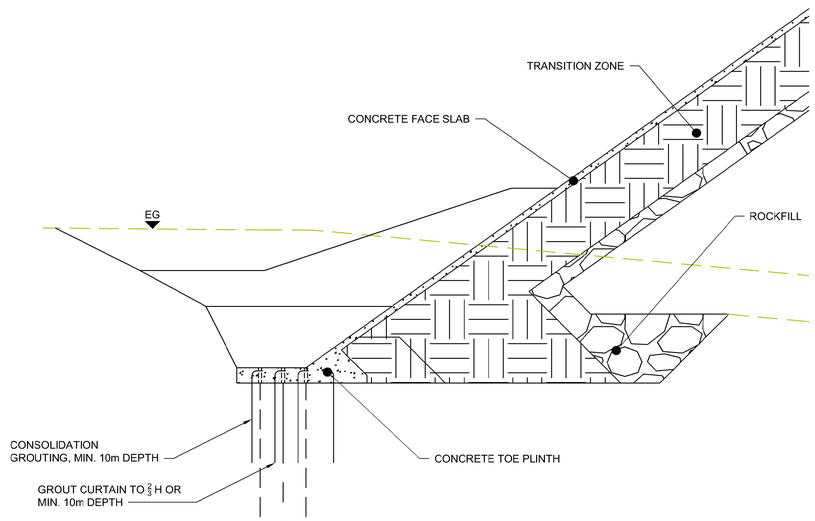
HEAD POND - EMBANKMENT SECTION

1:400m



A HEADPOND EMBANKMENT - CREST DETAIL

1:100m



B HEADPOND EMBANKMENT - TOE PLINTH / FOUNDATION DETAIL

1:100m

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AECOM

PROJECT

Balliemeanoch
Pumped Storage Hydro

CLIENT

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LEGEND

NOTES

1. DRAWING IS FOR INDICATIVE PURPOSES ONLY
2. LEVELS BASED ON 5m DIGITAL TERRAIN MODEL (DTM)
3. ROCKFILL SHOWN INDICATIVELY. FINAL DESIGN OF ROCKFILL ZONING TO BE CONFIRMED BY DESIGNER.

0 10 20 m
1:400

0 2.5 5 m
1:100

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ISSUE/REVISION

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I/R	DATE	DESCRIPTION

SHEET TITLE

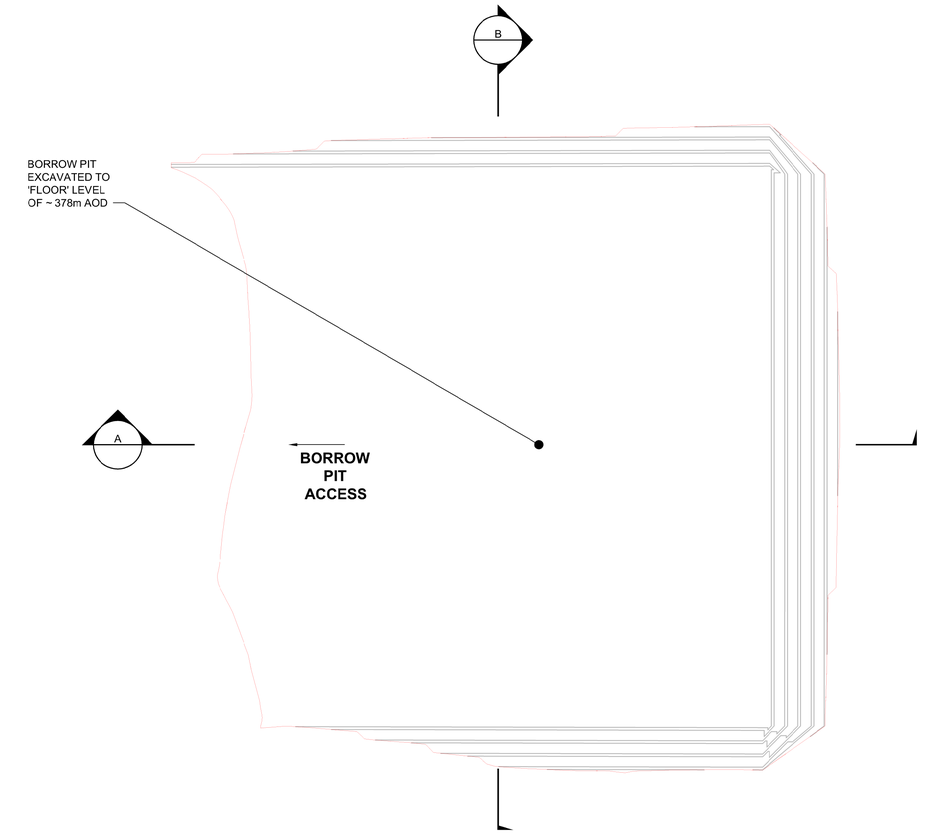
HEADPOND EMBANKMENTS

FIGURE NUMBER

FIGURE 2.7

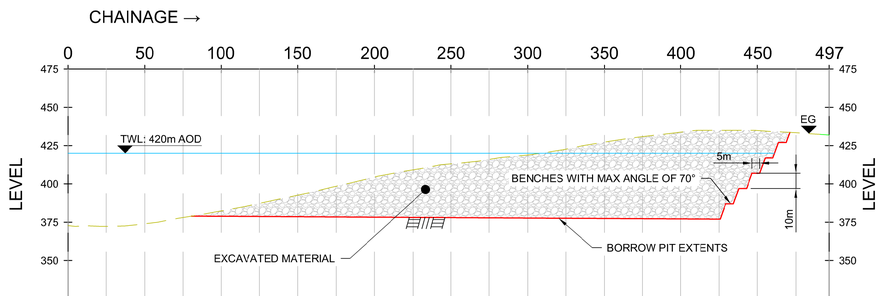
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Last saved by: AARON.CLEGHORN(2025-05-26) Last Plotted: 2025-05-26 AutoCAD Version: 24.1S (LMS TECH)
Filename: C:\PWWORKING\AECOM_DS09_UK_2020\D0533929\FIGURE 2.7 HEADPOND EMBANKMENTS.DWG



BORROW PIT PLAN
1:2000m

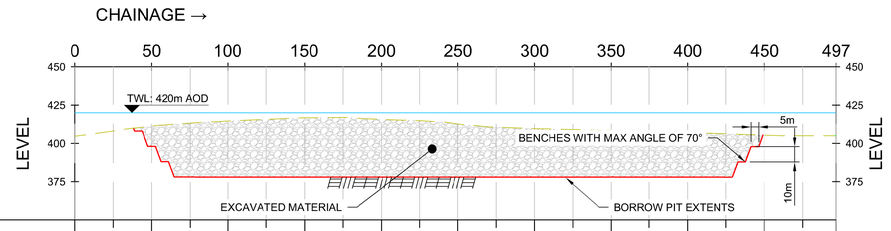
BP - Section A-A - LONGSECTION
SCALE: H 1:2000, V 1:2000 - DATUM: 325.000



BORROW PIT LEVEL					378.85	378.73	378.58	378.44	378.29	378.15	378.01	377.86	377.72	377.57	377.43	377.28	377.14	377.00	406.99													
EXISTING GROUND LEVELS	372.80	372.25	373.92	378.03	382.38	387.29	392.64	398.47	404.49	409.18	413.06	415.98	418.86	422.67	427.32	430.86	433.80	435.00	434.90	433.42	431.90										
LEVEL DIFFERENCE					-3.533	-8.561	-14.058	-20.029	-26.197	-31.033	-35.050	-38.121	-41.147	-45.099	-49.896	-53.574	-56.656	-58.005	-27.909													

A | BORROW PIT SECTION A
1:2000m

BP - Section B-B - LONGSECTION
SCALE: H 1:2000, V 1:2000 - DATUM: 350.000



BORROW PIT LEVEL			398.03	378.03	378.00	378.00	377.99	378.01	378.01	378.01	378.01	378.01	378.01	378.01	378.02	378.01	378.00	377.92													
EXISTING GROUND LEVELS	404.75	408.08	411.28	413.15	414.56	415.68	416.64	416.89	415.63	414.80	412.68	410.58	409.64	409.03	408.67	407.78	407.09	406.24	405.35	405.01	405.00										
LEVEL DIFFERENCE			-13.242	-35.116	-36.563	-37.678	-38.650	-38.874	-37.617	-36.786	-34.662	-32.566	-31.624	-31.015	-30.653	-29.764	-29.090	-28.315													

B | BORROW PIT SECTION B
1:2000m

PROJECT

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Pumped Storage Hydro

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LEGEND

NOTES

1. DRAWING IS FOR INDICATIVE PURPOSES ONLY
2. SEE DRAWING S03-Z1-05-DR-CE-315602 FOR BORROW PIT PLAN
3. SURFACE LEVELS AND EXISTING GROUND PROFILE BASED ON 5m DIGITAL TERRAIN MODEL (DTM)
4. PEAT STRIPPED FROM BORROW PIT AREA PRIOR TO COMMENCEMENT OF QUARRYING WORKS

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A	AC	DL	JIG
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I/R	DATE	DESCRIPTION

SHEET TITLE

HEADPOND BORROW PIT

FIGURE NUMBER

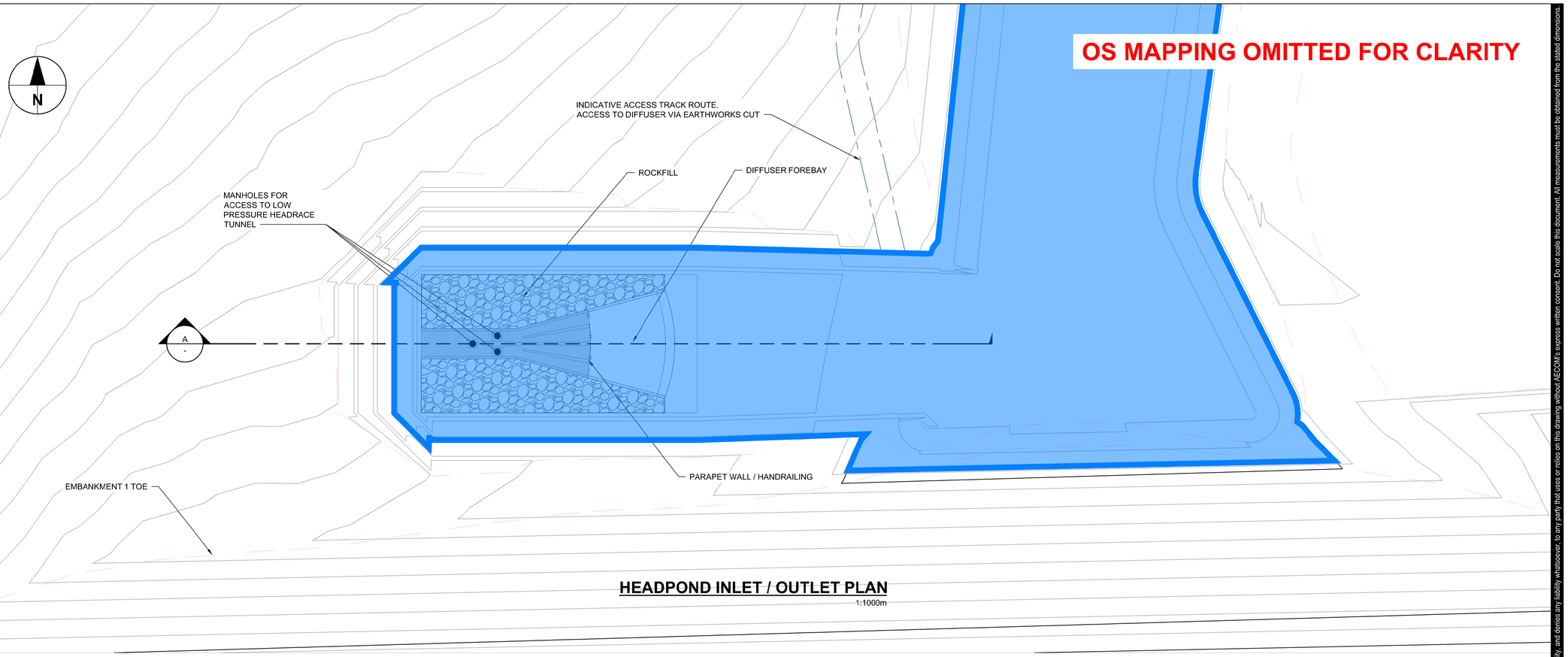
FIGURE 2.8

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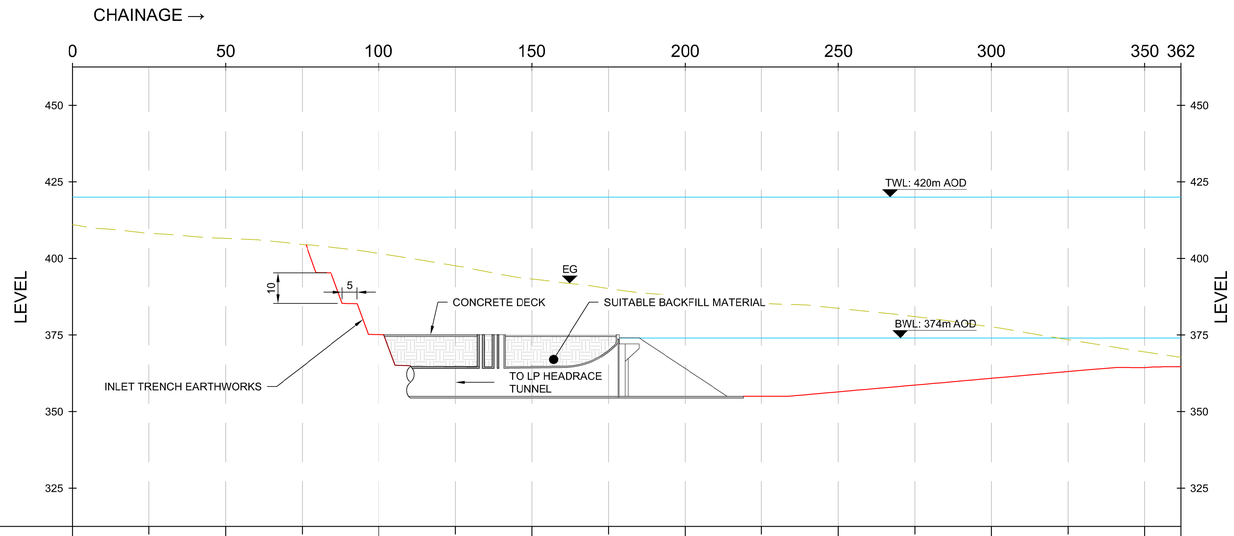
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Last saved by: AARON.CLEGHORN(2025-05-26) Last Plotted: 2025-05-26 AutoCAD Version: 24.1S (LMS TECH)
Filename: C:\PWWORKING\AECOM_DS09_UK_2020\D0533929\FIGURE 2.8 HEADPOND BORROW PIT.DWG

OS MAPPING OMITTED FOR CLARITY



HEADPOND INLET / OUTLET PLAN

1:1000m



EMBANKMENT / NEW SURFACE LEVEL					375.13	355.00	355.00	355.00	355.00	355.00	356.44	358.65	360.86	366.60	364.36	364.64
EXISTING GROUND LEVELS	411.05	408.20	406.55	404.55	401.65	397.60	393.28	390.14	387.62	385.33	383.69	380.99	377.65	373.48	369.46	367.70
LEVEL DIFFERENCE					-26.513	-42.602	-38.276	-35.137	-32.617	-30.326	-27.256	-22.344	-16.798	-6.879	-5.107	-3.059

A | HEADPOND INLET / OUTLET SECTION

1:1000m

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Filename: C:\PWWORKING\AECOM_DS\09_UK_2020\DS53929\FIGURE 2.9 INDICATIVE HEADPOND INLET OUTLET STRUCTURE.DWG

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LEGEND

- EXISTING GROUND (SEE NOTE NO. 2)
- PROPOSED GROUND
- PROPOSED WATER LEVEL
- BOTTOM WATER LEVEL (BWL)

NOTES

1. DRAWING IS FOR INDICATIVE PURPOSES ONLY
2. LEVELS TAKEN FROM 5m DIGITAL TERRAIN MODEL (DTM)
3. BWL SET AT 374m AOD
4. REFER TO FIGURE 2.5 - HEADPOND - INDICATIVE ARRANGEMENT FOR PLAN OF HEADPOND
5. CONTOURS SHOWN AT 5m INCREMENTS BASED ON 5m DTM

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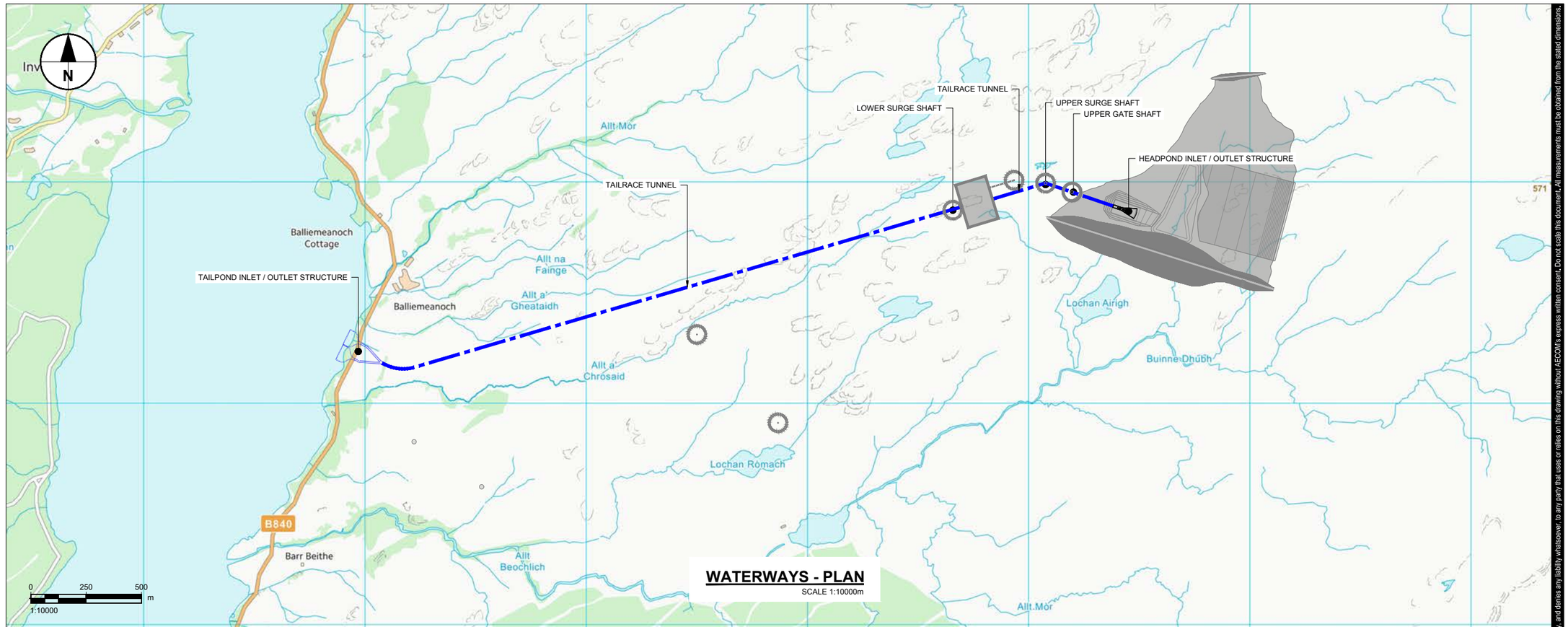
SHEET TITLE

INDICATIVE HEADPOND
INLET / OUTLET STRUCTURE

FIGURE NUMBER

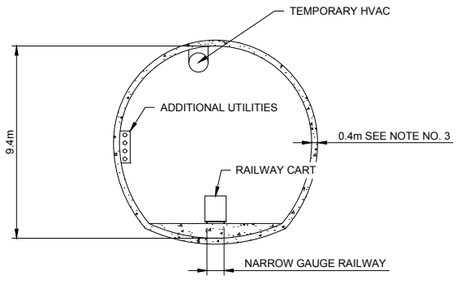
FIGURE 2.9

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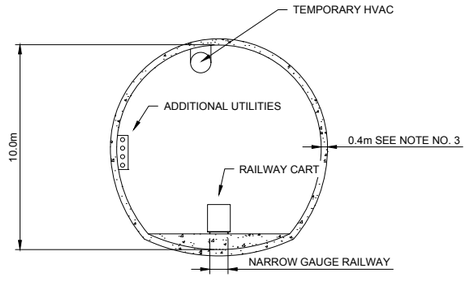
WATERWAYS - PLAN

SCALE 1:10000m



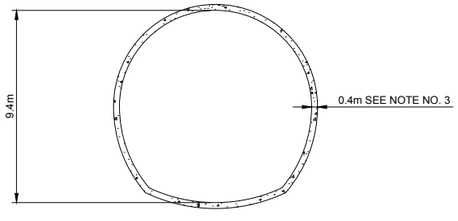
HEADRACE TUNNEL - CONSTRUCTION

1:150m



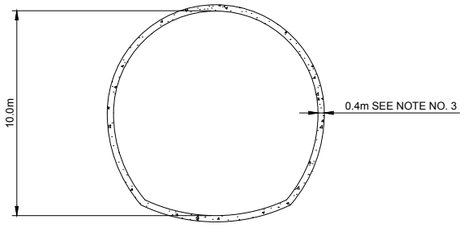
TAILRACE TUNNEL - CONSTRUCTION

1:150m



HEADRACE TUNNEL - OPPERATION

1:150m



TAILRACE TUNNEL - OPPERATION

1:150m

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LEGEND

WATERWAYS

POWER CAVERN

NOTES

1. DRAWING IS FOR INDICATIVE PURPOSES ONLY.
2. ALL SECTIONS ARE INDICATIVE.
3. TUNNEL LINING THICKNESS IS SUBJECT TO ROCK SUPPORT DESIGN AT THE NEXT DESIGN PHASE. MINIMUM THICKNESS OF 400mm IS SHOWN INDICATIVELY.
4. THE CROSS SECTION IS SHOWN INDICATIVELY ASSUMING A DRILL AND BLAST WOULD BE ADOPTED FOR TUNNELING.
5. UPPER HEADPOND SHOWN IN LIGHT BLUE INDICATIVELY FOR REFERENCE.

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A	AC	DL	JIG
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SHEET TITLE

WATERWAYS AND TUNNELS SECTIONS

FIGURE NUMBER

FIGURE 2.10

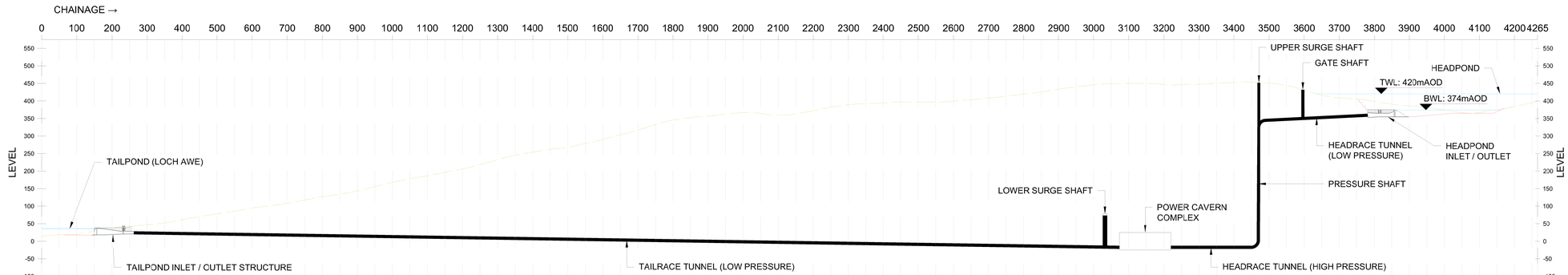
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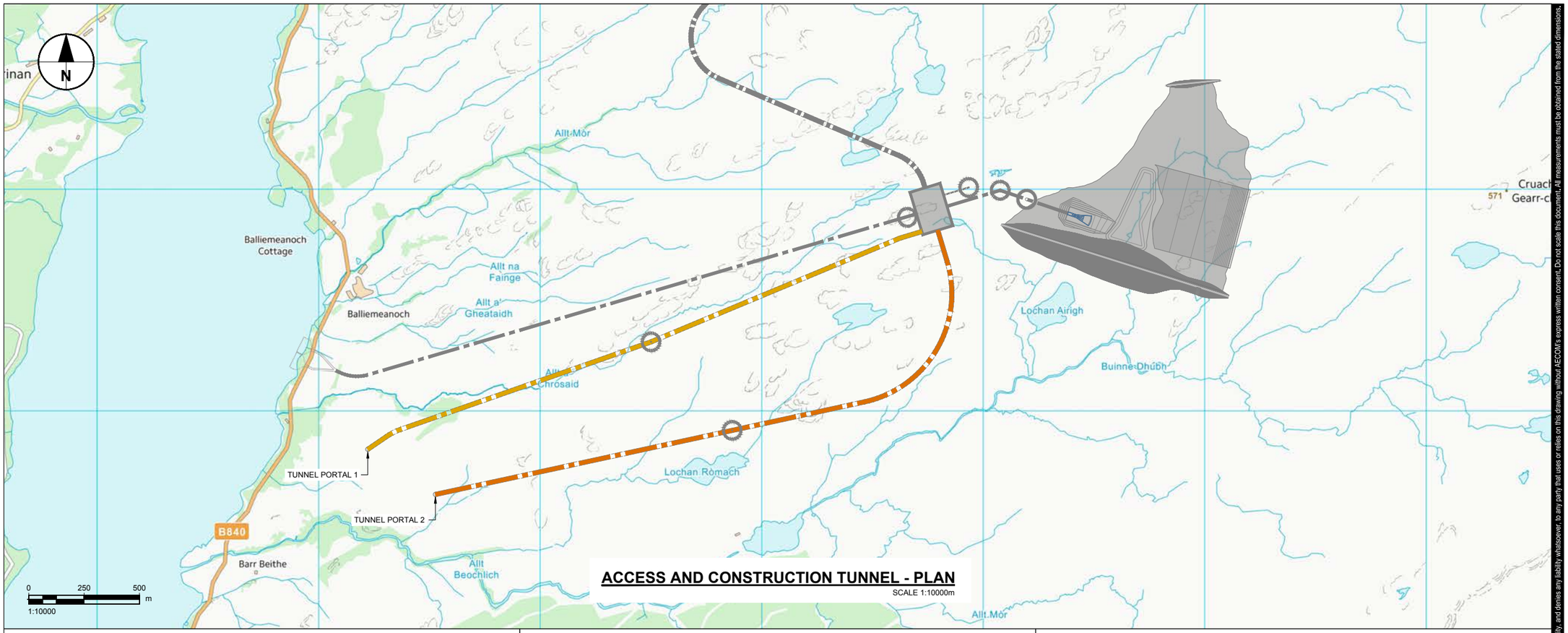
Project Management Initials: Designer: AC Checked: DL Approved: JIG
Last saved by: AARON.CLEGHORN (2025-06-23) Last Plotted: 2025-06-23 AutoCAD Version: 24.1S (LMS TECH)
Filename: C:\PW\WORKING\AECOM_DS09_UK_2020\D0485521\FIGURE 2.10 WATERWAYS AND TUNNELS SECTION .DWG

Project Management Initials: Designer: AC Checked: DL Approved: JIG

Waterways Longsection - LONGSECTION
SCALE: H 1:5000, V 1:5000 - DATUM: -125.000

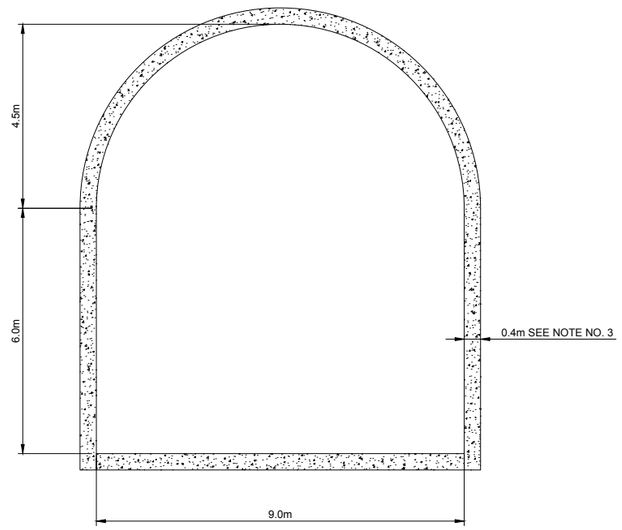


| CHAINAGE | 00.000 | 50.000 | 100.000 | 150.000 | 200.000 | 250.000 | 300.000 | 350.000 | 400.000 | 450.000 | 500.000 | 550.000 | 600.000 | 650.000 | 700.000 | 750.000 | 800.000 | 850.000 | 900.000 | 950.000 | 1000.000 | 1050.000 | 1100.000 | 1150.000 | 1200.000 | 1250.000 | 1300.000 | 1350.000 | 1400.000 | 1450.000 | 1500.000 | 1550.000 | 1600.000 | 1650.000 | 1700.000 | 1750.000 | 1800.000 | 1850.000 | 1900.000 | 1950.000 | 2000.000 | 2050.000 | 2100.000 | 2150.000 | 2200.000 | 2250.000 | 2300.000 | 2350.000 | 2400.000 | 2450.000 | 2500.000 | 2550.000 | 2600.000 | 2650.000 | 2700.000 | 2750.000 | 2800.000 | 2850.000 | 2900.000 | 2950.000 | 3000.000 | 3050.000 | 3100.000 | 3150.000 | 3200.000 | 3250.000 | 3300.000 | 3350.000 | 3400.000 | 3450.000 | 3500.000 | 3550.000 | 3600.000 | 3650.000 | 3700.000 | 3750.000 | 3800.000 | 3850.000 | 3900.000 | 3950.000 | 4000.000 | 4050.000 | 4100.000 | 4150.000 | 4200.000 | 4250.000 | 4265.427 |
|---|---|---



ACCESS AND CONSTRUCTION TUNNEL - PLAN

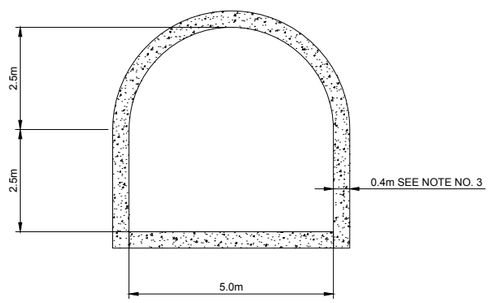
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ACCESS TUNNEL SECTON

SCALE 1:75m

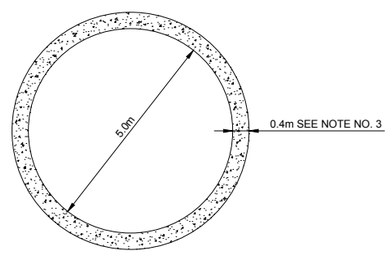
0 1.875 3.75 m
1:75



CONSTRUCTION / EMERGENCY TUNNEL SECTION

SCALE 1:75m

0 1.875 3.75 m
1:75



VENTILATION SHAFT - SECTIONAL PLAN

SCALE 1:75m

0 1.875 3.75 m
1:75

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PROJECT

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LEGEND

- CONSTRUCTION / EMERGENCY TUNNEL
- ACCESS TUNNEL
- VENTILATION TUNNEL
- VERTICAL VENTILATION SHAFT
- POWER CAVERN
- TUNNEL PORTALS

NOTES

1. DRAWING IS FOR INDICATIVE PURPOSES ONLY.
2. ALL SECTIONS ARE INDICATIVE.
3. TUNNEL LINING THICKNESS IS SUBJECT TO ROCK SUPPORT DESIGN AT THE NEXT DESIGN PHASE. MINIMUM THICKNESS OF 400mm IS SHOWN INDICATIVELY.
4. UPPER HEADPOND SHOWN FOR REFERENCE.
5. REFER TO FIGURE 2.14 - POWER TUNNEL SECTION AND FIGURE 2.10 - WATERWAYS AND TUNNELS SECTION

APPROVED FOR ISSUE

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A	AC	DL	JIG
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I/R	DATE	DESCRIPTION

SHEET TITLE

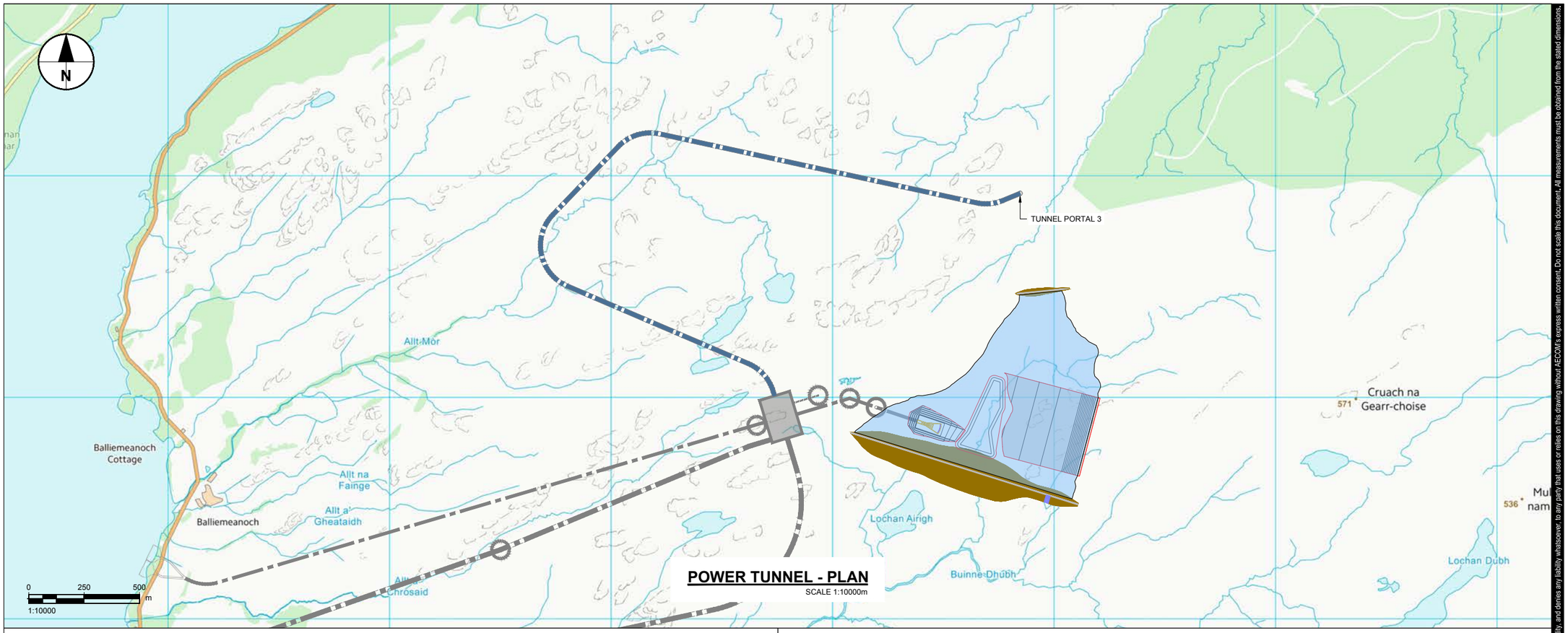
ACCESS AND CONSTRUCTION TUNNEL SECTIONS

FIGURE NUMBER

FIGURE 2.13

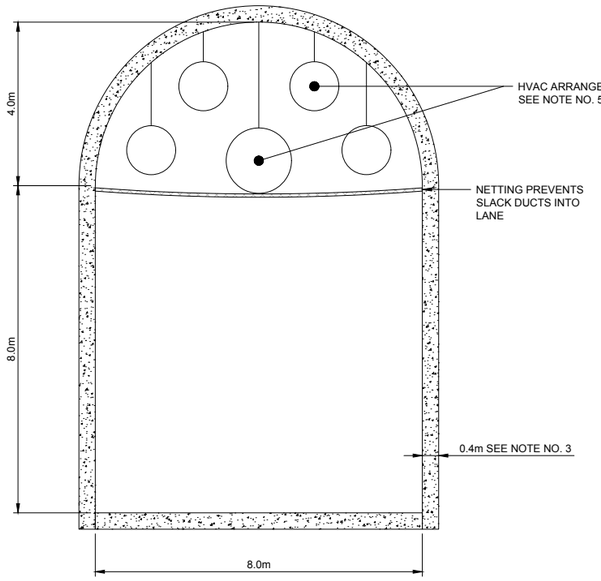
Project Management Initials: Designer: AC Checked: DL Approved: JIG

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Filename: C:\PWWORKING\AECOM_DS09_UK_2020\D0485521\FIGURE 2.13 ACCESS AND CONSTRUCTION TUNNEL SECTION.DWG



POWER TUNNEL - PLAN

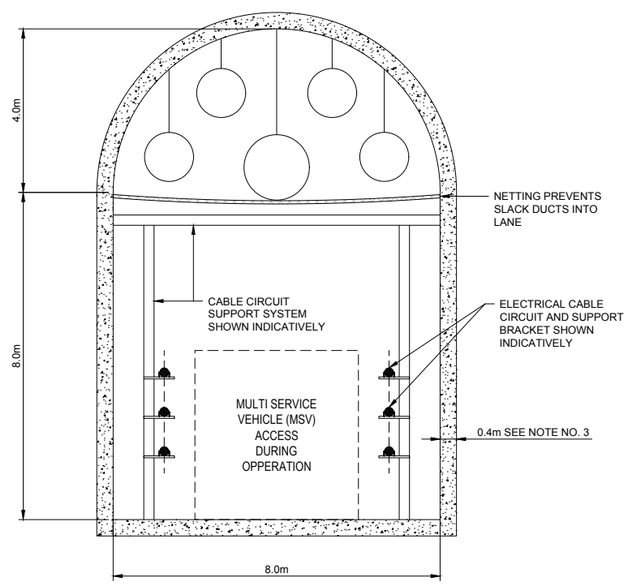
SCALE 1:10000m



POWER TUNNEL - DURING CONSTRUCTION

SCALE 1:75m

0 1.875 3.75 m
1:75



POWER TUNNEL - DURING OPERATION AND MAINTENANCE

SCALE 1:75m

0 1.875 3.75 m
1:75

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LEGEND

- POWER TUNNEL
- POWER CAVERN
- TUNNEL PORTALS

NOTES

1. DRAWING IS FOR INDICATIVE PURPOSES ONLY.
2. ALL SECTIONS ARE INDICATIVE.
3. TUNNEL TO BE USED FOR DELIVERY OF ABNORMAL INDIVISIBLE LOADS (AILs) DURING CONSTRUCTION. POST DELIVERY, TUNNEL TO BE ADAPTED INTO OPERATIONAL POWER / CABLE TUNNEL.
3. TUNNEL LINING THICKNESS IS SUBJECT TO ROCK SUPPORT DESIGN AT THE NEXT DESIGN PHASE. MINIMUM THICKNESS OF 400mm IS SHOWN INDICATIVELY.
4. UPPER HEADPOND SHOWN FOR REFERENCE.
5. HVAC SYSTEM AND TRANSFORMER DELIVERY VEHICLE SHOWN INDICATIVELY. TO BE CONFIRMED AT DETAILED DESIGN STAGE.
6. CABLING ARRANGEMENT AND SUPPORT SYSTEM ARE SHOWN INDICATIVELY AND SHALL BE FINALISED AT DETAILED DESIGN STAGE.
7. REFER TO FIGURE 2.13 - ACCESS AND CONSTRUCTION TUNNEL SECTION

APPROVED FOR ISSUE

B	AC	DL	JIG
A	AC	DL	JIG
I/R	DRAWN BY	CHECKED	APPROVED

ISSUE/REVISION

B	MAY 2025	FEI UPDATE
A	JULY 2024	FINAL
I/R	DATE	DESCRIPTION

SHEET TITLE

POWER TUNNEL SECTION

FIGURE NUMBER

FIGURE 2.14

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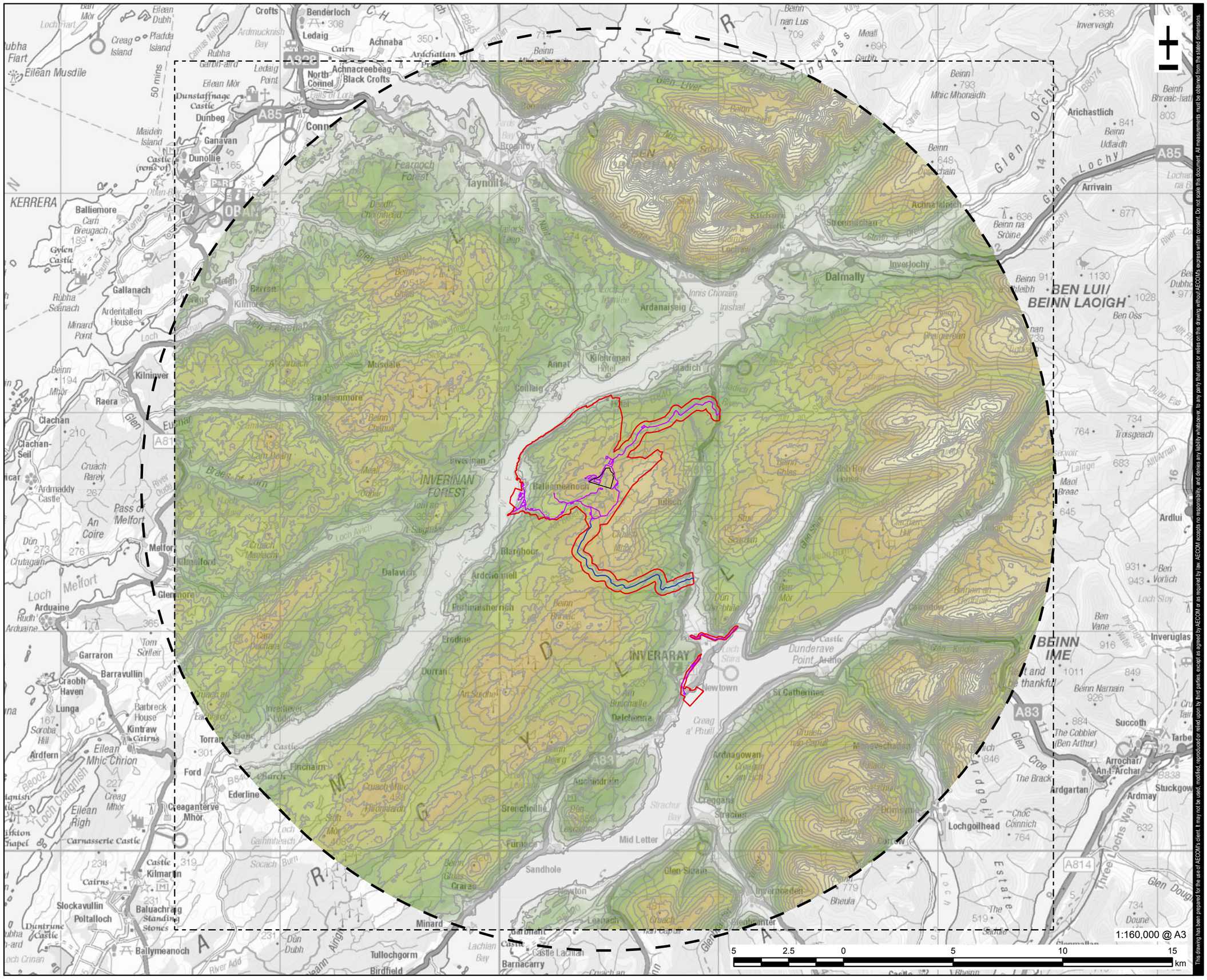
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Project Management Initials: Designer: AC Checked: DL Approved: JIG

Last saved by: AARON.CLEGHORN(2025-06-23) Last Plotted: 2025-06-23 AutoCAD Version: 24.1S (LMS TECH)
Filename: C:\PW\WORKING\AECOM_DS09_UK_2020\D0485521\FIGURE 2.14 POWER TUNNEL SECTION.DWG

Revision: 1 Drawn: TS Checked: LG Approved: BM Date: 2025-05-12

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AECOM

PROJECT

BALLIEMEANOCH PUMPED STORAGE HYDRO

CLIENT

ILI (Borders PSH) Ltd.

CONSULTANT

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www.aecom.com

NOTES

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

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Topography

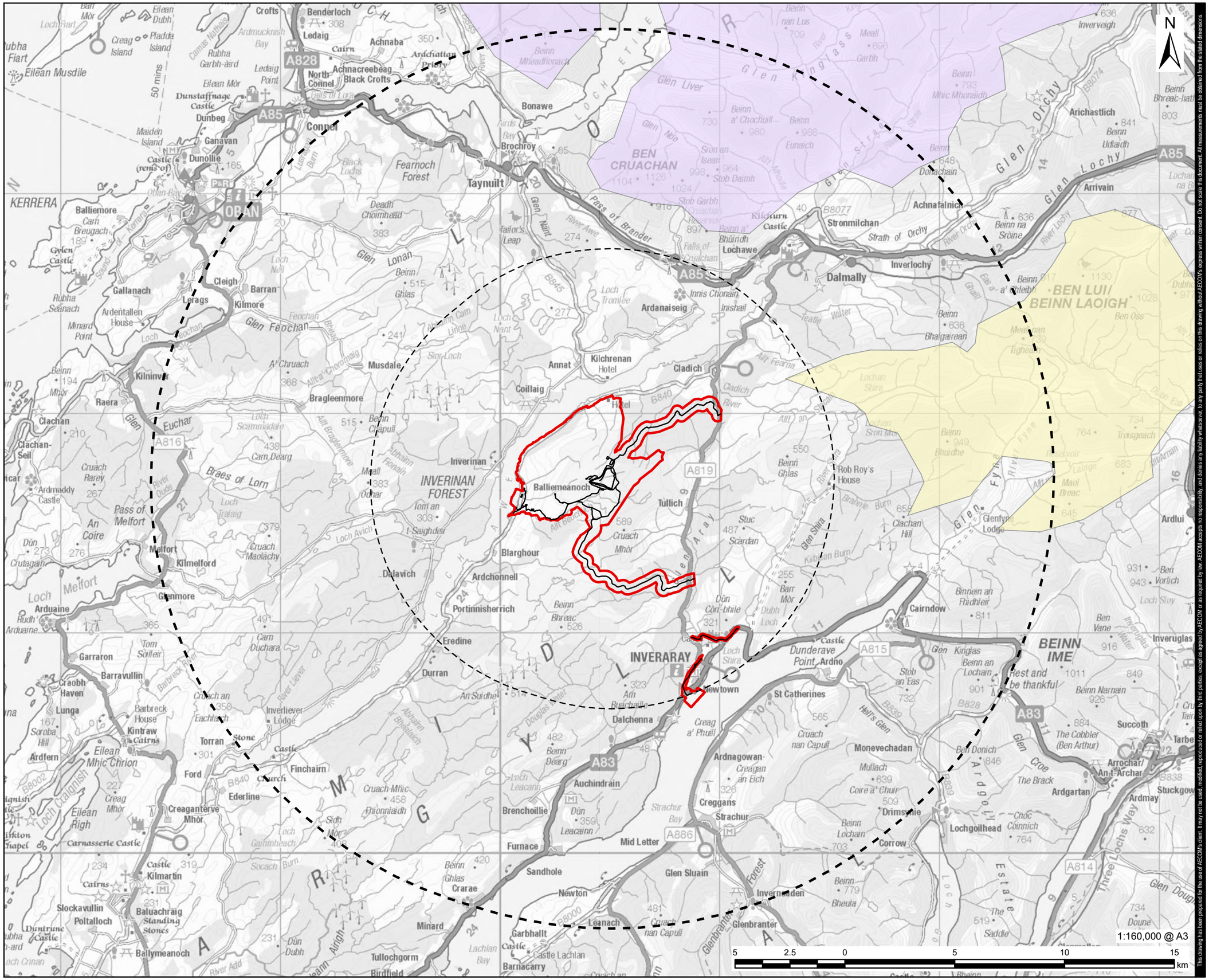
FIGURE NUMBER

Figure 5.1

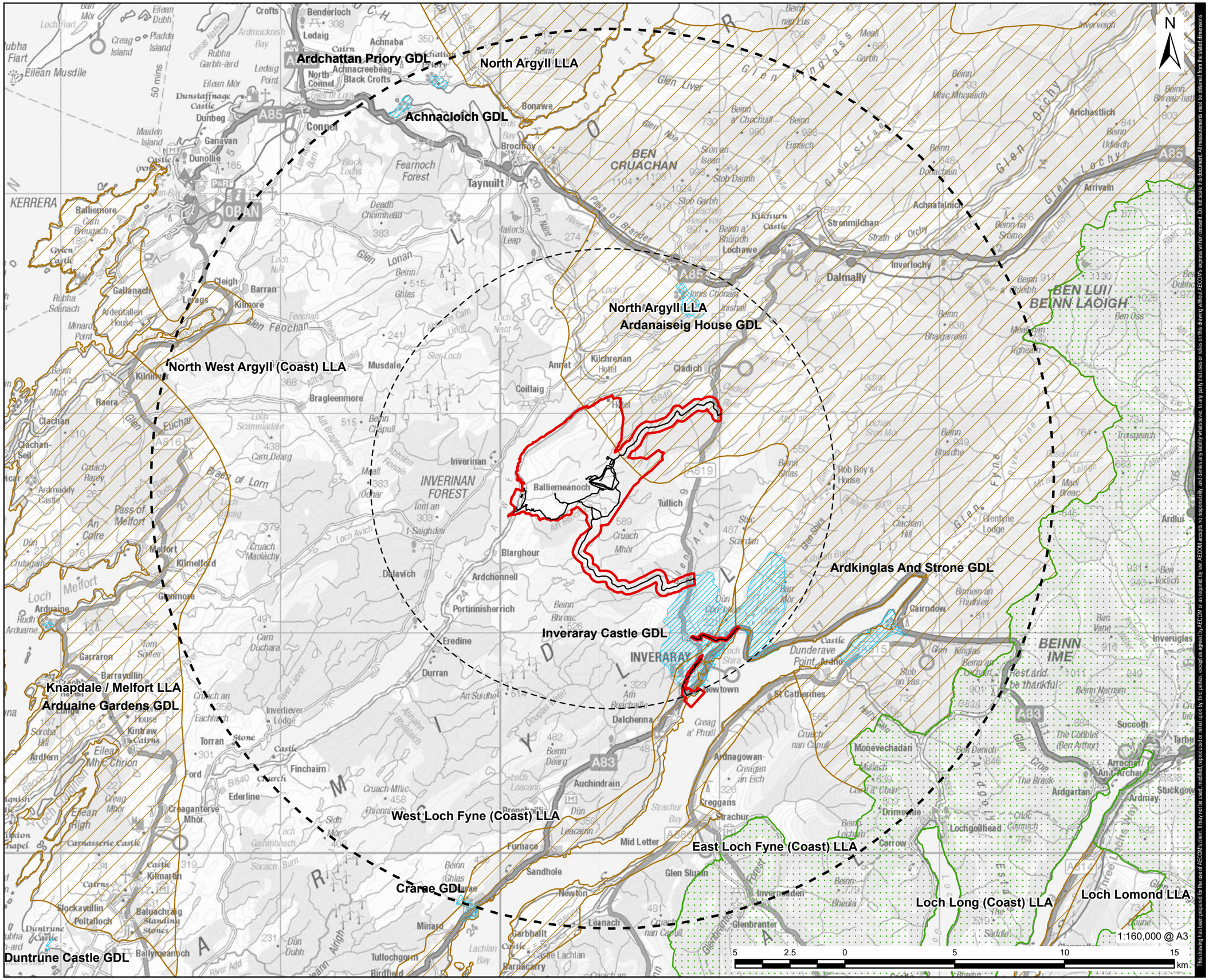
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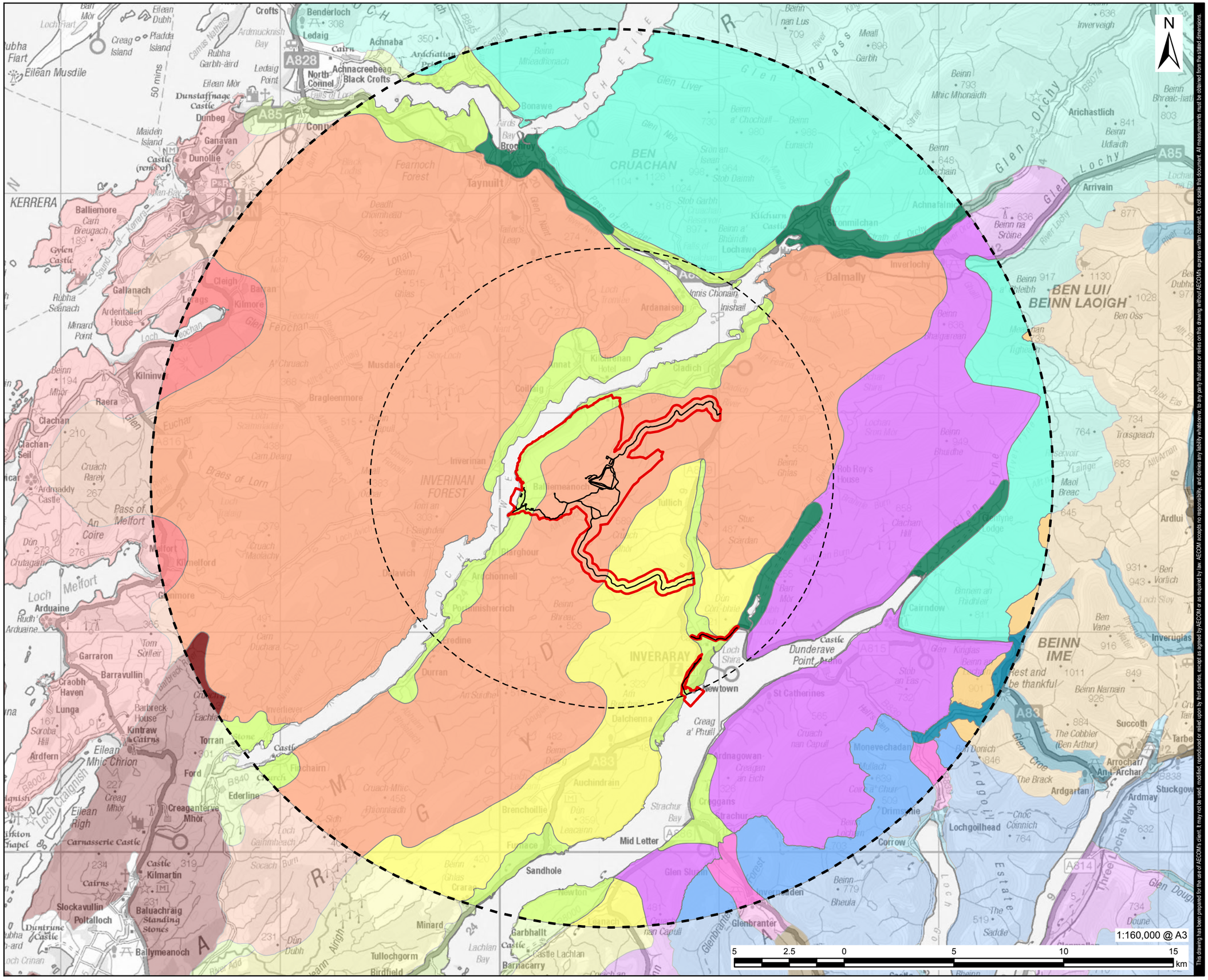
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A828
A816
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A83
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B8077
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B8045
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B8000
B8002
B8084
B8839
B8838
B828
B840
Benderloch
Ledaig
Achnaba
Achnacreebeag
Black Crofts
North Connel
Connel
Dunstaffnage Castle
Dunbeg
Ganavan
Dunollie
Castle (ruins of)
OBAN
Maiden Island
Eilean Musdile
Eilean Dubh
Eilean Mòr
Ledaig Point
Crofts
Bonawe
Brochroy
Taynuilt
Fearnoch Forest
Pass of Brander
Glen Nant
Tailor's Leap
Glen Lonan
Deadh Choimhead
Loch Nell
Black Lochs
Lerags
Cleigh
Barran
Kilmore
Gallanach
Ardentallen House
Balliemore
Gylen Castle
Kerrera
Glen Feochan
Kilninver
Raera
Clachan
Clachan-Seil
Ardmaddy Castle
Braes of Lorn
Pass of Melfort
An Coire
Melfort
Kilmelford
Loch Melfort
Arduaine
Glenmore
Garraron
Barravullin
Craobh Haven
Lunga
Kintraw
Cairns
Ardfern
Eilean Mhic Chrion
Loch Craignish
Eilean Righ
Carnasserie Castle
Creaganterve Mhor
Ford
Torran
Stone
Castle
Church
Finchairn
Ederline
Inverlever Lodge
Barbreck House
Barbreck R.
River Liever
Cruach an Eachlaich
Abhainn a' Bhealaich
Douglas Wat
Allt Braddelmore
Allt a' Chrorain
Allt Chaorainaig
Allt Fearna
Allt Broighleinn
Allt Bhràighe
Allt Arigh
Allt Mhuic
Allt Coire Mhuic
Allt Cruach Mhic
Allt Dhionnlaidh
Allt Leacainn
Allt Mhoille
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Allt Mhoille

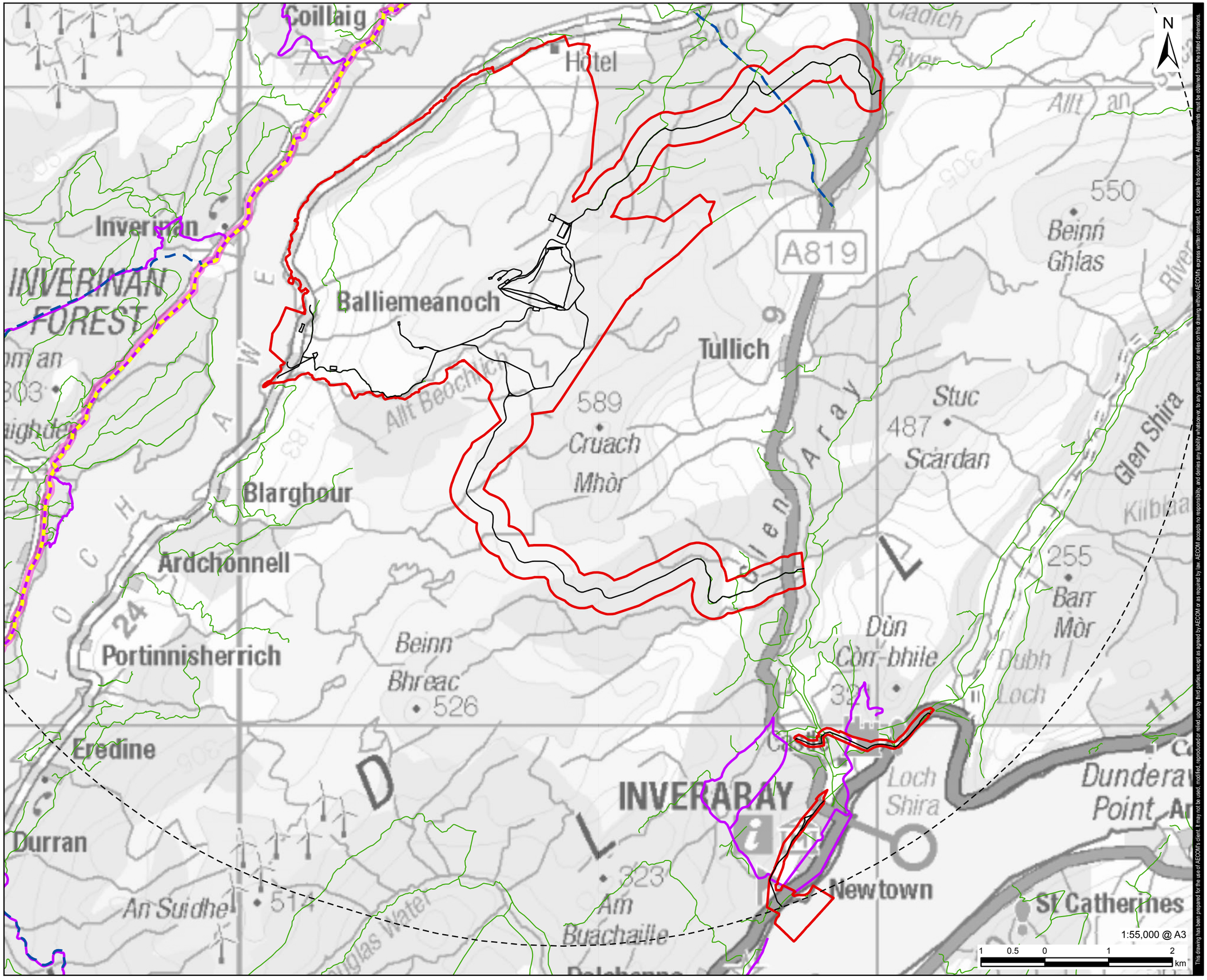
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Ardchattan Priory GDL
North Argyll LLA
Achnacloich GDL
North Argyll LLA
Ardanaiseig House GDL
North West Argyll (Coast) LLA
Ardkinglas And Strone GDL
Inveraray Castle GDL
Knapdale / Melfort LLA
Arduaine Gardens GDL
West Loch Fyne (Coast) LLA
East Loch Fyne (Coast) LLA
Crarae GDL
Loch Long (Coast) LLA
Loch Lomond LLA
Duntrune Castle GDL
BEN CRUACHAN
BEN LUI/ BEINN LAOIGH
BEINN IME
INVERINAN FOREST
Fearnoch Forest
INVERARAY
KERRERA
Glen Lonan
Glen Feochan
Glen Euchar
Glen Kinglass
Glen Orchy
Glen Lochy
Glen Shira
Glen Fyne
Pass of Brander
Pass of Melfort
Braes of Lorn
A85
A82
A83
A819
A816
A828
A84
Oban
Taynuilt
Connel
Dalmally
Lochawe
Inveraray
Arrochar
Tarbet
Ardlui
Crianlarich
Tyndrum
Dalmally
Kilchurn Castle
Stronmilchan
Achnafalnich
Arrivain
Arichastlich
Cairndow
Newtown
Dalchenna
Auchindrain
Strachur
Creggans
Furnace
Sandhole
Minard
Lochgoilhead
Succoth
Ardgartan
Ardmay
Stuckgowan
Monevechadan
Drimsynie
Carrow
Glenbranter
Inveruglas
Ardlui
Balliemeanoch
Tullich
Blarghour
Ardchonnell
Portinnisherrich
Dalavich
Kilchrenan
Cladich
Annat
Coillaig
Bragleenmore
Musdale
Kilninver
Melfort
Kilmelford
Arduaine
Ganavan
Dunollie
Dunbeg
Benderloch
Ledaig
Achnaba
Achnacreebeag
Black Crofts
North Connel
Bonawe
Brochroy
Deadh Choimhead
Glen Nant
Tailor's Leap
Loch Awe
Loch Etive
Loch Melfort
Loch Scammadale
Loch Nell
Loch Nant
Loch Shira
Loch Arklet
Loch Lomond
Inveruglas Water
River Orchy
River Awe
River Douglas
River Aray
Eredine
Durran
Inverliever Lodge
Kintraw
Ardfern
Barnacarry
Castle Lachlan
Tullochgorm
Birdfield
Garbhallt
Leanach
Newton
Invermaden
Glen Sluain
Mid Letter
Cairn Dearg
Beinn Chapuil
Beinn Ghlas
Beinn Bhreac
Beinn Dearg
Beinn a' Chochuill
Beinn a' Bhùiridh
Beinn Eunaich
Beinn Mhic Mhonaidh
Beinn Dorain
Beinn na Sròine
Beinn Udlaidh
Beinn Bhreac-liath
Beinn Narnain
Ben Oss
Ben Vane
Ben Vorlich
Stob Garbh
Stob Dàmh
Stob an Eas
Meall Garbh
Meall Dubh
Meall Breac
Meall nan Eun
Meall Odhar
Meall Reamhar
Cruach Mhòr
Cruach nan Capull
Creag a' Phuill
Creagan an Eich
Ben Donich
Ben Arthur
Cobbler
Castle Stalker
Dunderave Castle
Castle Ardno
Kilchrenan Hotel
Cladich Hotel
Bob Boy's House
Glenfyne Lodge
Glen Shira
Glen Kinglass
Glen Liver
Glen Noe
Glen Streap
Glen Nant
Glen Lonan
Glen Feochan
Glen Euchar
Glen Orchy
Glen Lochy
Glen Fyne


N
1:160,000 @ A3
5 2.5 0 5 10 15 km
Development Boundary
10km Buffer
20km Study Area
Permanent Infrastructure
Landscape Character Types
LCT 57 Craggy Coast and Islands
LCT 40 Craggy Upland - Argyll
LCT 251 Highland Summits
LCT 39 Plateau Moor and Forest - Argyll
LCT 53 Rocky Coastland - Argyll
LCT 35 Rugged Mountains
LCT 250 Steep Ridges and Hills
LCT 34 Steep Ridges and Mountains
LCT 253 Straths and Glens
LCT 37 Upland Glens - Argyll
LCT 252 Upland Glens - Loch Lomond & the Trossachs
LCT 43 Upland Parallel Ridges - Argyll
BEN CRUACHAN
BEN LUI/ BEINN LAOIGH
BEINN IME
INVERINAN FOREST
KERRERA
Benderloch
Ledaig
Achnaba
Achnacreebeag
Black Crofts
North Connel
Dunstaffnage Castle
Dunbeg
Ganavan
Dunollie
Balliemore
Gallanach
Ardentallen House
Kilninver
Clachan
Clachan-Seil
Arduaine
Garraron
Craobh Haven
Barravullin
Lunga
Kintraw
Ardfern
Ford
Ederline
Creaganterve Mhor
Carnasserie Castle
Kilmartin
Stockavullin
Poltalloch
Baluachraig Standing Stones
Ballymeanoch
Taynuilt
Bonawe
Brochroy
Connel
Fearnoch Forest
Glen Lonan
Glen Feochan
Inverinan
Musdale
Bragleenmore
Glen Euchar
Braes of Lorn
Pass of Melfort
Loch Melfort
Glen Liver
Glen Nant
Glen Orchy
Glen Lochy
Glen Strae
Glen Kinglass
Glen Noe
Glen Ure
Glen Creran
Glen Salachan
Glen Shira
Glen Croe
Glen Douglas
Glen Fyne
Glen Dubh
Glen Donich
Glen Shuna
Glen Aray
Glen Kinglas
Glen Ruthven
Glen Ruthvenmore
Glen Ruthvenbeg
Glen Ruthvenfield
Glen Ruthvenlea
Glen Ruthvenhill
Glen Ruthvenside
Glen Ruthvenmuir
Glen Ruthvenhead
Glen Ruthvenfoot
Glen Ruthvenmouth
Glen Ruthvenbridge
Glen Ruthvenford
Glen Ruthvenlochan
Glen Ruthvenwood
Glen Ruthvenfield
Glen Ruthvenside
Glen Ruthvenmuir
Glen Ruthvenhead
Glen Ruthvenfoot
Glen Ruthvenmouth
Glen Ruthvenbridge
Glen Ruthvenford
Glen Ruthvenlochan
Glen Ruthvenwood
Arichastlich
Arrivain
Dalmally
Inverlochy
Succoth
Arrochar/ Ant-Archar
Ardgartan
Stuckgowan
Ardmay
Lochgoilhead
Corrow
Inveruglas
Ardlui
Tarbet
Newtown
Mid Letter
Sandhole
Minard
Tullochgorm
Birdfield
Garbhallt
Barnacarry
Castle Lachlan
Glenbranter
Dunderave Castle
Castle Stalker
Eilean Musdile
Eilean Dubh
Pladda Island
Maiden Island
Eilean Mòr
Eilean Mhic Chrion
Eilean Righ
Eilean Rarey
Eilean Dubh
Eilean Mòr
Eilean Musdile
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Eilean Dubh
Eilean Mòr

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AECOM

PROJECT

BALLIEMEANOCH PUMPED STORAGE HYDRO

CLIENT

ILI (Borders PSH) Ltd.

CONSULTANT

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

LEGEND

- Development Boundary
- Permanent Infrastructure
- 10km Buffer

Argyll and Bute Paths and Walking Routes

- Public Right of Way (Heritage Paths)
- Caledonia Way (NCN78)
- Core Paths
- Local Walking Paths
- Recreational Routes

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

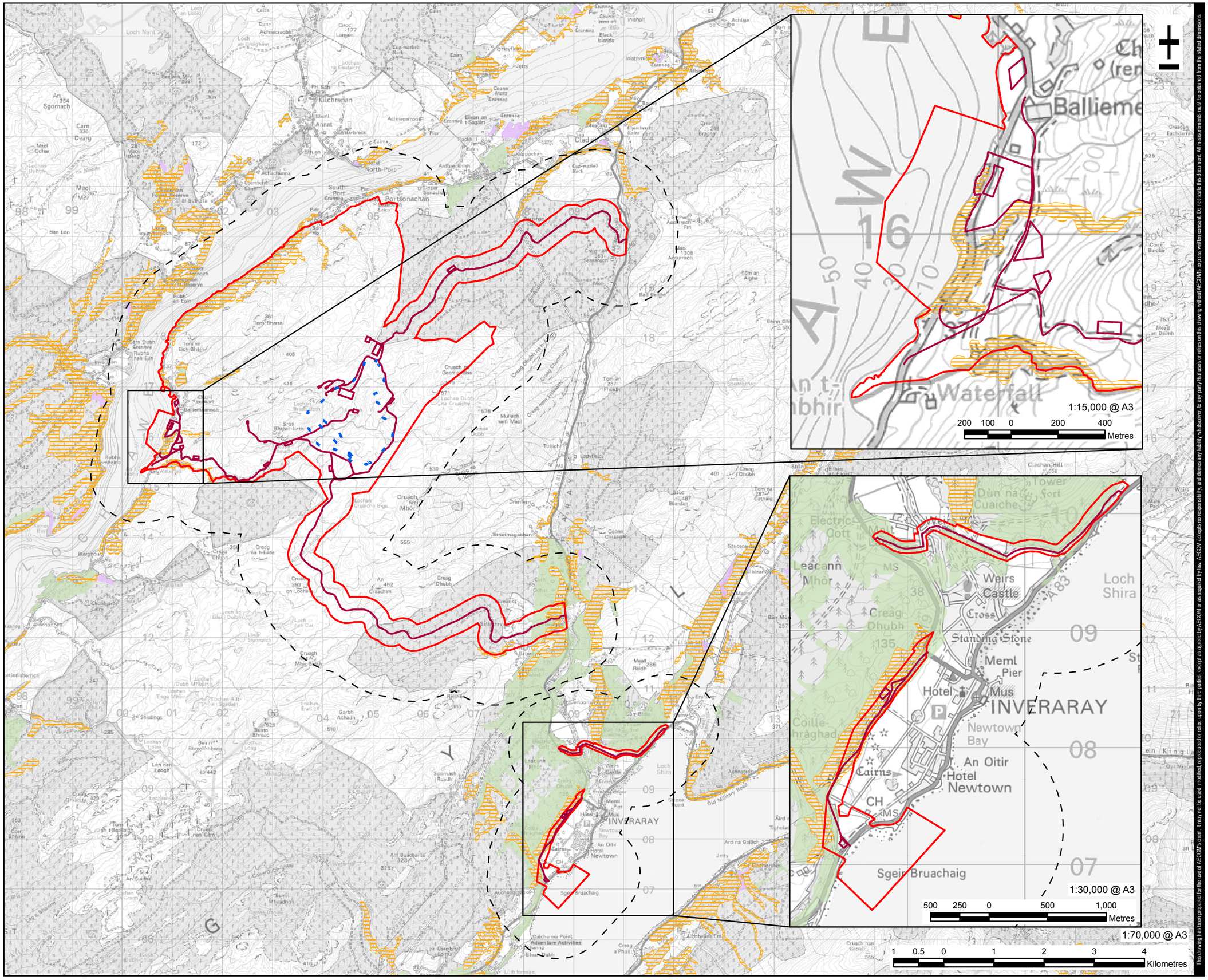
Recreational Routes and Core Paths

FIGURE NUMBER

Figure 5.6

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BALLIEMEANOCH PUMPED STORAGE HYDRO

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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Headpond and Embankments
- 1km Study Area

Woodland listed on the Ancient Woodland Inventory (AWI)

- Ancient woodland of semi-natural origin
- Long-Established plantation woodland
- Other woodland present on Roy military maps

NOTES

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PROJECT NUMBER

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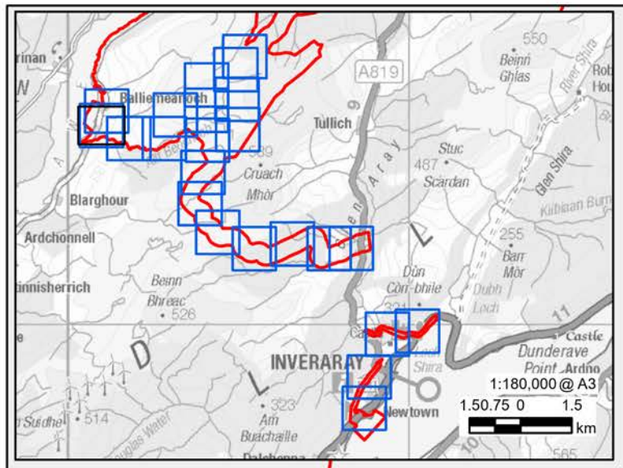
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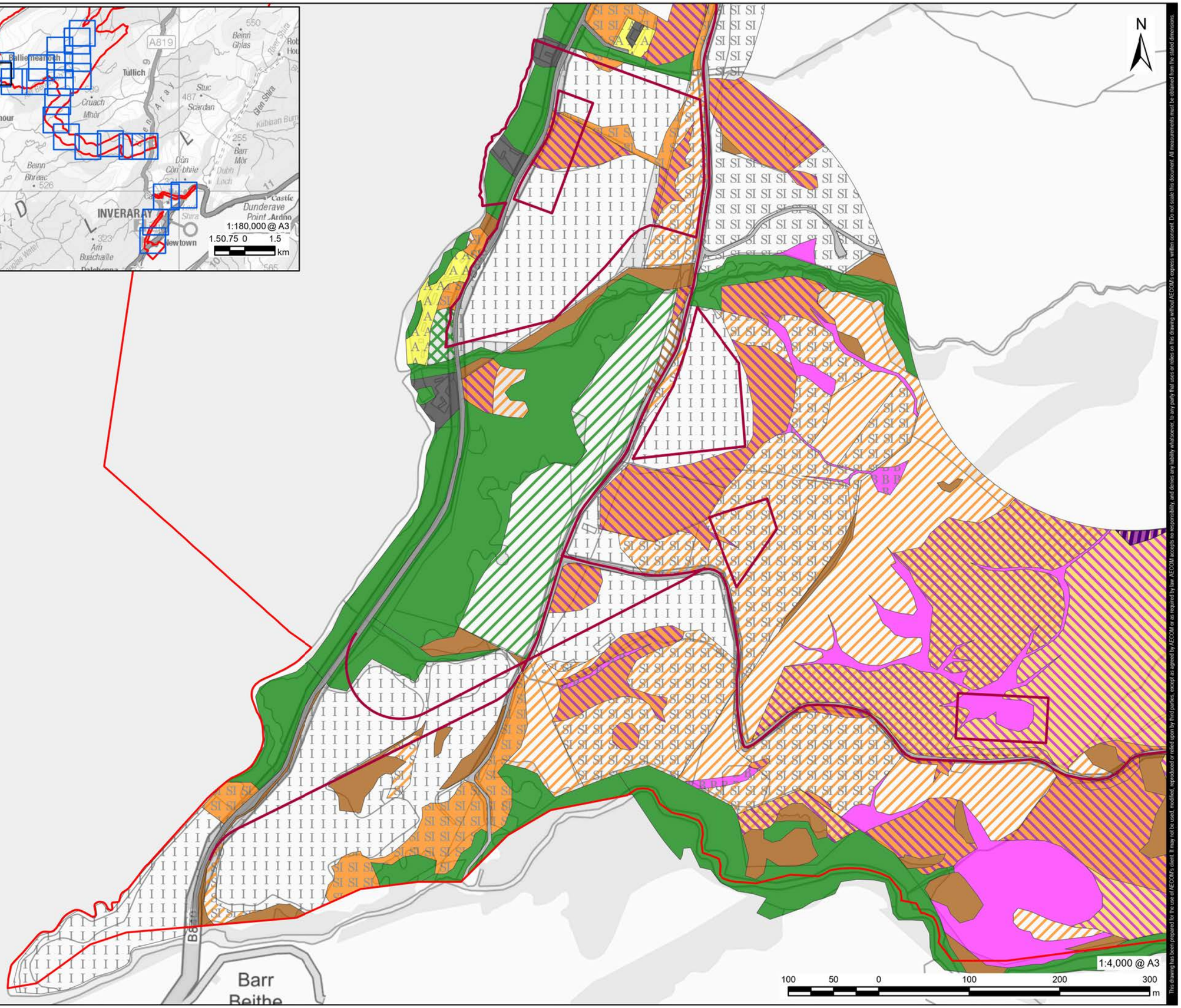
Ancient Woodland

FIGURE NUMBER

Figure 6.2

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A2.1 Dense scrub
- B1.1 Unimproved acid grassland
- B1.2 Semi-improved acid grassland
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- B6 Poor semi-improved grassland
- C1.1 Dense bracken
- C3.1 Tall ruderal
- D2 Wet heath
- D6 Wet heath/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E2.1 Acid flush
- E2.2 Basic flush
- J1.2 Amenity grassland
- J3.6 Building(s)
- Road
- Track

NOTES

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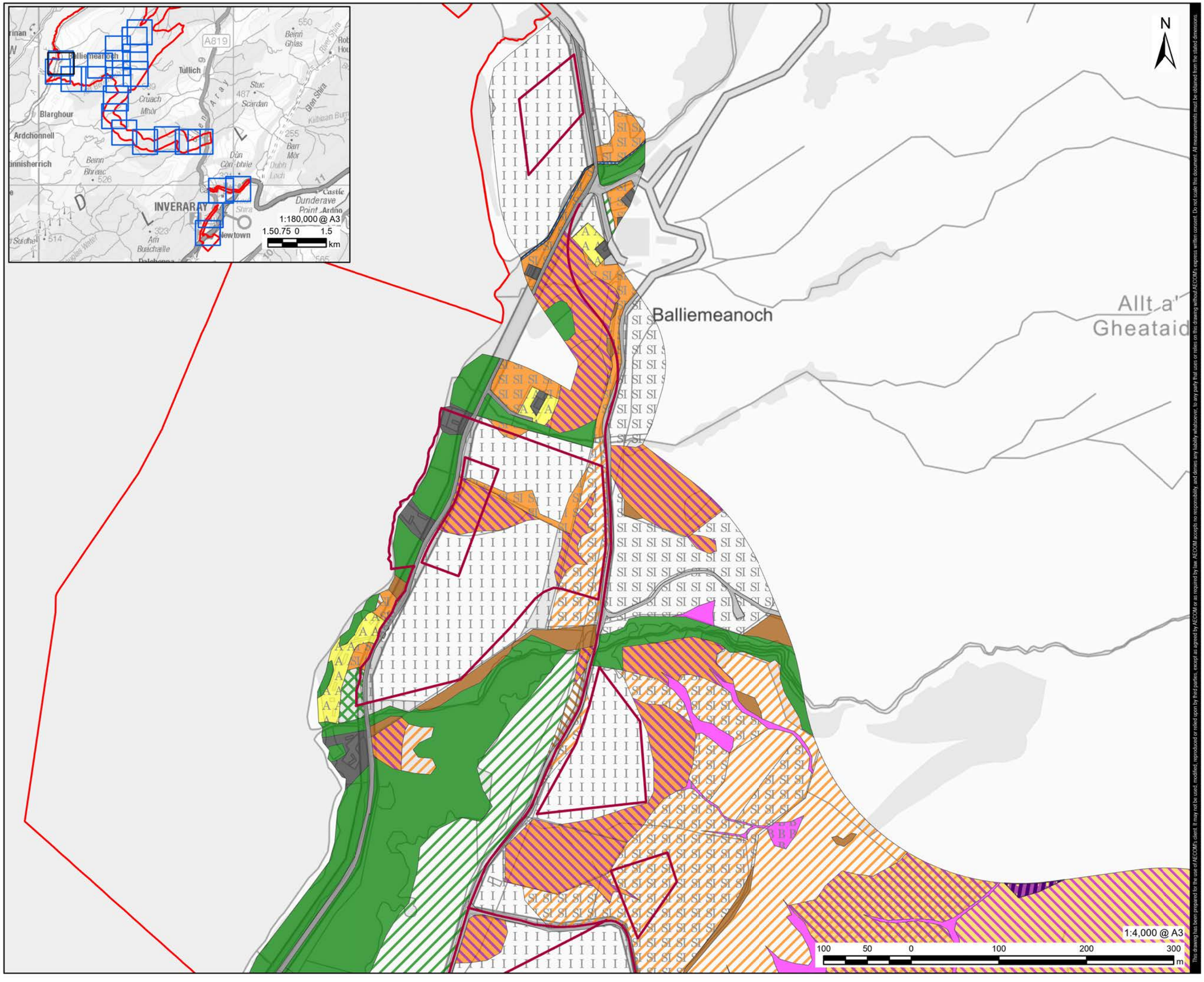
Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 1 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A2.1 Dense scrub
- B1.1 Unimproved acid grassland
- B1.2 Semi-improved acid grassland
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- B6 Poor semi-improved grassland
- C1.1 Dense bracken
- C3.1 Tall ruderal
- D2 Wet heath
- D6 Wet heath/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E2.1 Acid flush
- E2.2 Basic flush
- G2 Running water
- J1.2 Amenity grassland
- J3.6 Building(s)
- Road
- Track

NOTES

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ISSUE PURPOSE

FINAL

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FIGURE TITLE

Phase 1 Habitats

FIGURE NUMBER

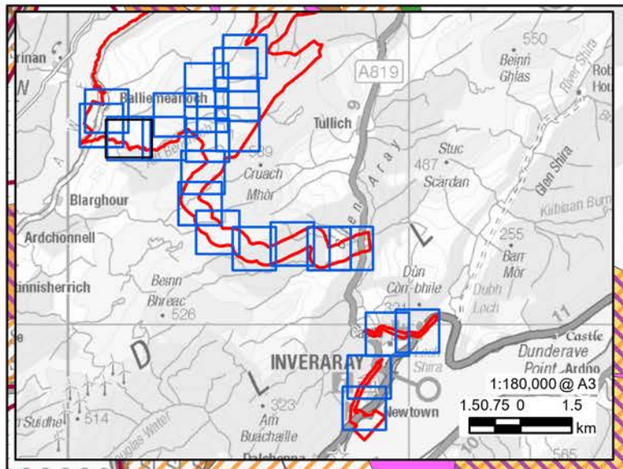
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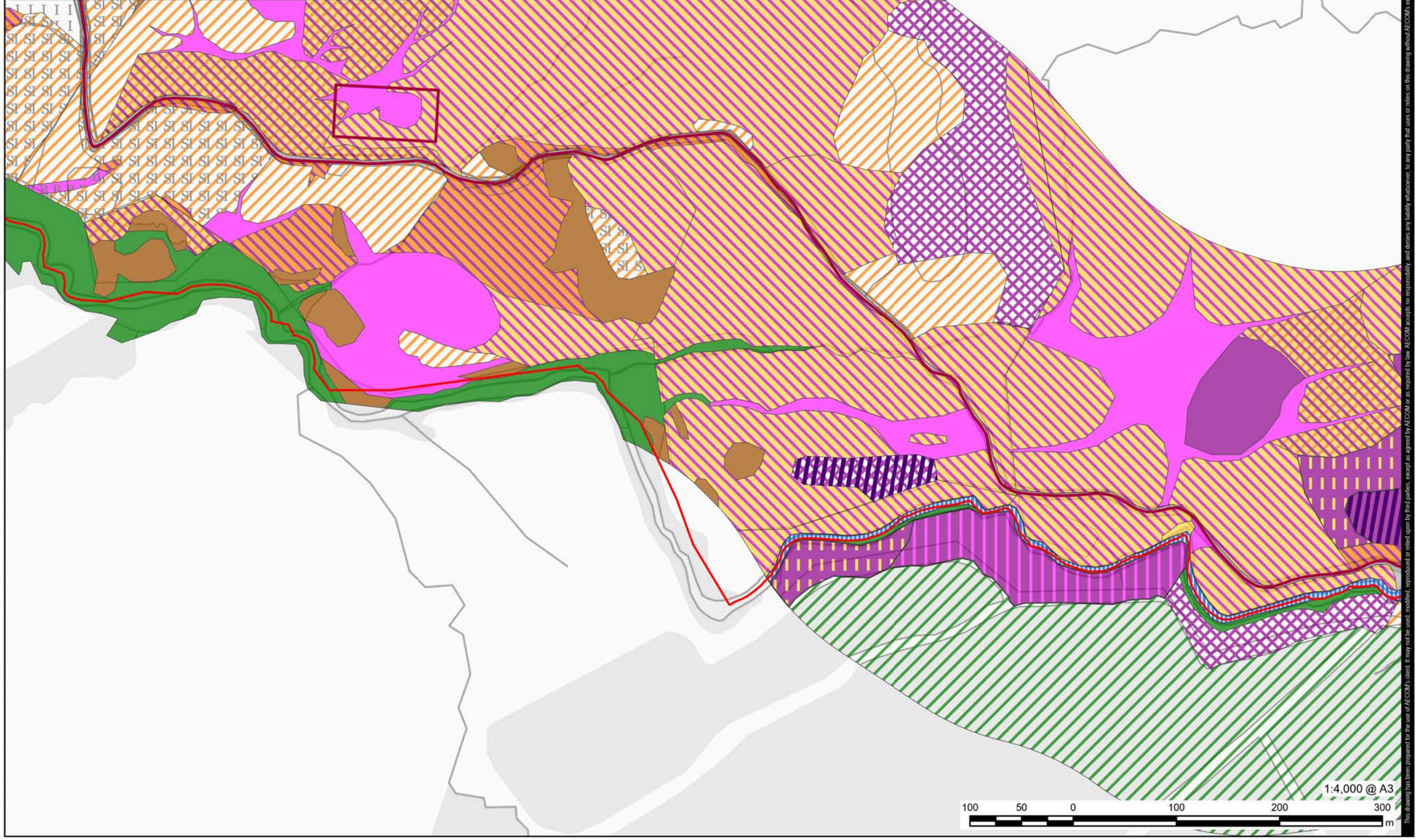
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AECOM

PROJECT

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- B1.1 Unimproved acid grassland
- B1.2 Semi-improved acid grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- C3.1 Tall ruderal
- D1.1 Acid dry heath
- D2 Wet heath
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E2.1 Acid flush
- E2.2 Basic flush
- G2 Running water
- Track

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Phase 1 Habitats

FIGURE NUMBER

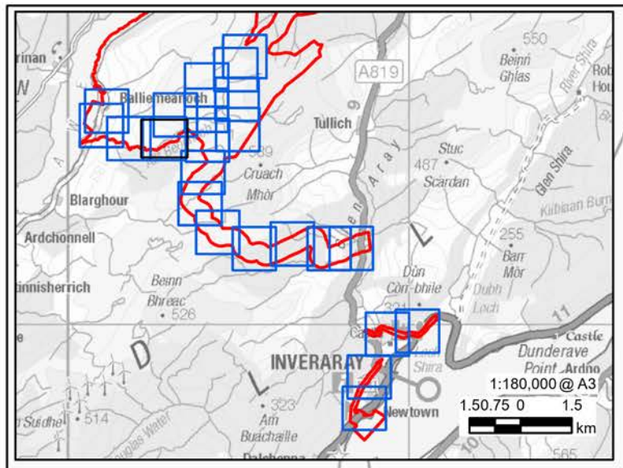
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BALLIEMEANOCH PUMPED STORAGE HYDRO

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www.aecom.com

LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- B1.1 Unimproved acid grassland
- B1.1/E2.1 Acid grassland/flush mosaic
- B5 Marsh/marshy grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E2.1 Acid flush
- G1.3 Oligotrophic standing water
- Reservoir drawdown
- G2 Running water
- J3.6 Building(s)
- Track

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

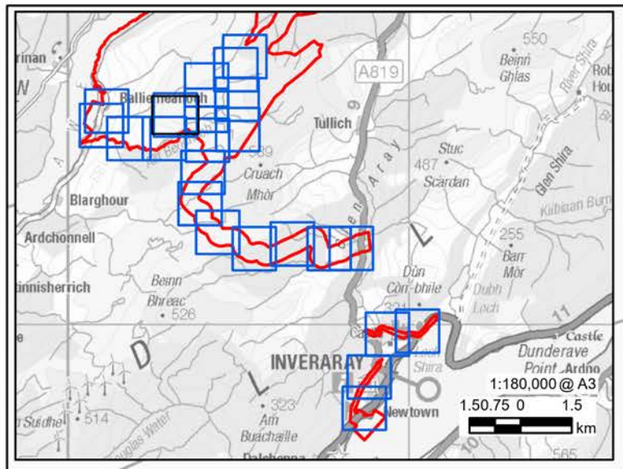
60570241

FIGURE TITLE

Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 4 of 23)



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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E2.1 Acid flush
- G1.3 Oligotrophic standing water
- G2 Running water

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

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FIGURE TITLE

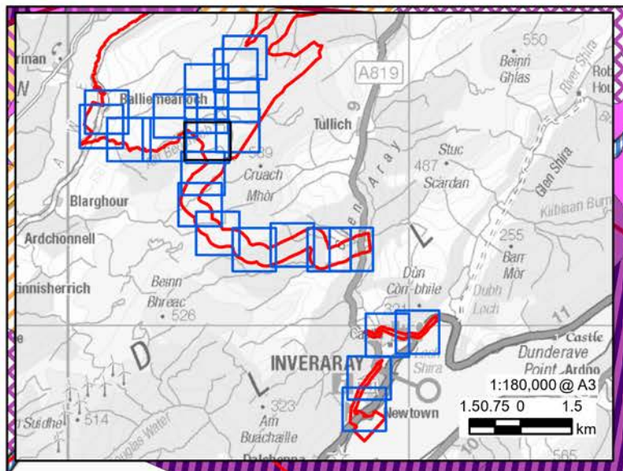
Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 5 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.2.2 Conifer plantation
- B1.1 Unimproved acid grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E2.1 Acid flush
- G2 Running water

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

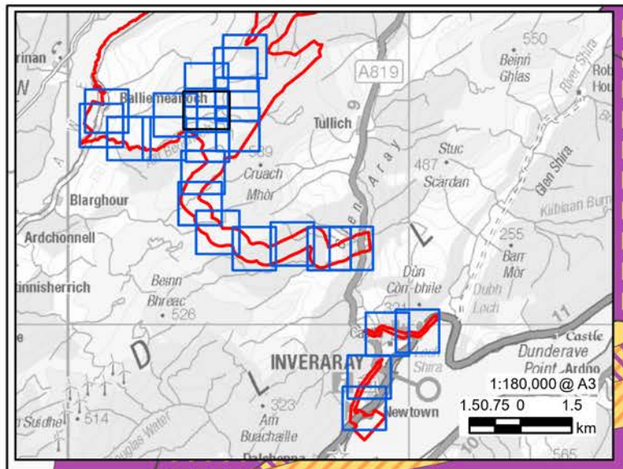
Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 6 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E1.7/D2 Degraded blanket bog/wet heath mosaic
- E2.1 Acid flush
- G1.3 Oligotrophic standing water
- G2 Running water

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FIGURE TITLE

Phase 1 Habitats

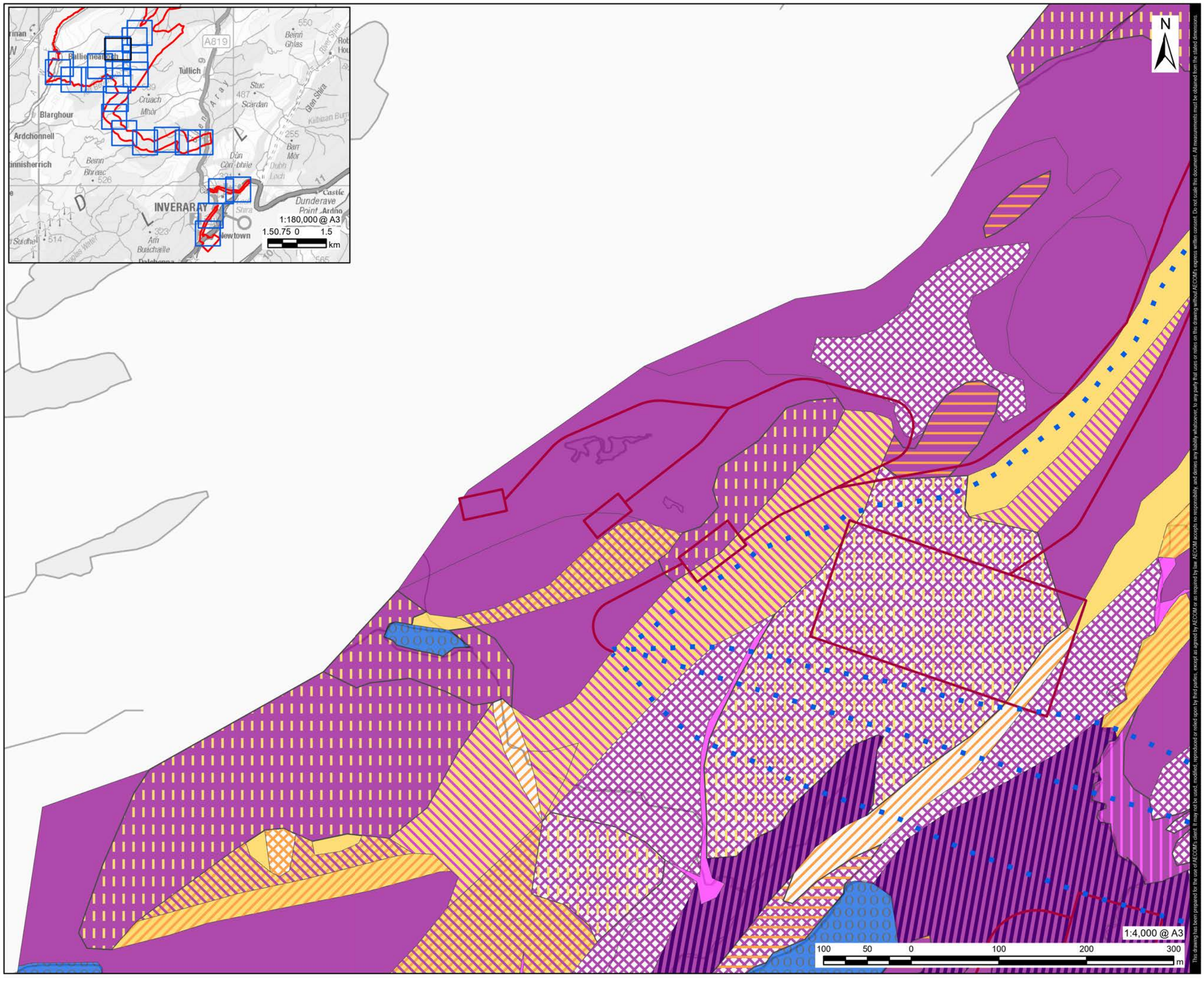
FIGURE NUMBER

Figure 6.3 (Sheet 7 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E1.7/D2 Degraded blanket bog/wet heath mosaic
- E2.1 Acid flush
- G1.3 Oligotrophic standing water

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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

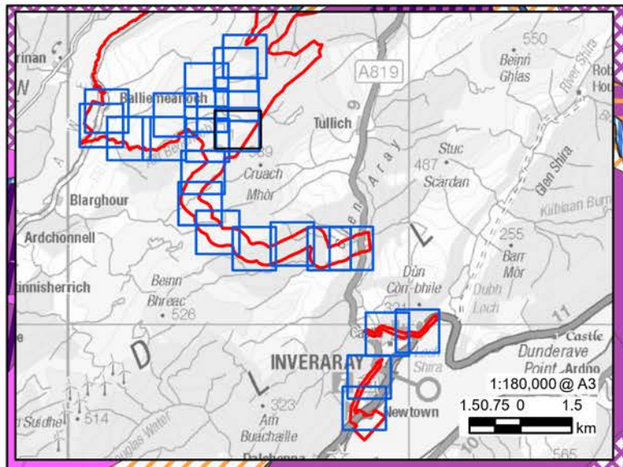
Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 8 of 23)

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N

1:4,000 @ A3

100 50 0 100 200 300 m

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- B1.1 Unimproved acid grassland
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D1.1 Blanket bog/dry heath mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E2.1 Acid flush
- E3.2 Basin mire
- G2 Running water

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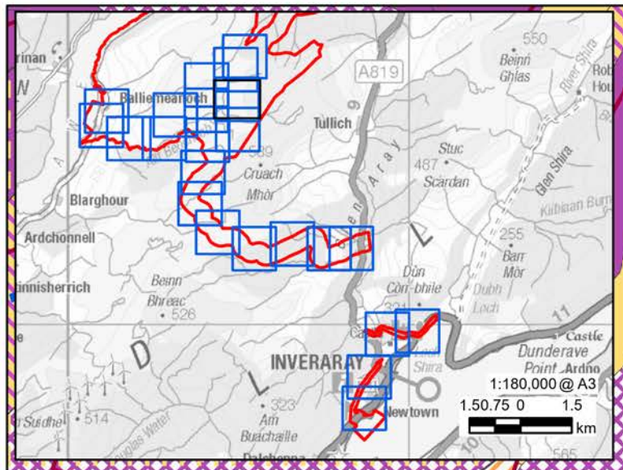
FIGURE TITLE

Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 9 of 23)

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N

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100 50 0 100 200 300 m

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- B1.1 Unimproved acid grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E1.7/D2 Degraded blanket bog/wet heath mosaic
- E2.1 Acid flush
- E3.2 Basin mire
- G1.3 Oligotrophic standing water
- G2 Running water

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FIGURE TITLE

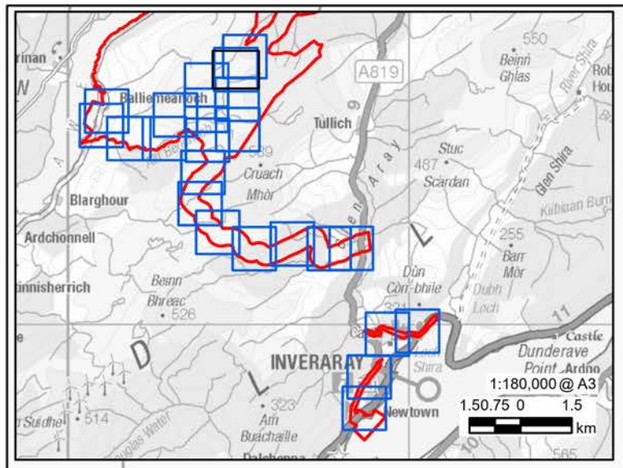
Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 10 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.1.2 Broadleaved plantation
- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.7 Degraded blanket bog
- E1.7/D2 Degraded blanket bog/wet heath mosaic
- E2.1 Acid flush
- E2.2 Basic flush
- E3.2 Basin mire

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

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FIGURE TITLE

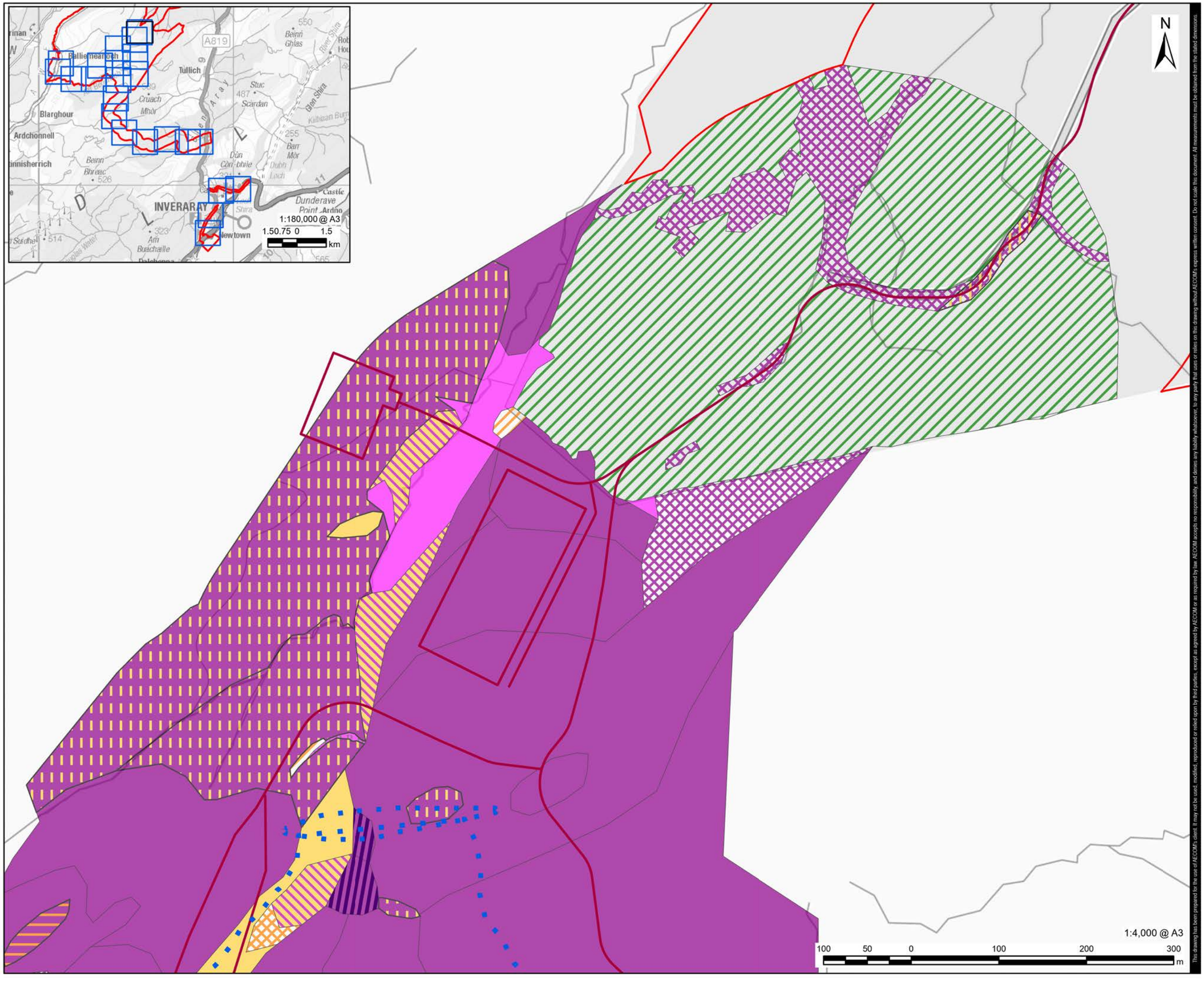
Phase 1 Habitats

FIGURE NUMBER

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.1.2 Broadleaved plantation
- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.7 Degraded blanket bog
- E1.7/D1.1 Degraded blanket bog/dry heath mosaic
- E2.1 Acid flush
- E2.2 Basic flush

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FIGURE TITLE

Phase 1 Habitats

FIGURE NUMBER

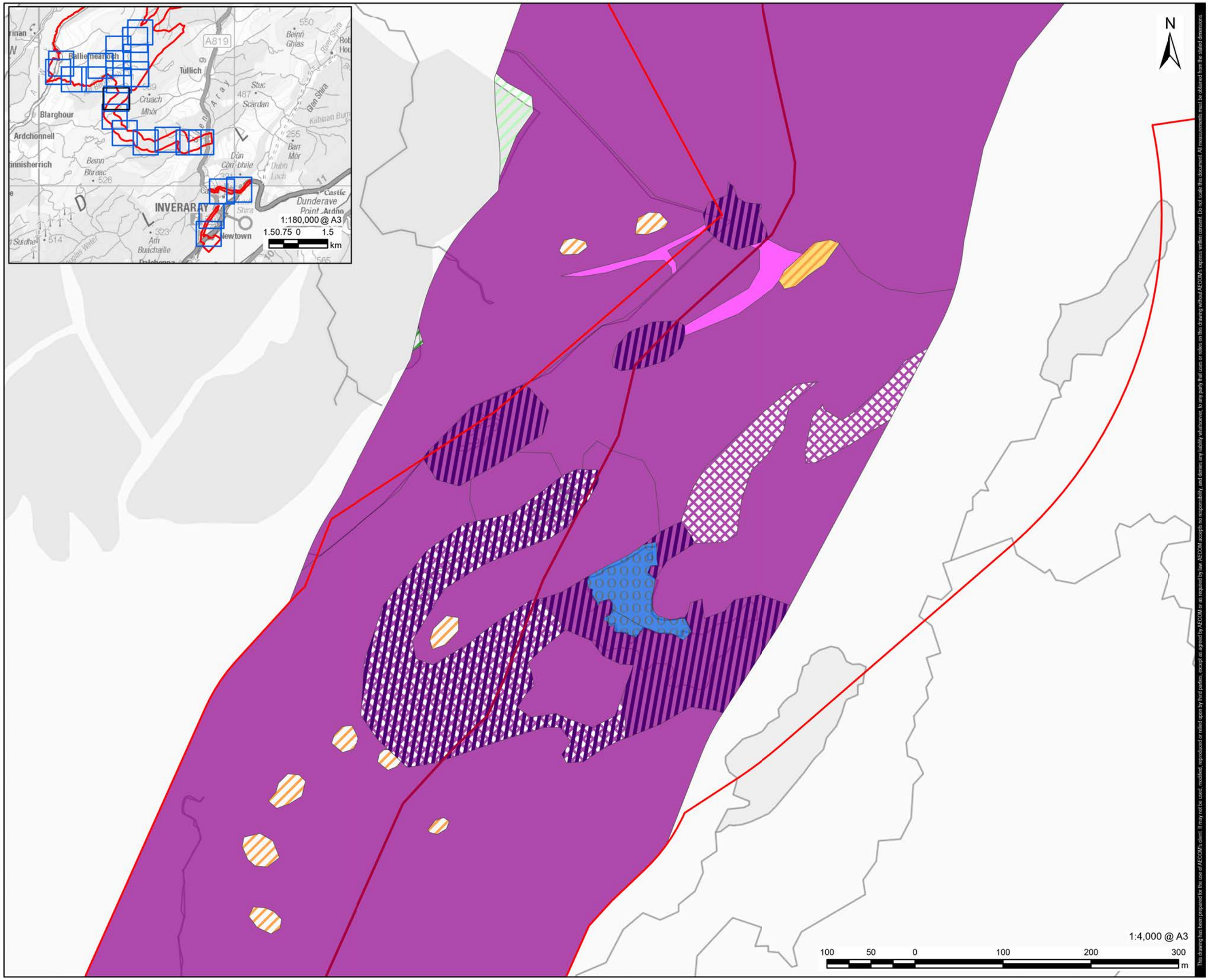
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Revision: 0 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14



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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- B1.1 Unimproved acid grassland
- D5 Dry heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.7 Degraded blanket bog
- E2.1 Acid flush
- G1.3 Oligotrophic standing water

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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

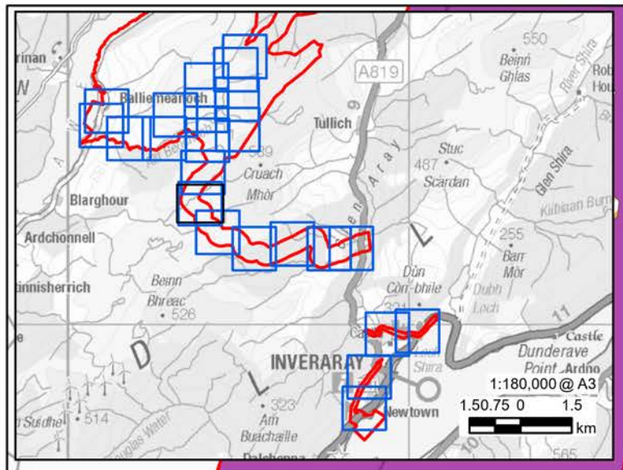
Phase 1 Habitats

FIGURE NUMBER

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N

Cruach an Lochain

1:4,000 @ A3

100 50 0 100 200 300 m

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.7 Degraded blanket bog
- E2.1 Acid flush

NOTES

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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

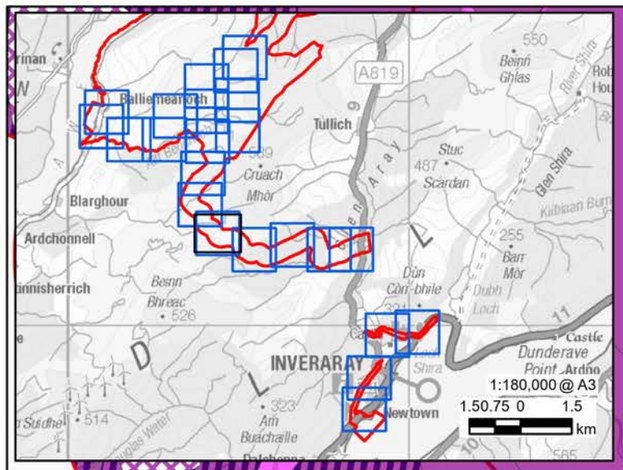
Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 14 of 23)

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www.aecom.com

LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.2.2 Conifer plantation
- B1.1 Unimproved acid grassland
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E2.1 Acid flush
- E3.2 Basin mire

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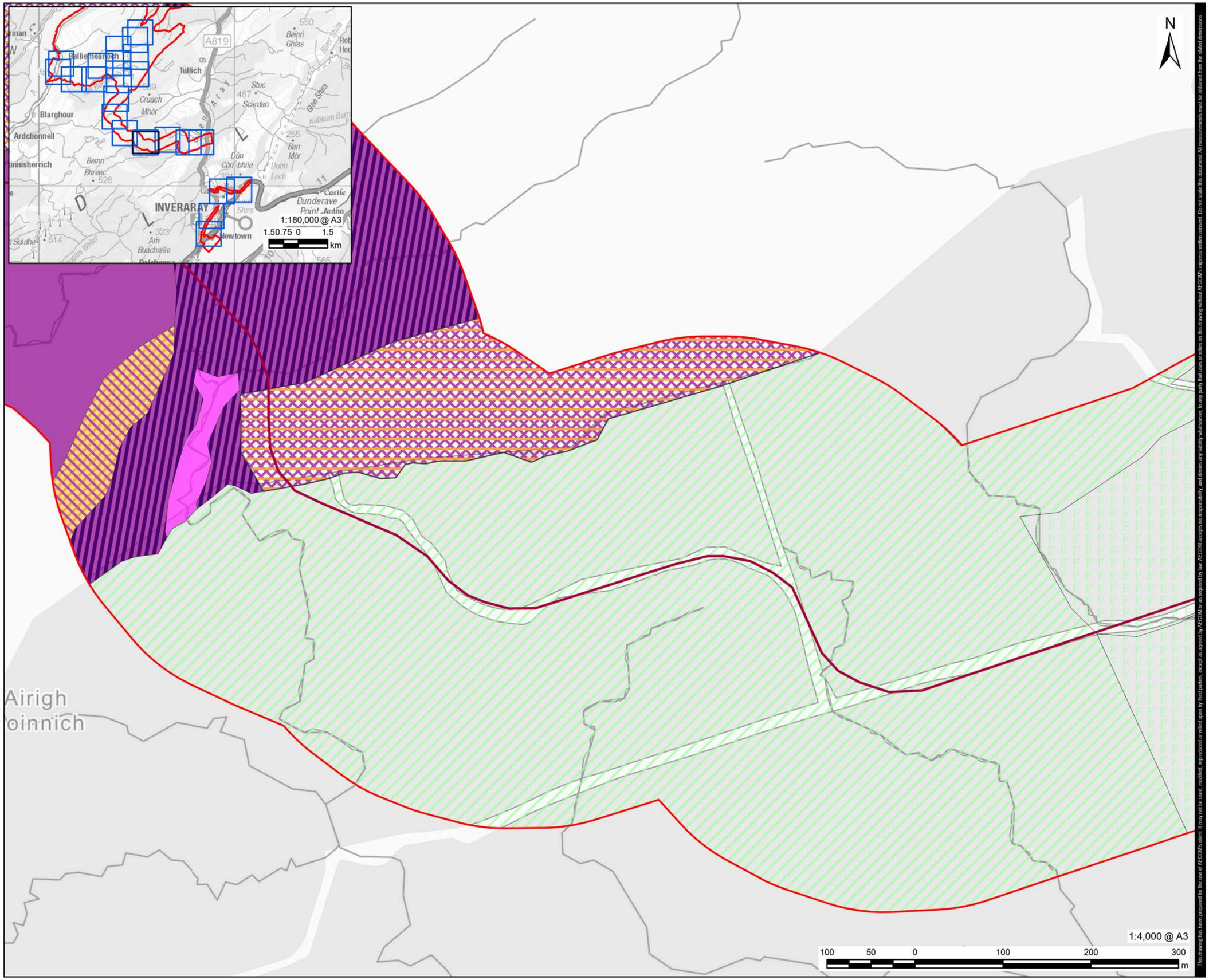
Phase 1 Habitats

FIGURE NUMBER

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- Areas with significant amounts of wet blanket bog (M17a)

Phase 1 Habitat

- A1.2.2 Conifer plantation
- A4.2 Felled conifer plantation
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E2.1 Acid flush

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FIGURE TITLE

Phase 1 Habitats

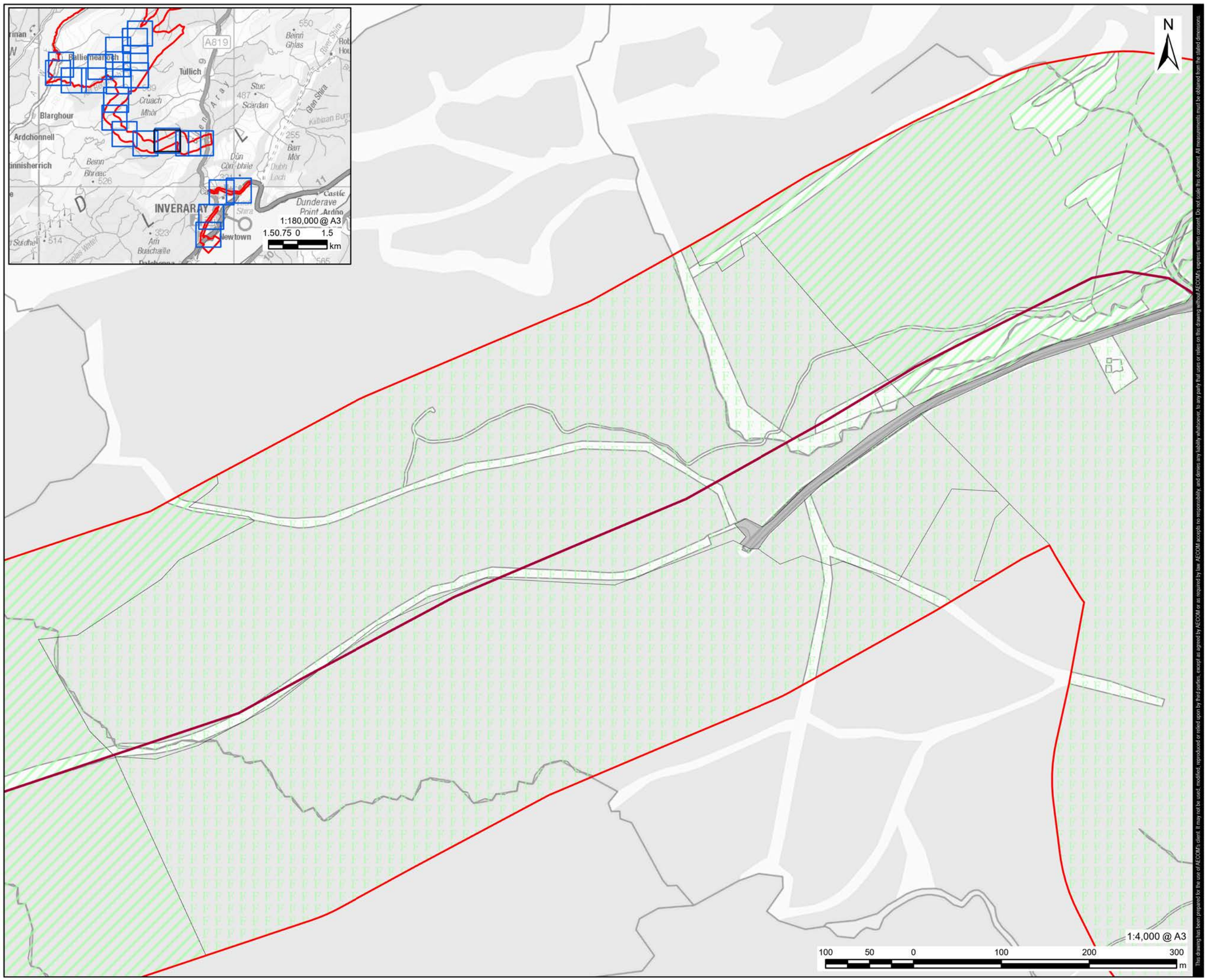
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 Habitat

- A1.2.2 Conifer plantation
- A4.2 Felled conifer plantation
- Track

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PROJECT NUMBER

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FIGURE TITLE

Phase 1 Habitats

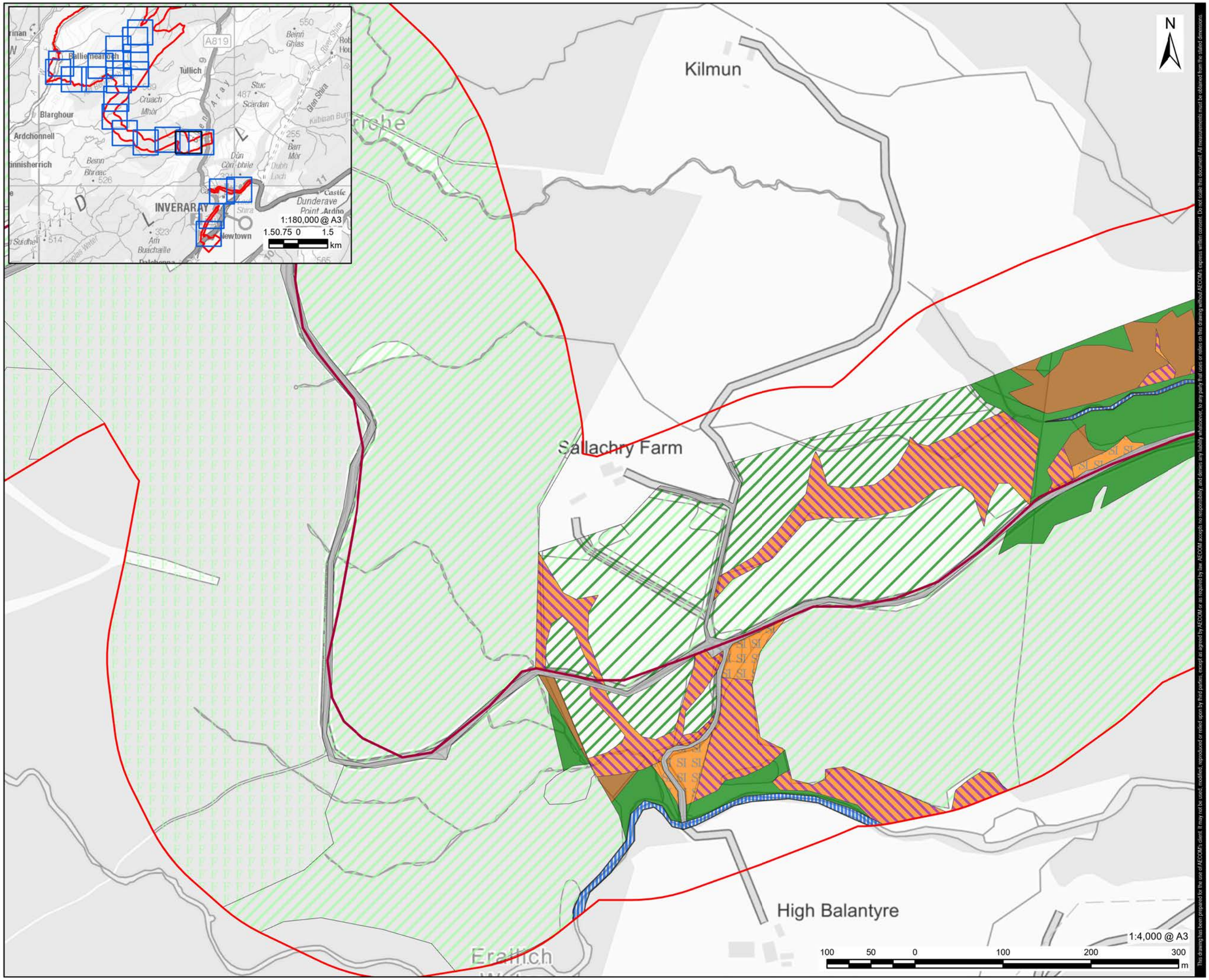
FIGURE NUMBER

Figure 6.3 (Sheet 17 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- A4.2 Felled conifer plantation
- B2.2 Semi-improved neutral grassland
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- G2 Running water
- Track

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PROJECT NUMBER

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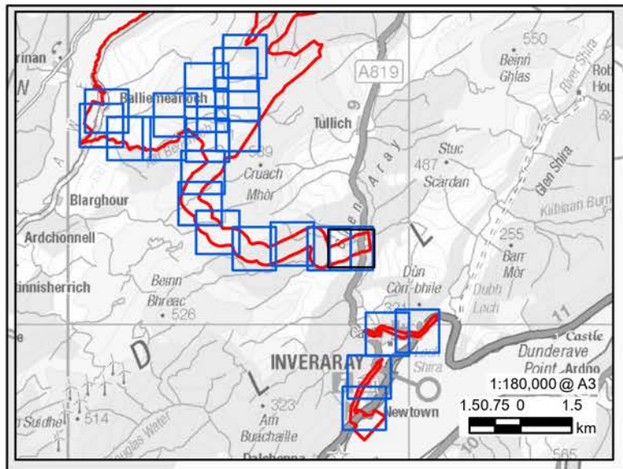
FIGURE TITLE

Phase 1 Habitats

FIGURE NUMBER

Figure 6.3 (Sheet 18 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- E2.1 Acid flush
- G2 Running water
- J1.2 Amenity grassland
- J3.6 Building(s)
- Road
- Track

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FIGURE TITLE

Phase 1 Habitats

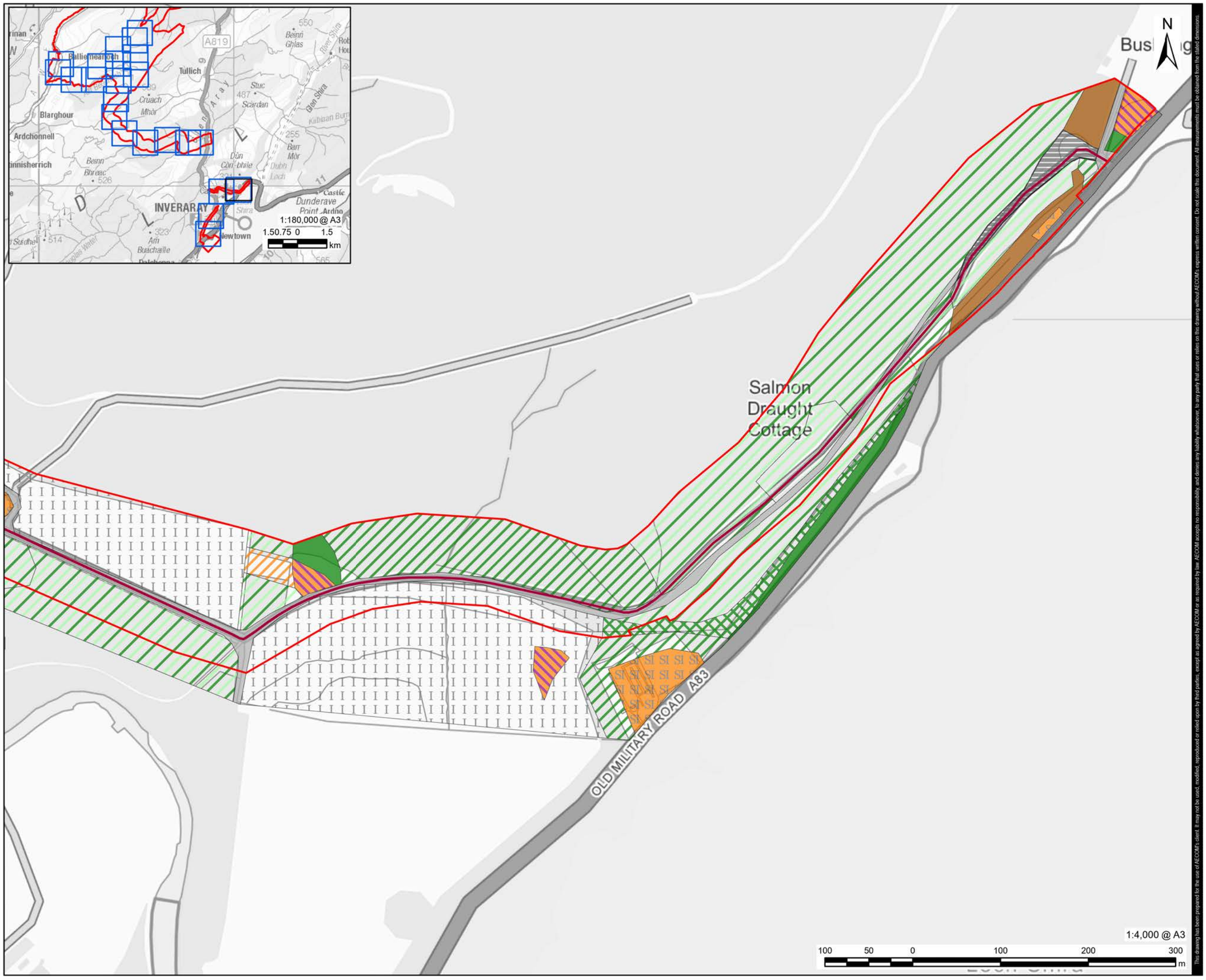
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- A2.1 Dense scrub
- B1.1 Unimproved acid grassland
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- Construction works
- Road
- Track

NOTES

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FIGURE TITLE

Phase 1 Habitats

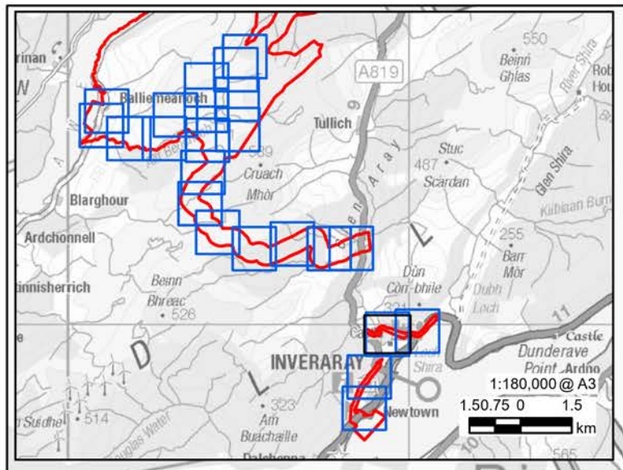
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- A2.1 Dense scrub
- B1.1 Unimproved acid grassland
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- G2 Running water
- J1.2 Amenity grassland
- J3.6 Building(s)
- Track

NOTES

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ISSUE PURPOSE

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FIGURE TITLE

Phase 1 Habitats

FIGURE NUMBER

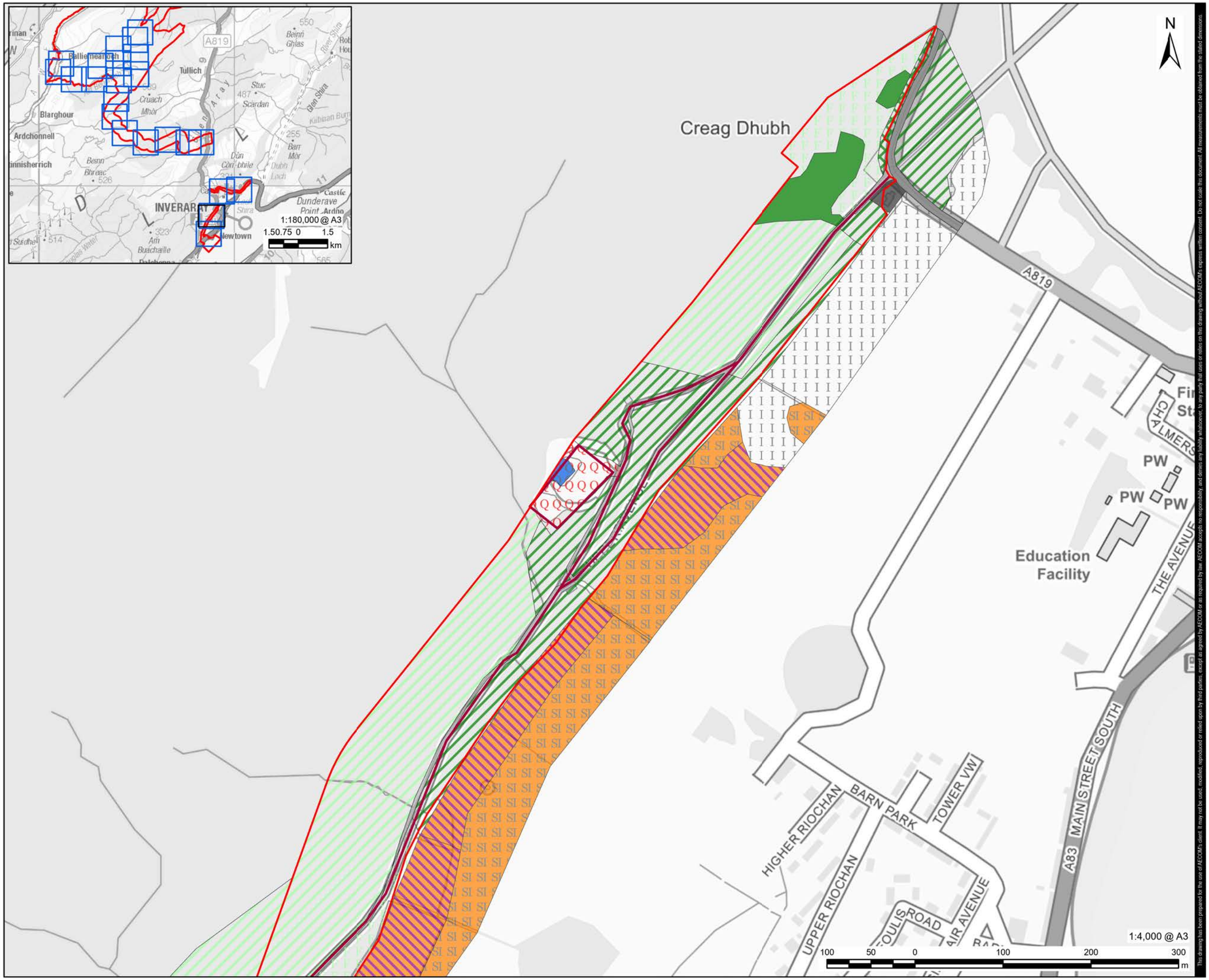
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A2.1 Dense scrub
- A4.2 Felled conifer plantation
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- G1.3 Oligotrophic standing water
- I2.1 Quarry
- J3.6 Building(s)
- Road
- Track

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FIGURE TITLE

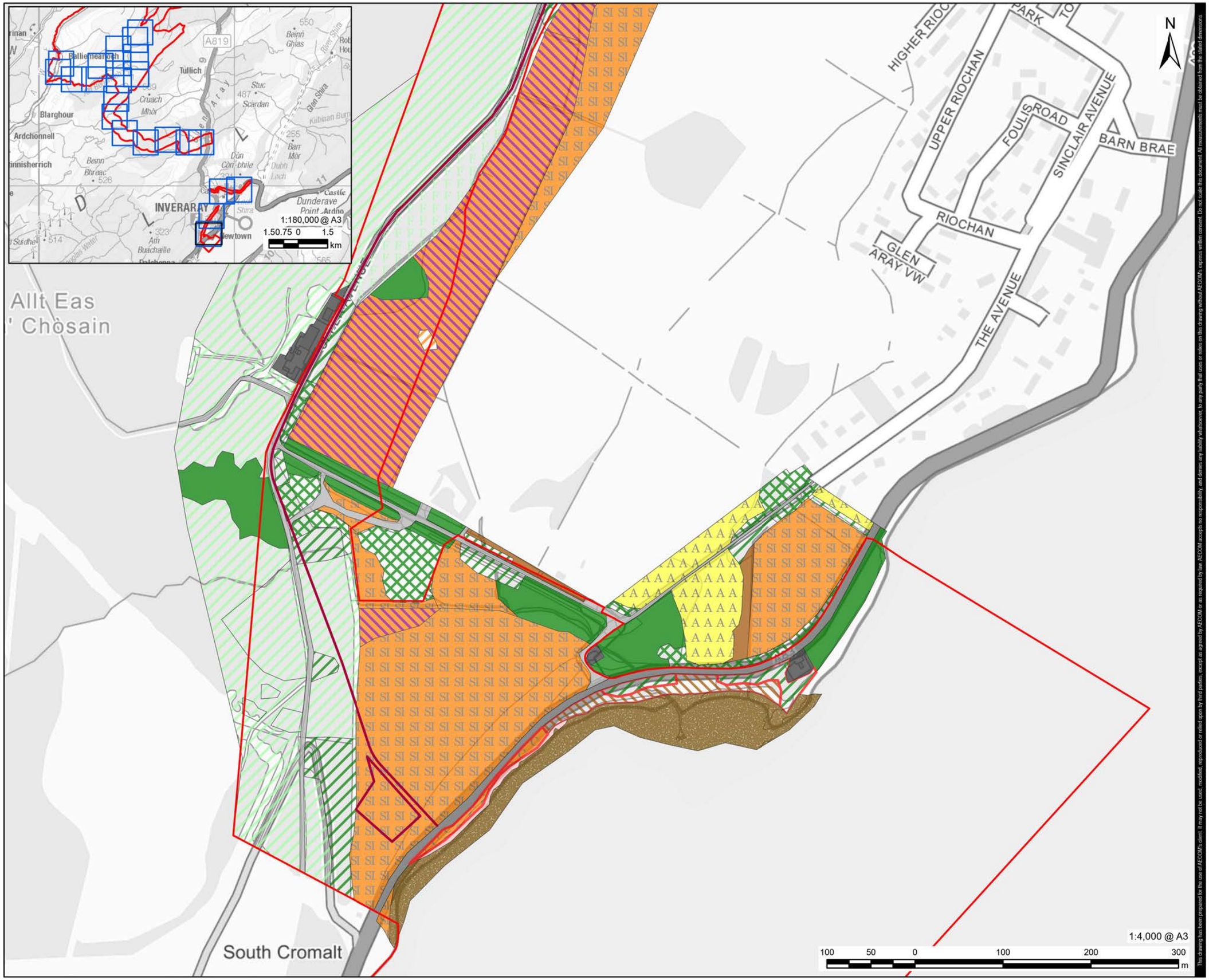
Phase 1 Habitats

FIGURE NUMBER

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 Habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.1.2JK Broadleaved plantation with Japanese knotweed
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- A2.1 Dense scrub
- A4.2 Felled conifer plantation
- B1.1 Unimproved acid grassland
- B2.2 Semi-improved neutral grassland
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- C3.1JK Japanese knotweed
- H2.6 Saltmarsh
- H8.4JK Coastal grassland with scattered Japanese knotweed
- Sediment/seaweed
- J1.2 Amenity grassland
- J3.6 Building(s)
- Road
- Track

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FIGURE TITLE

Phase 1 Habitats

FIGURE NUMBER

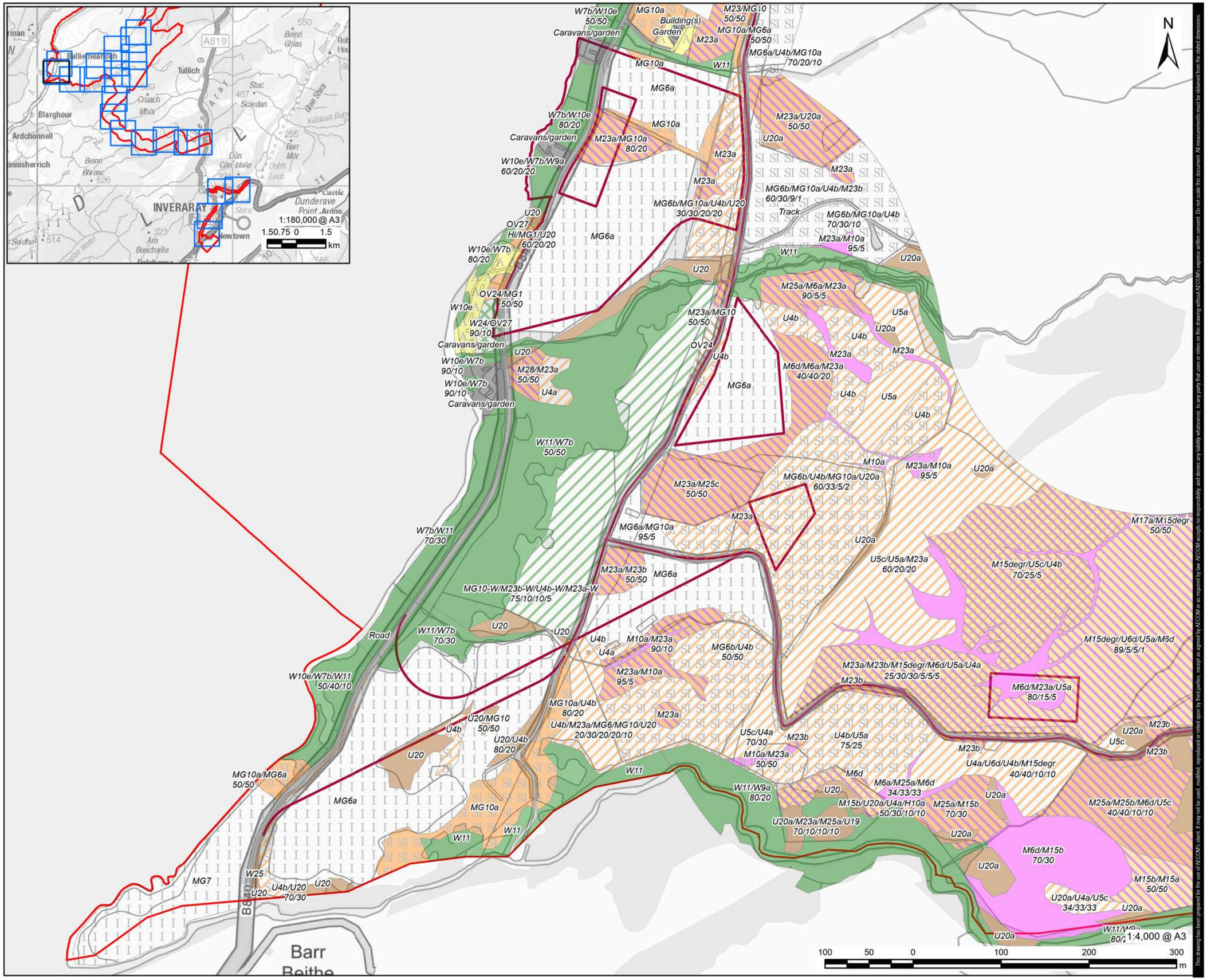
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A2.1 Dense scrub
- B1.1 Unimproved acid grassland
- B1.2 Semi-improved acid grassland
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- B6 Poor semi-improved grassland
- C1.1 Dense bracken
- C3.1 Tall ruderal
- D2 Wet heath
- D6 Wet heath/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E2.1 Acid flush
- E2.2 Basic flush
- J1.2 Amenity grassland
- J3.6 Building(s)
- Road
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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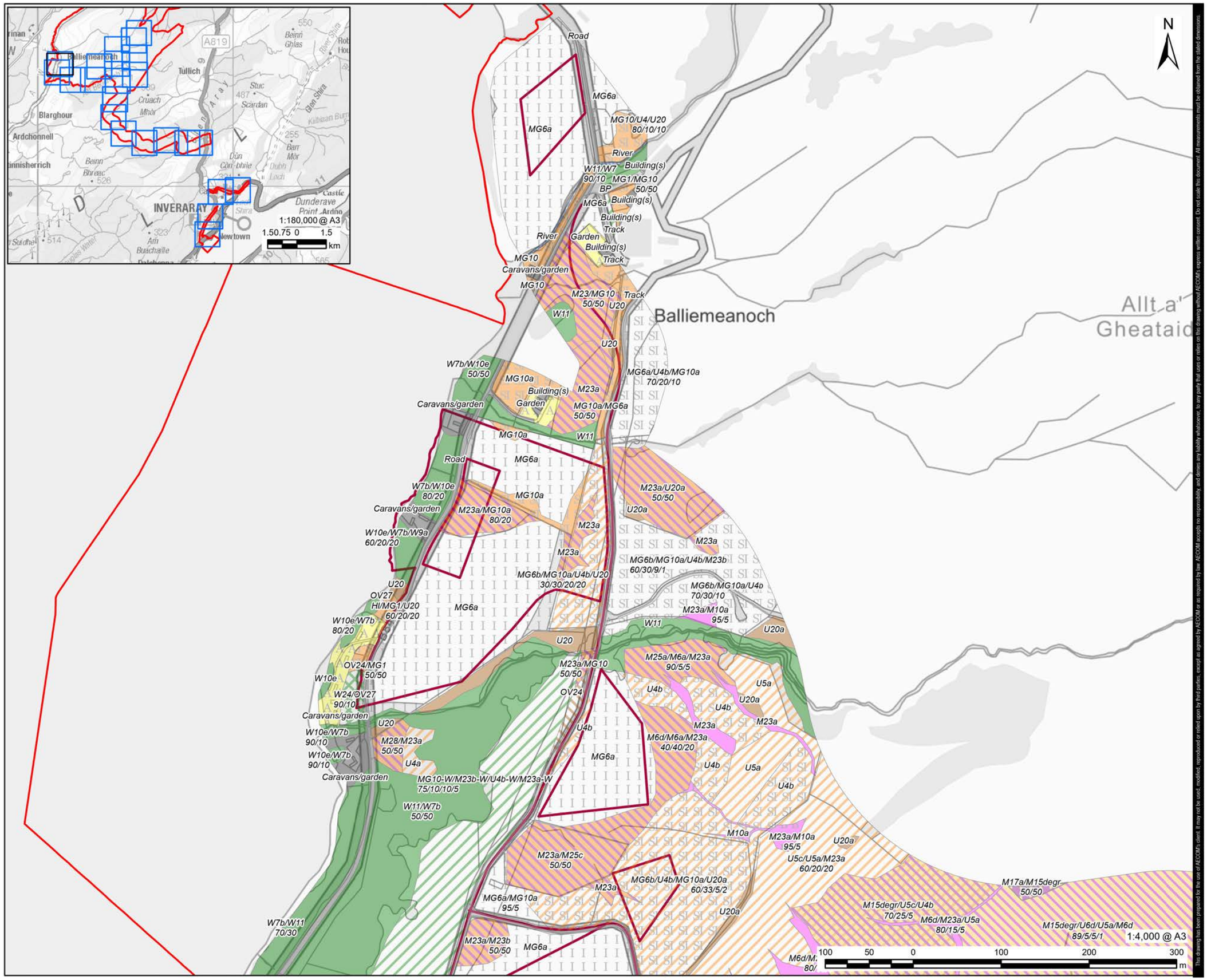
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FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A2.1 Dense scrub
- B1.1 Unimproved acid grassland
- B1.2 Semi-improved acid grassland
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- B6 Poor semi-improved grassland
- C1.1 Dense bracken
- C3.1 Tall ruderal
- D2 Wet heath
- D6 Wet heath/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E2.1 Acid flush
- E2.2 Basic flush
- G2 Running water
- J1.2 Amenity grassland
- J3.6 Building(s)
- Road
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

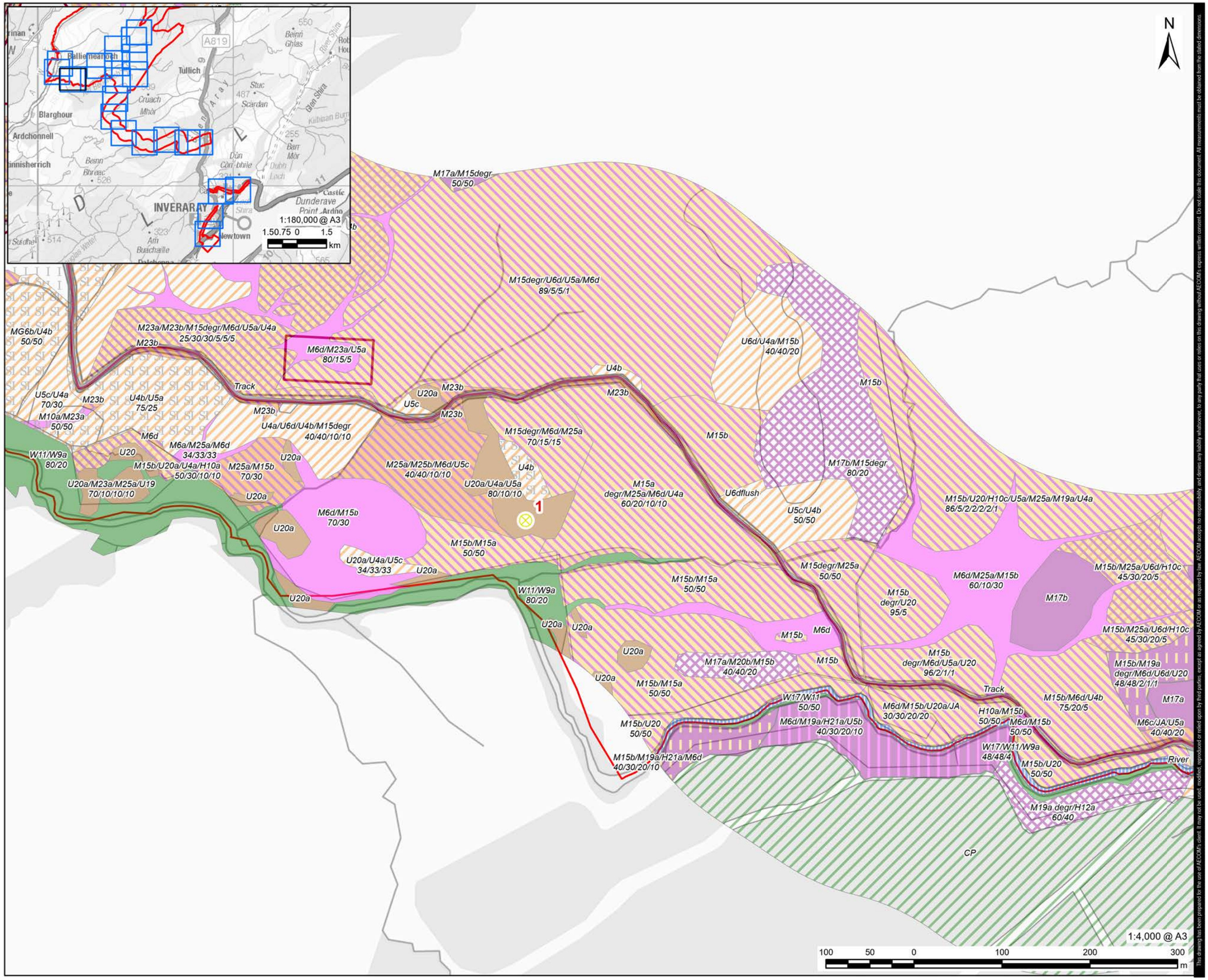
National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 2 of 23)

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BALLIEMEANOCH PUMPED STORAGE HYDRO

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CONSULTANT

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177 Bothwell Street
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Notable plant species

- Other notable species

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- B1.1 Unimproved acid grassland
- B1.2 Semi-improved acid grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- C3.1 Tall ruderal
- D1.1 Acid dry heath
- D2 Wet heath
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E2.1 Acid flush
- E2.2 Basic flush
- G2 Running water
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

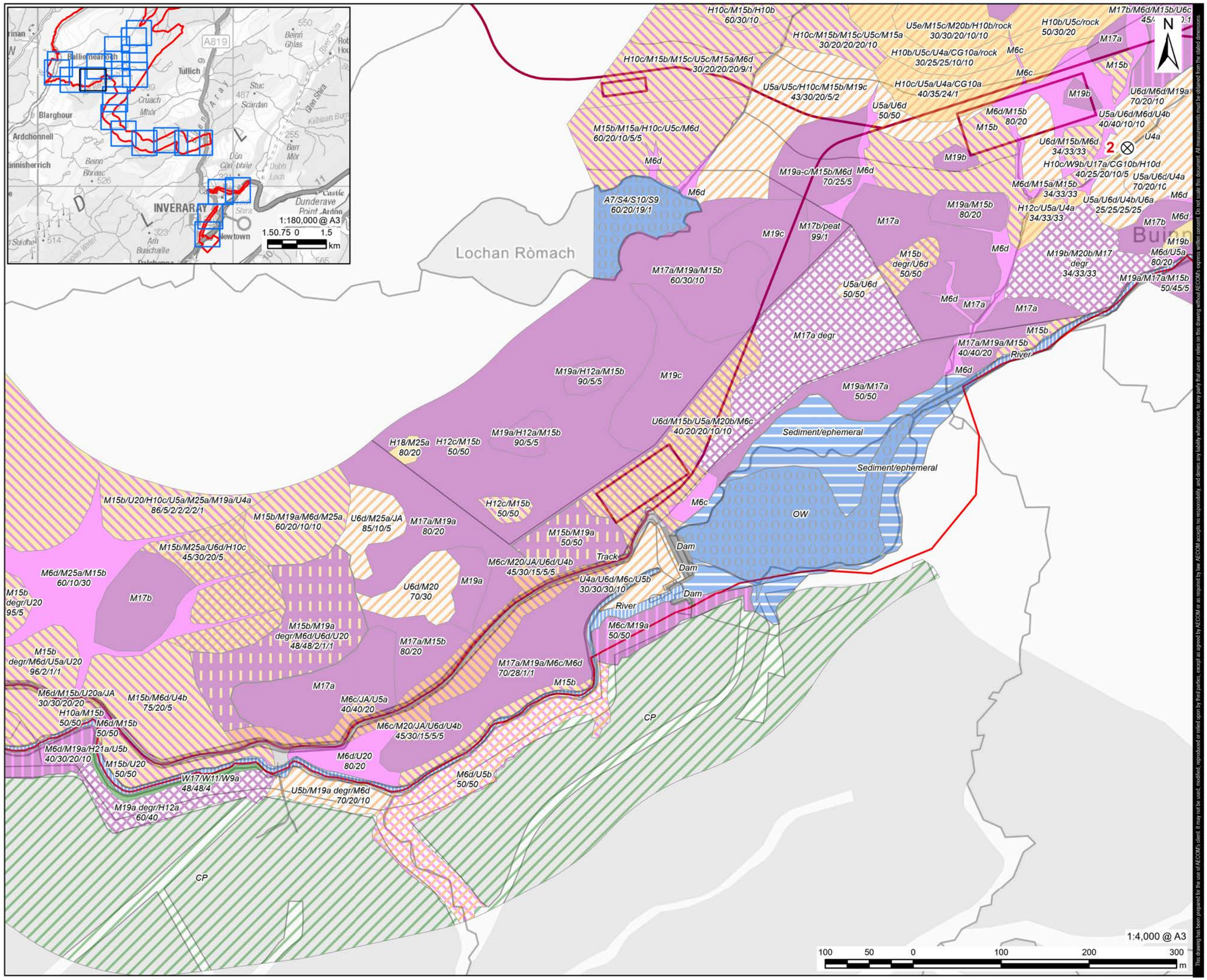
National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 3 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Notable plant species

- Species-rich habitat

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- B1.1 Unimproved acid grassland
- B1.1/E2.1 Acid grassland/flush mosaic
- B5 Marsh/marshy grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E2.1 Acid flush
- G1.3 Oligotrophic standing water
- Reservoir drawdown
- G2 Running water
- J3.6 Building(s)
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

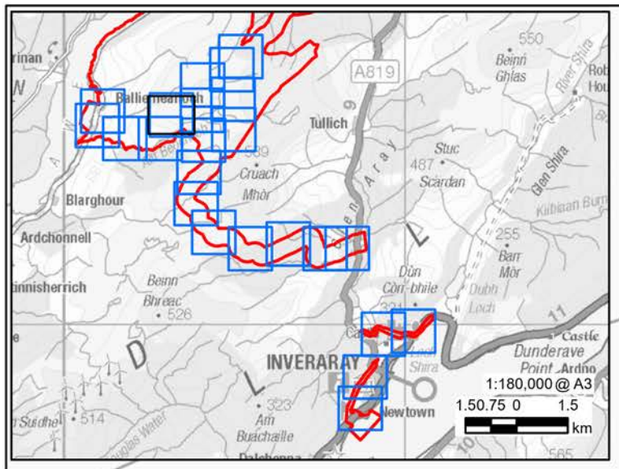
National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 4 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Notable plant species

- Species-rich habitat

Phase 1 habitat

- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E2.1 Acid flush
- G1.3 Oligotrophic standing water
- G2 Running water

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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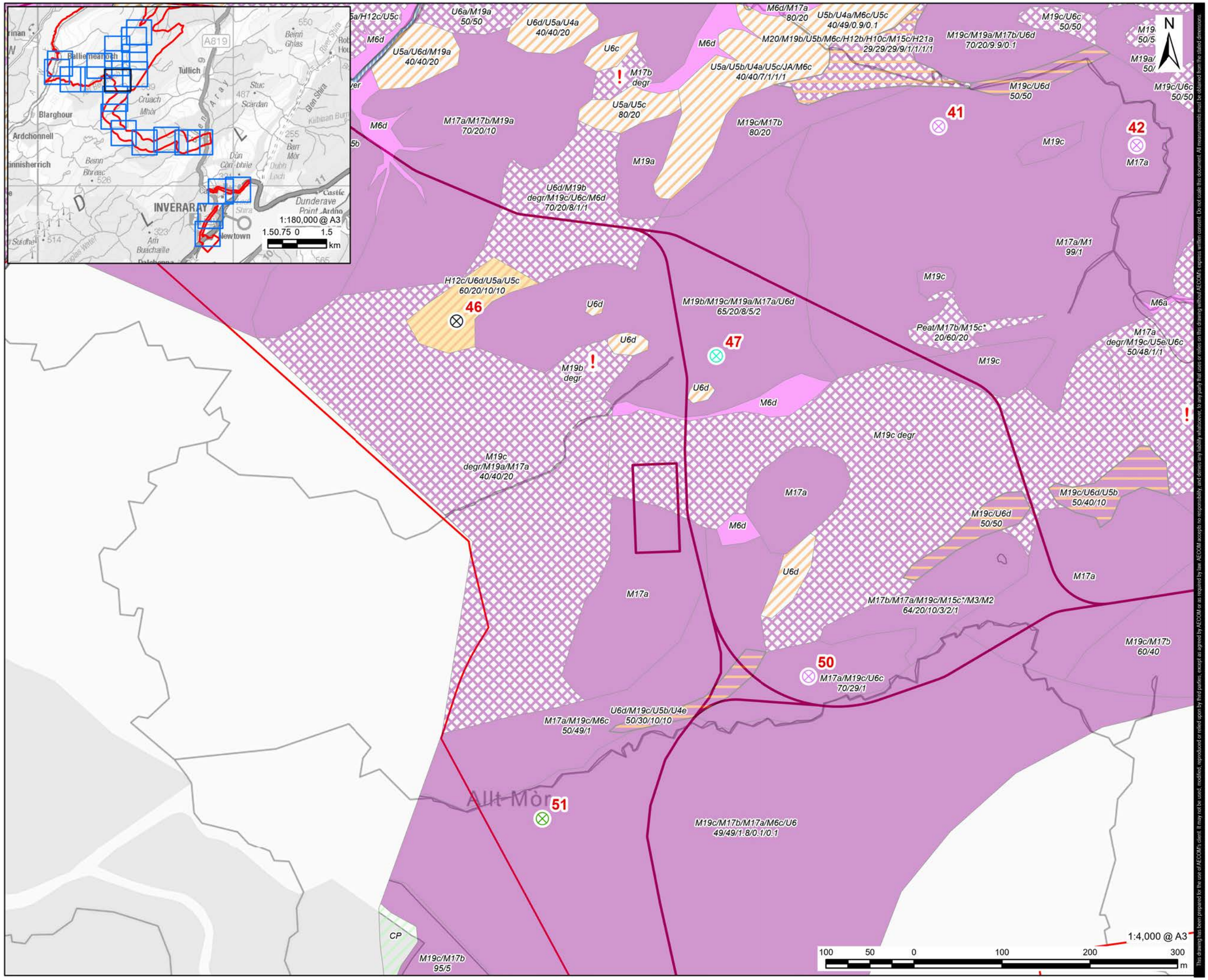
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FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 5 of 23)



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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- ! Clear burning evidence

Notable plant species

- Cloudberry
- Bog bilberry
- Sphagnum medium
- Species-rich habitat

Phase 1 habitat

- A1.2.2 Conifer plantation
- B1.1 Unimproved acid grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E2.1 Acid flush
- G2 Running water

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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ISSUE PURPOSE

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PROJECT NUMBER

60570241

FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

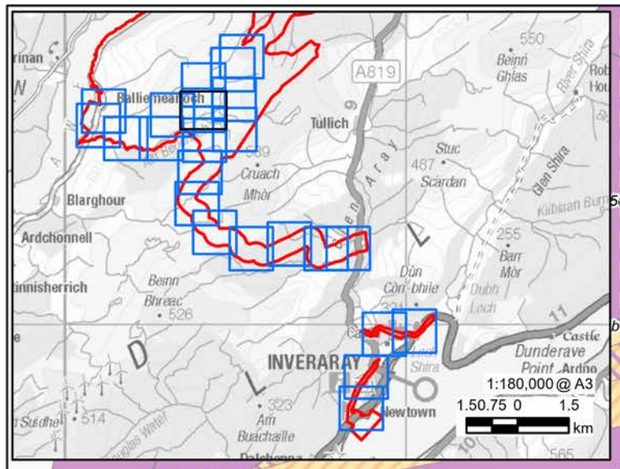
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- ! Clear burning evidence

Notable plant species

- Cloudberry
- Bog bilberry
- Sphagnum medium
- Species-rich habitat
- Other notable species

Phase 1 habitat

- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E1.7/D2 Degraded blanket bog/wet heath mosaic
- E2.1 Acid flush
- G1.3 Oligotrophic standing water
- G2 Running water

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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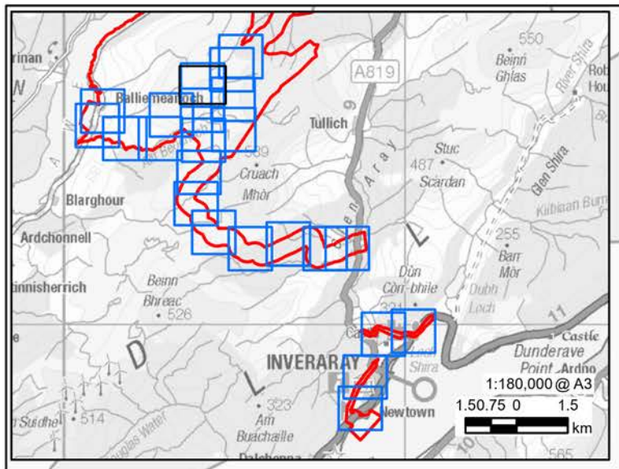
60570241

FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 7 of 23)



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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- ! Clear burning evidence

Notable plant species

- Bog bilberry
- Sphagnum medium
- Species-rich habitat

Phase 1 habitat

- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E1.7/D2 Degraded blanket bog/wet heath mosaic
- E2.1 Acid flush
- G1.3 Oligotrophic standing water

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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PROJECT NUMBER

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FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

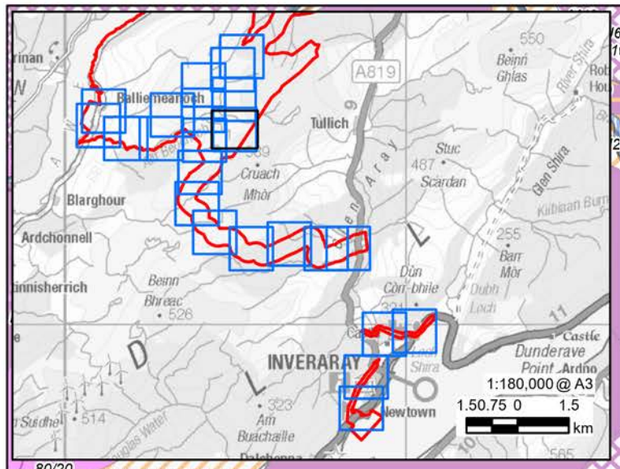
FIGURE NUMBER

Figure 6.4 (Sheet 8 of 23)

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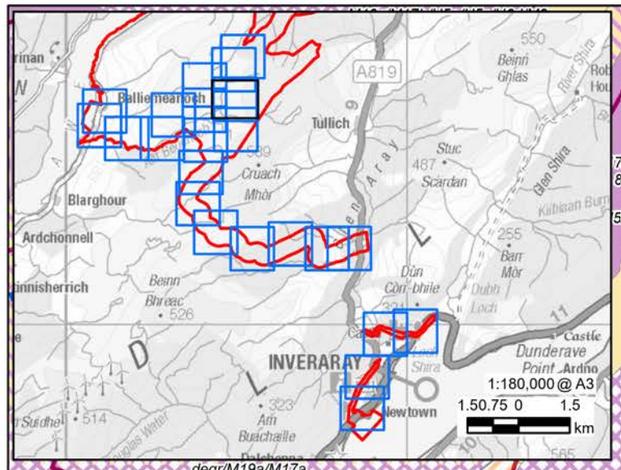
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38
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44
45
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M17b/M19c 70/30
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Peat/M17b/M15c* 20/60/20
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M19c/U6c 50/50
M19a/M17b 50/50
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U5b/U4a/M6c/U5c 40/49/0.9/0.1
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U6d
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M6d
M6d
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PROJECT

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure
- ! Clear burning evidence

Notable plant species

- Cloudberry
- Bog bilberry
- Sphagnum austinii
- Sphagnum medium
- Large bog pools
- Species-rich habitat
- Other notable species

Phase 1 habitat

- B1.1 Unimproved acid grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E1.7/D2 Degraded blanket bog/wet heath mosaic
- E2.1 Acid flush
- E3.2 Basin mire
- G1.3 Oligotrophic standing water
- G2 Running water

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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ISSUE PURPOSE

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FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

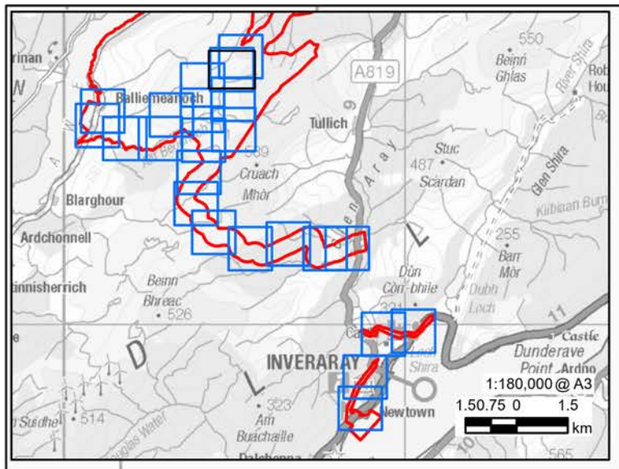
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M17
M6d
U5a
CP
M20/M6c/M6d/M6b/M2
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degr/U6c/U5a/M6c/U5c/U5b
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degr/M6c/U5a
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M19c/M19a/U6c/U6d/U5e/M15b/U5c
50/25/15/7/1/1/1
M19c/U6c/U5e/H10b
30/30/30/10
M17b/M3
80/20
M17b/M17a/M3
70/29/1
M19c/U6c/M15c/H12b/U5e
50/20/15/14/1
12
M15b/M19c/M17b/U5e
40/30/29/1
M17b/M17a
80/20
U5b/U5a/H21a/M19b/M15b/H18a/H12b/U6d
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35/25/25/13/1.9/0.1
M17b/M15c/M19c
40/50/10
M6c/M6d
50/50
M19c degr/M15b
degr/M19a/M17a
40/50/9/1
M19c
M19c/U6d
50/50
M19c/M17b/U5e/U6c/H10b
40/39/10/10/1
H10c/U5a/M15b/U6d/M19b
55/20/10/10/5
M15c/M15a/U5c
96/2/2
M19b/M17b/M19a/M6c
40/40/19/1
M17b/M15c
50/50
M6d
M19b degr/M19a/M6d
60/39/1
M15b/M15c/U5c/U5a/U5b/CG10a/U6d/M6c
33/33/16/10/5/1/1/1
M17b/M15c
50/50
1:4,000 @ A3
100 50 0 100 200 300
m

N

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BALLIEMEANOCH PUMPED STORAGE HYDRO

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Notable plant species

- Sphagnum medium
- Species-rich habitat
- Other notable species

Phase 1 habitat

- A1.1.2 Broadleaved plantation
- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.7 Degraded blanket bog
- E1.7/D2 Degraded blanket bog/wet heath mosaic
- E2.1 Acid flush
- E2.2 Basic flush
- E3.2 Basin mire

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

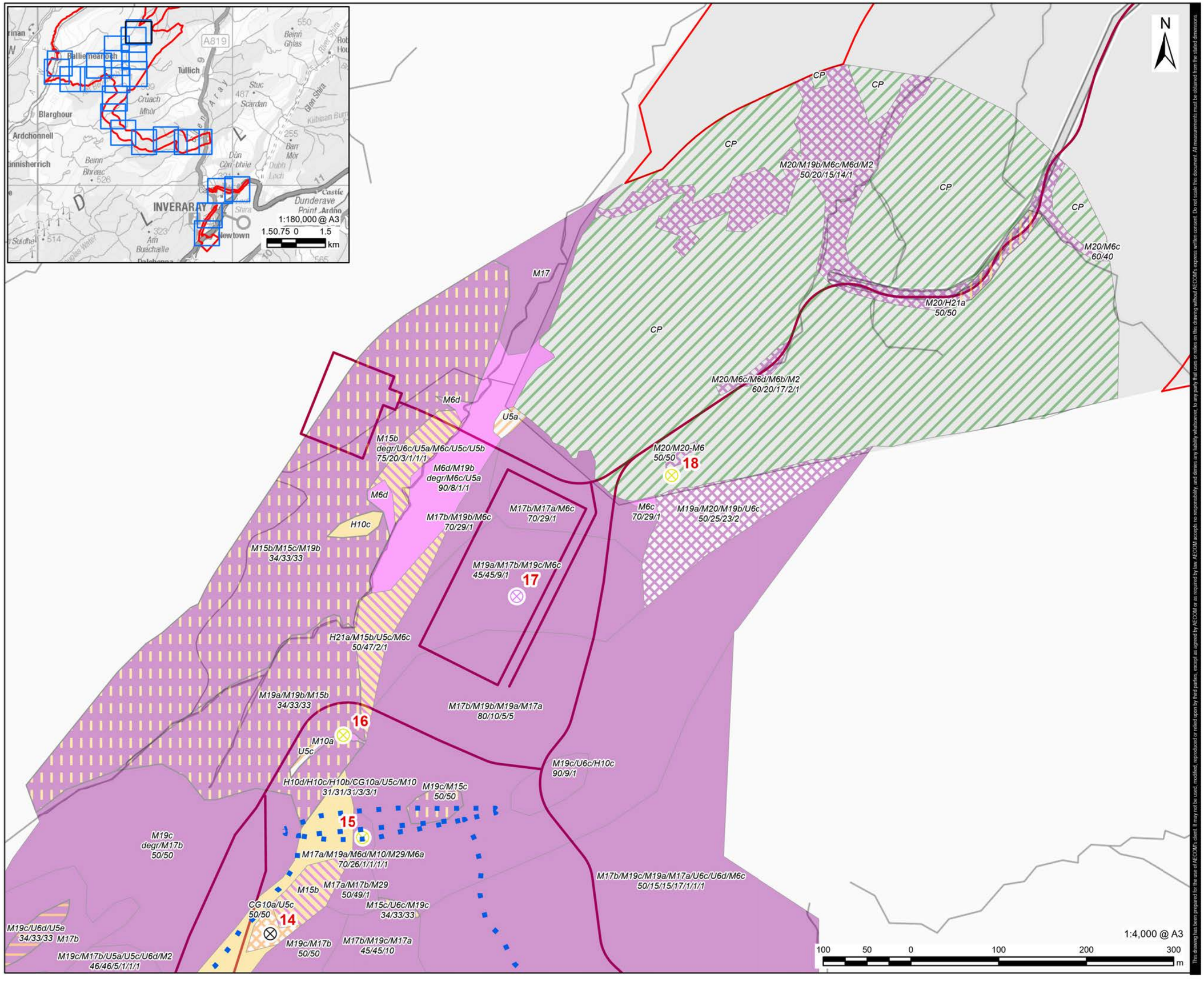
National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 11 of 23)

Revision: 0 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Notable plant species

- Sphagnum medium
- Species-rich habitat
- Other notable species

Phase 1 habitat

- A1.1.2 Broadleaved plantation
- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D1.1 Acid dry heath
- D2 Wet heath
- E1.6.1 Blanket bog
- E1.6.1/B1.1 Blanket bog/acid grassland mosaic
- E1.6.1/D2 Blanket bog/wet heath mosaic
- E1.7 Degraded blanket bog
- E1.7/D1.1 Degraded blanket bog/dry heath mosaic
- E2.1 Acid flush
- E2.2 Basic flush

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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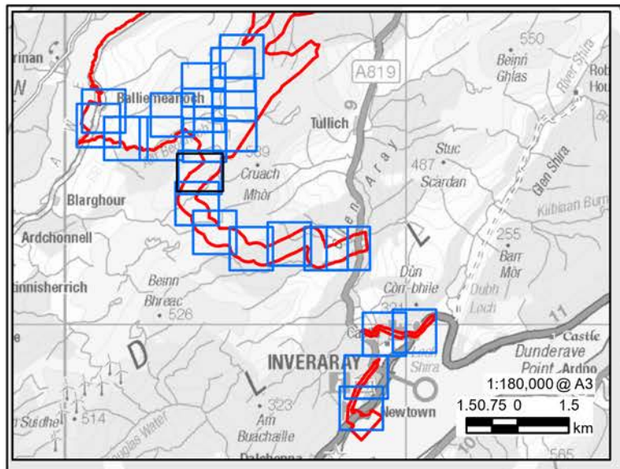
FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 12 of 23)

Revision: 0 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14



N

CP
M19c/M17b/M17a/M6c/U6
49/49/1.8/0.1/0.1
M17a/M6a/M6c/M1/M29
77/20/1/1/1
U6d/U4a
50/50
U6d/U4a
50/50
M19c/M17b
95/5
M6c
95/5
H21a/U5b/U6d
34/33/33
M19c/M17b
95/5
M6c/M6a/M17a
60/20/20
CP
M17a
M19c
degr/M17b/U6d/M15b
75/10/10/5
52
M17b/Peat/M6a
95/4.9/0.1
M17a/Peat/M3/M6c
92/5/2/1
M19c
M17b/Peat/M6a
95/4.9/0.1
M19c
M17a
OW
A8
53
U6d
M17b/M19c/M17a/M15Jsq*/M6c
80/15/3/1.9/0.1
M19c/M19a/M17b
65/20/15
M17a/M17-M6/M17c/M17b/M4/S9
65/20/5/5/3/2
U6c
U6c
U6c
U6c
U6c
M19c/M19a/M17b/U6d/U5a
70/20/9/0.9/0.1

1:4,000 @ A3
100 50 0 100 200 300 m

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Notable plant species

- Sphagnum medium

Phase 1 habitat

- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- B1.1 Unimproved acid grassland
- D5 Dry heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.7 Degraded blanket bog
- E2.1 Acid flush
- G1.3 Oligotrophic standing water

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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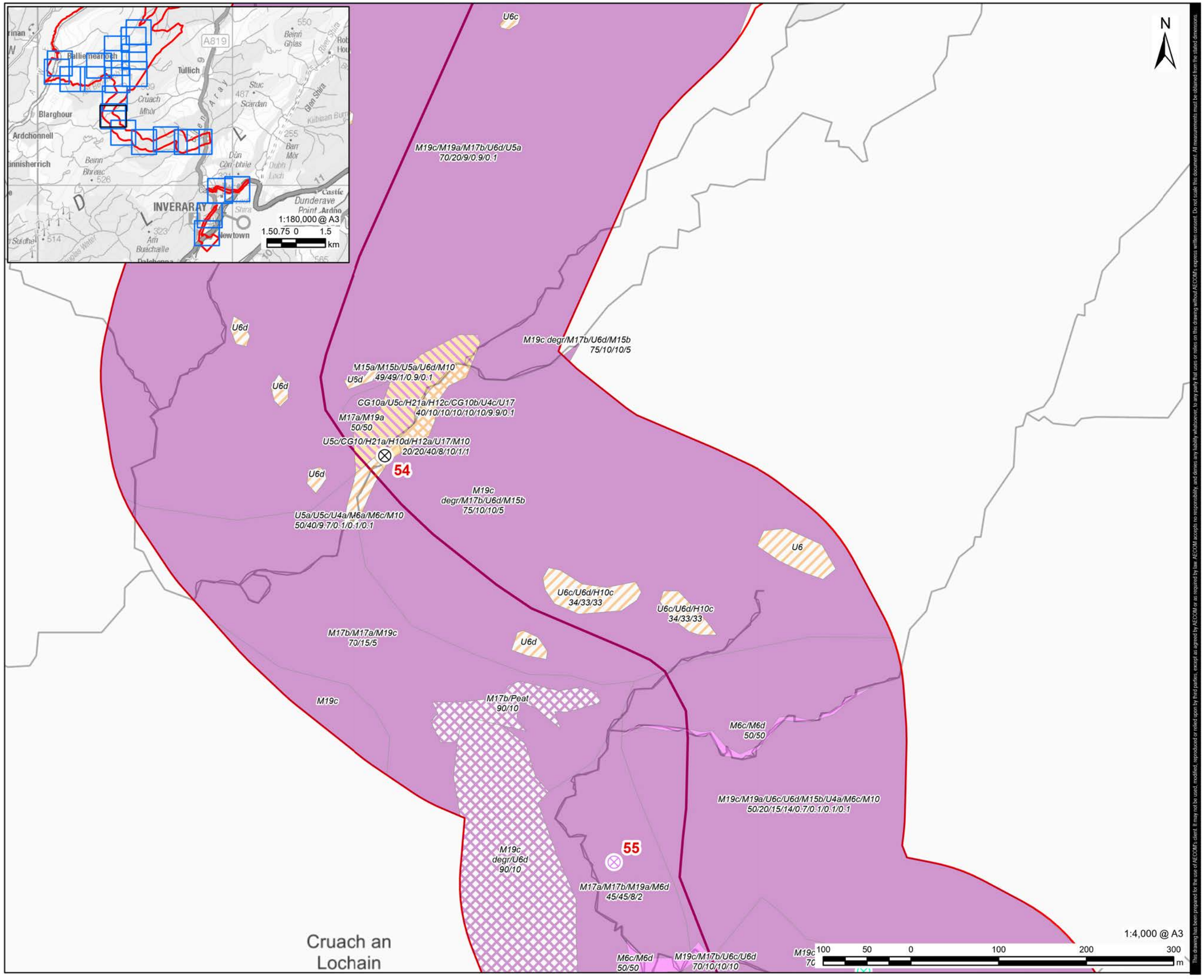
FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 13 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Notable plant species

- Bog bilberry
- Sphagnum medium
- Species-rich habitat

Phase 1 habitat

- B1.1 Unimproved acid grassland
- B3.1 Unimproved basic grassland
- D2 Wet heath
- D5 Dry heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.7 Degraded blanket bog
- E2.1 Acid flush

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

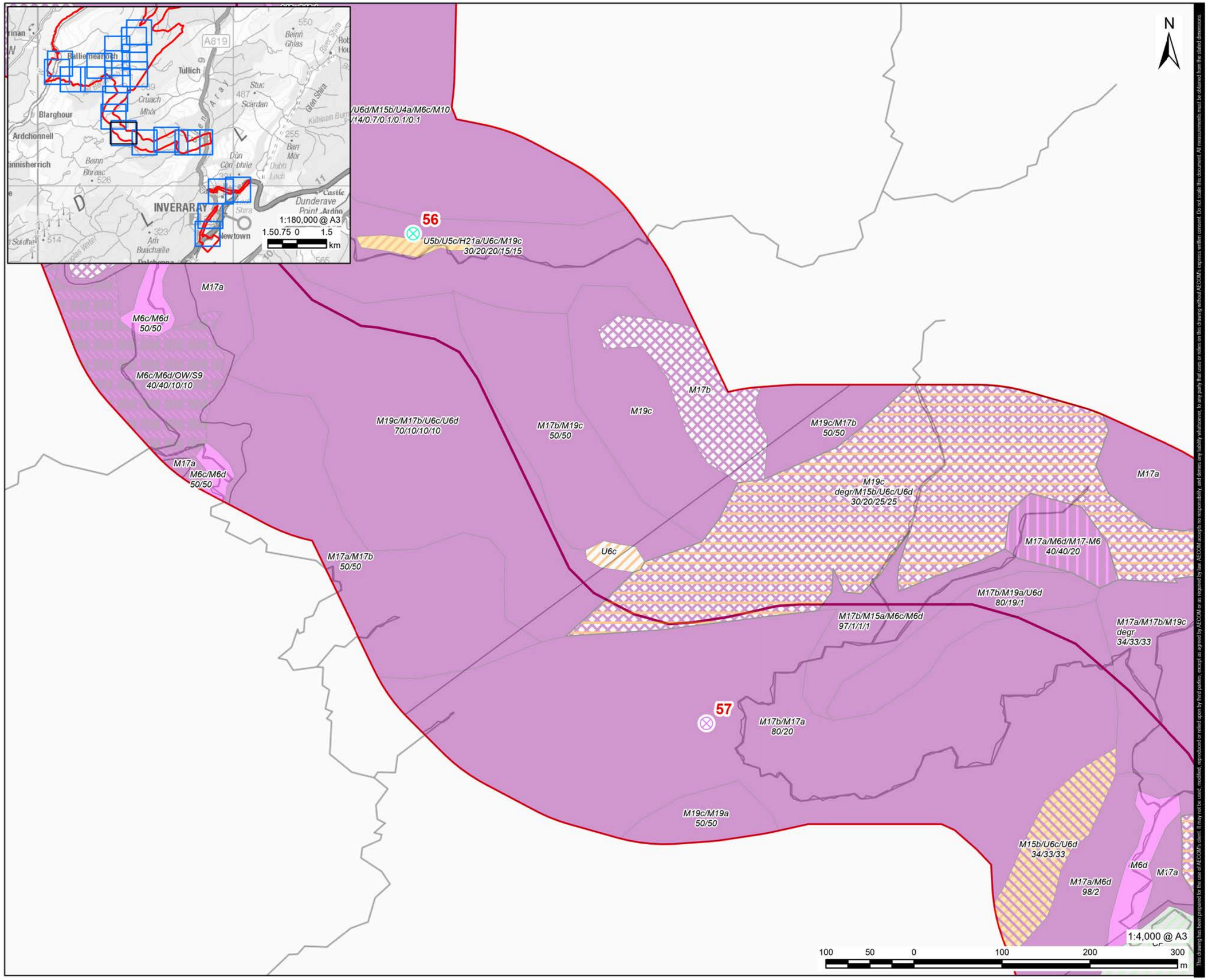
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Notable plant species

- Bog bilberry
- Sphagnum medium

Phase 1 habitat

- A1.2.2 Conifer plantation
- B1.1 Unimproved acid grassland
- D5 Dry heath/acid grassland mosaic
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7 Degraded blanket bog
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E2.1 Acid flush
- E3.2 Basin mire

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

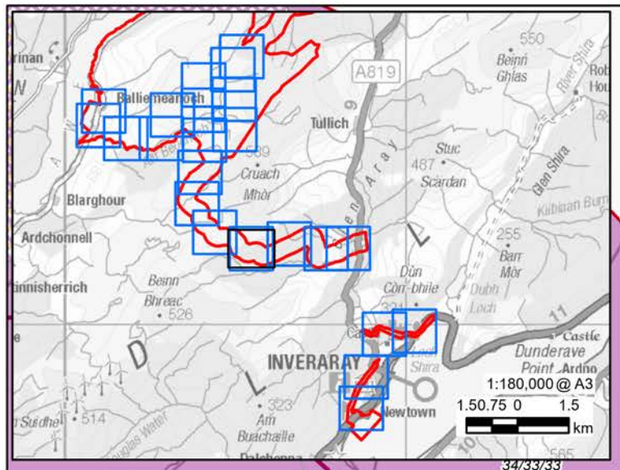
FIGURE NUMBER

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.2.2 Conifer plantation
- A4.2 Felled conifer plantation
- D6 Wet heath/acid grassland mosaic
- E1.6.1 Blanket bog
- E1.6.1/E2.1 Blanket bog/acid flush mosaic
- E1.7/B1.1 Degraded blanket bog/ acid grassland mosaic
- E2.1 Acid flush

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

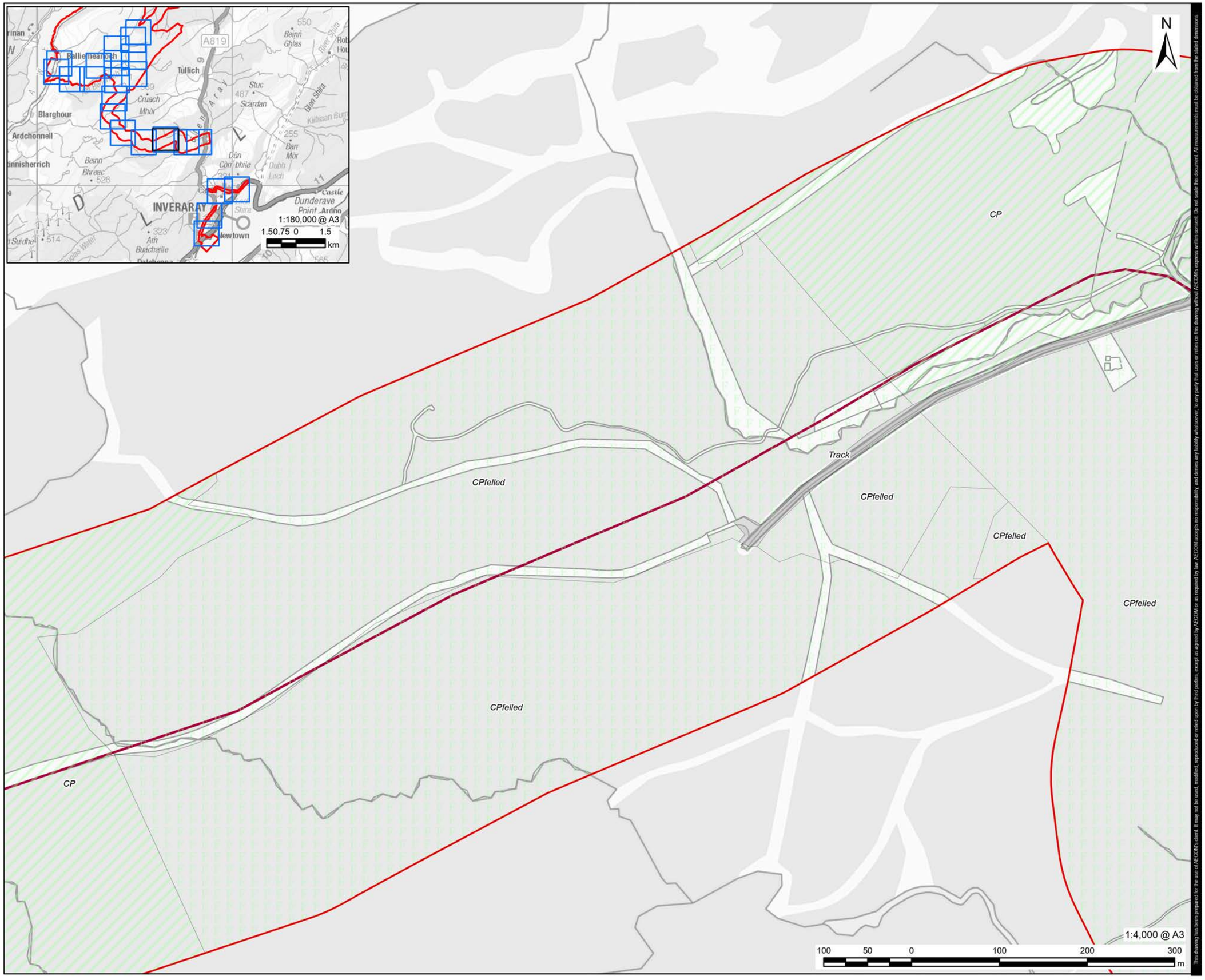
National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 16 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.2.2 Conifer plantation
- A4.2 Felled conifer plantation
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 17 of 23)

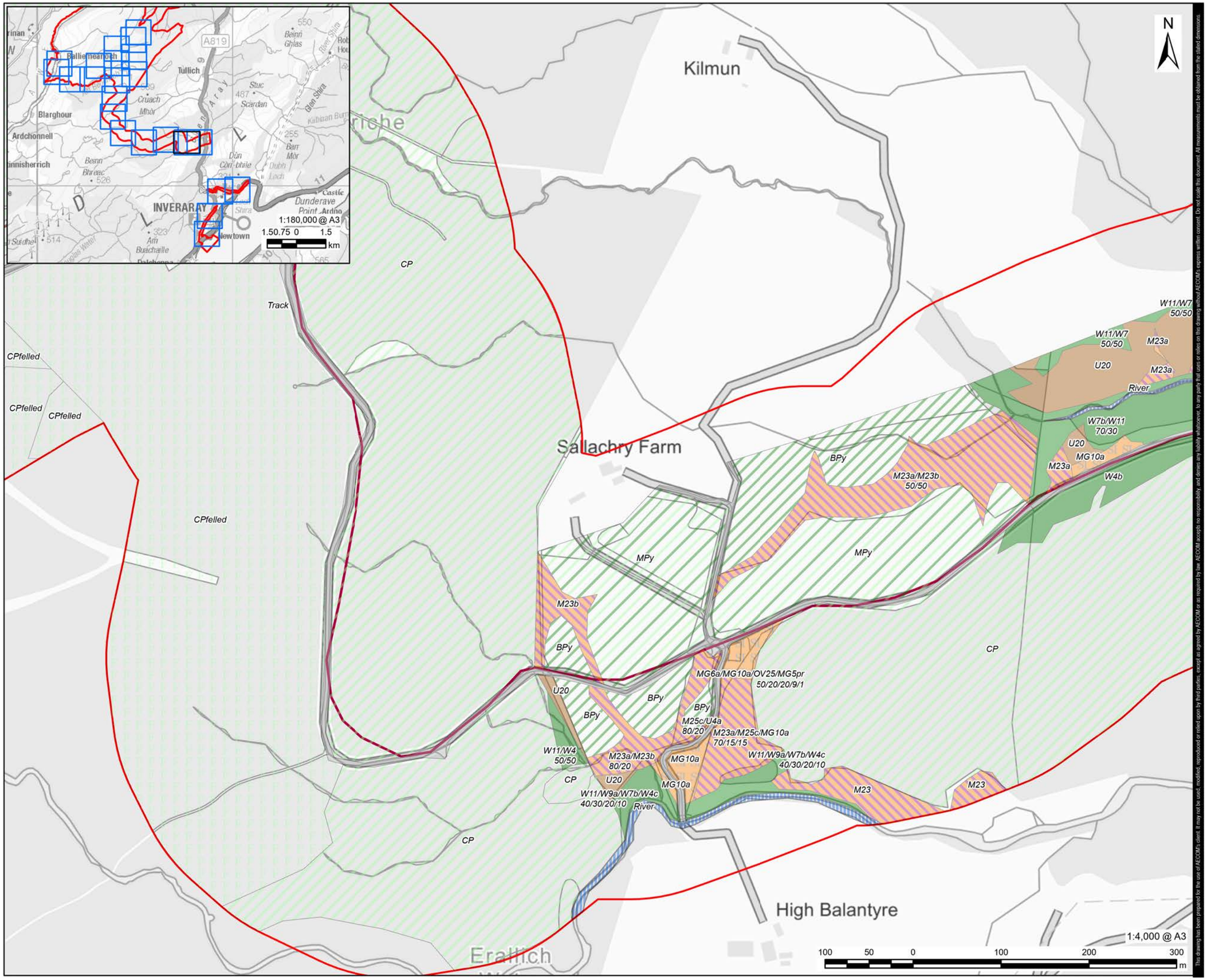
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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- A4.2 Felled conifer plantation
- B2.2 Semi-improved neutral grassland
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- G2 Running water
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

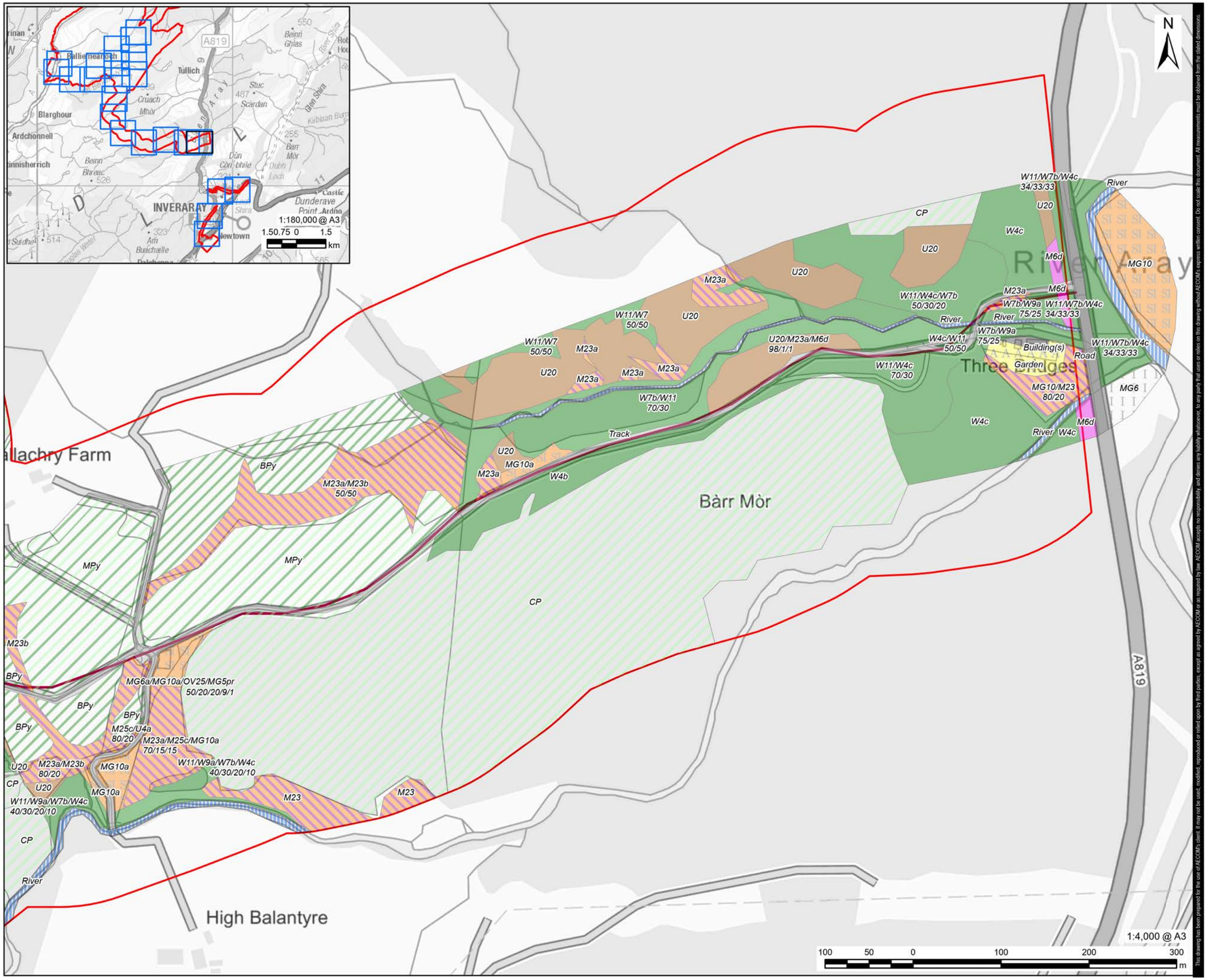
National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 18 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- E2.1 Acid flush
- G2 Running water
- J1.2 Amenity grassland
- J3.6 Building(s)
- Road
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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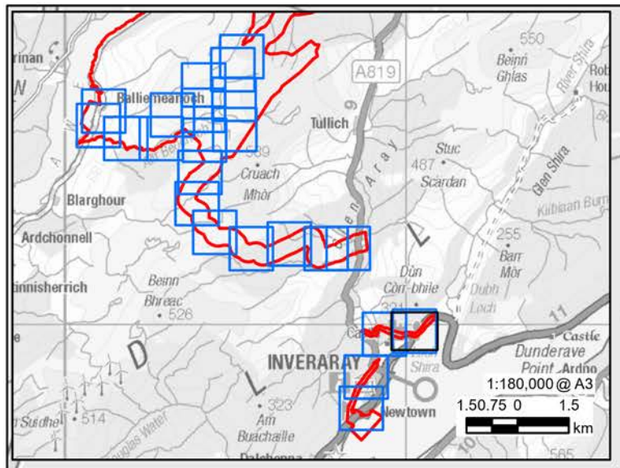
FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 19 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- A2.1 Dense scrub
- B1.1 Unimproved acid grassland
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- Construction works
- Road
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

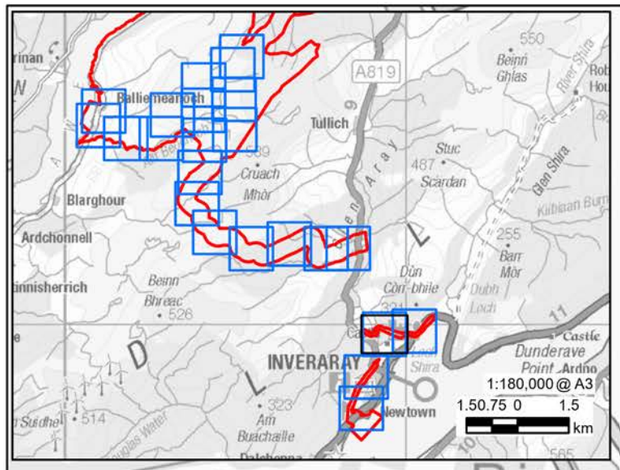
FIGURE NUMBER

Figure 6.4 (Sheet 20 of 23)

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BALLIEMEANOCH PUMPED STORAGE HYDRO

CLIENT

ILI (Borders PSH) Ltd.

CONSULTANT

AECOM Limited
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Glasgow, B2 7ER
T +44(0)141 202 050

LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- A2.1 Dense scrub
- B1.1 Unimproved acid grassland
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- G2 Running water
- J1.2 Amenity grassland
- J3.6 Building(s)
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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PROJECT NUMBER

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FIGURE TITLE

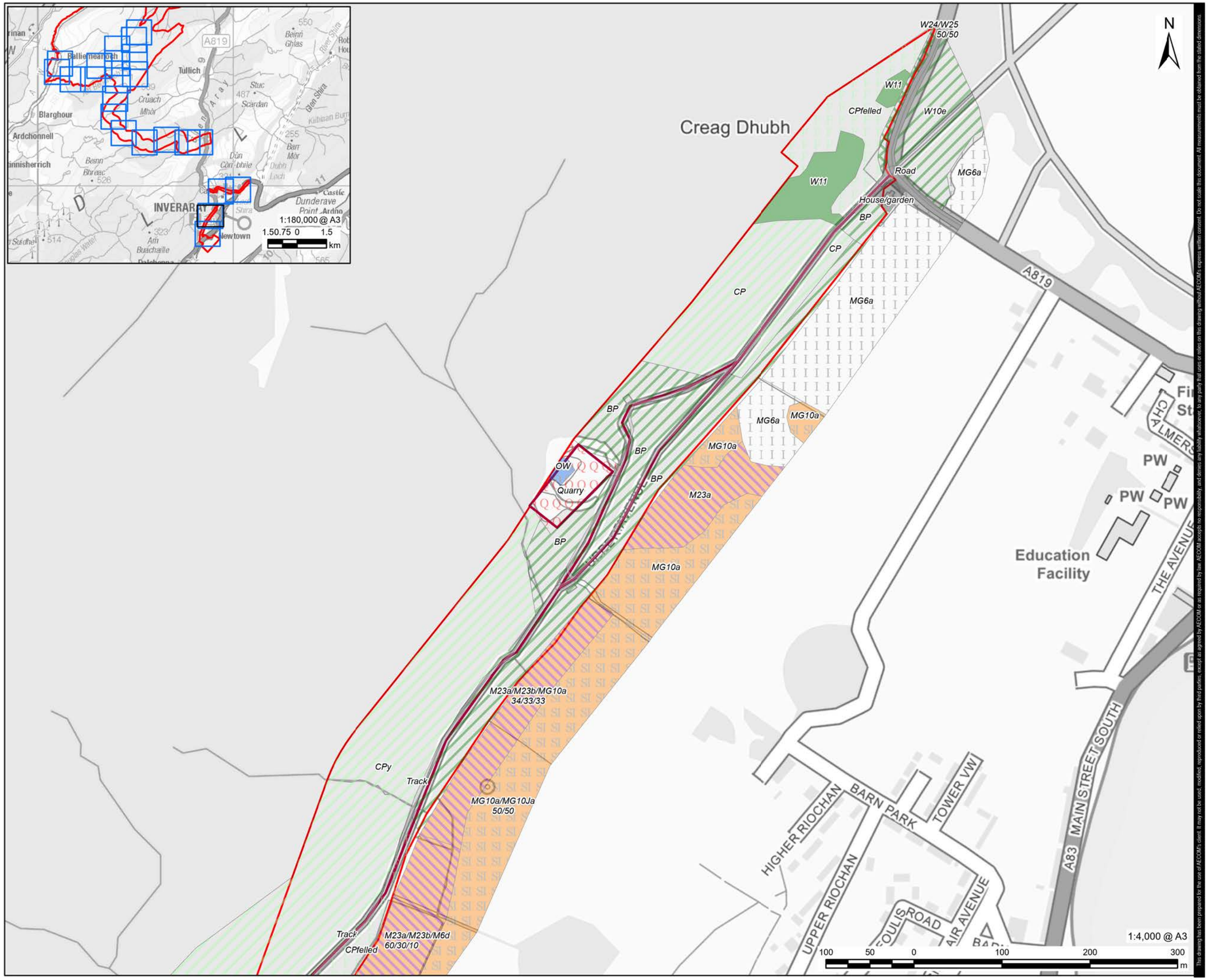
National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 21 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.2.2 Conifer plantation
- A2.1 Dense scrub
- A4.2 Felled conifer plantation
- B2.2 Semi-improved neutral grassland
- B4 Agriculturally-improved pasture
- B5 Marsh/marshy grassland
- G1.3 Oligotrophic standing water
- I2.1 Quarry
- J3.6 Building(s)
- Road
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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PROJECT NUMBER

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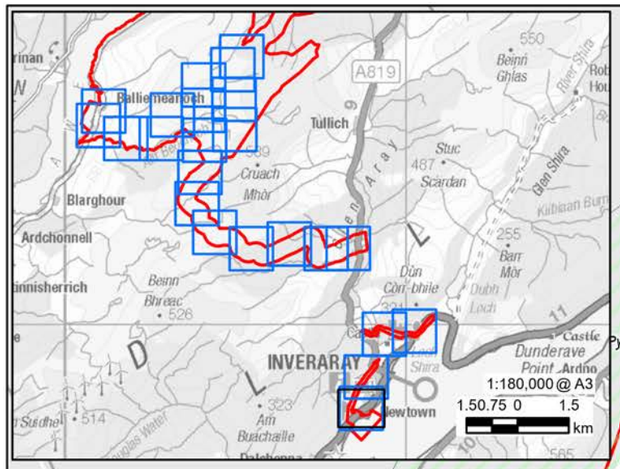
FIGURE TITLE

National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 22 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Phase 1 habitat

- A1.1.1 Semi-natural broadleaved woodland
- A1.1.2 Broadleaved plantation
- A1.1.2JK Broadleaved plantation with Japanese knotweed
- A1.2.2 Conifer plantation
- A1.3.2 Mixed plantation
- A2.1 Dense scrub
- A4.2 Felled conifer plantation
- B1.1 Unimproved acid grassland
- B2.2 Semi-improved neutral grassland
- B5 Marsh/marshy grassland
- C1.1 Dense bracken
- C3.1JK Japanese knotweed
- H2.6 Saltmarsh
- H8.4JK Coastal grassland with scattered Japanese knotweed
- Sediment/seaweed
- J1.2 Amenity grassland
- J3.6 Building(s)
- Road
- Track

NOTES

Faded Phase 1 habitats, as on Figure 6.3, are shown to aid interpretation. National Vegetation Classification (NVC) types for each habitat polygon are shown as labels. Where an NVC label comprises a mosaic of NVC types, estimated percentage proportions of the mosaic components are shown beneath.

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FIGURE TITLE

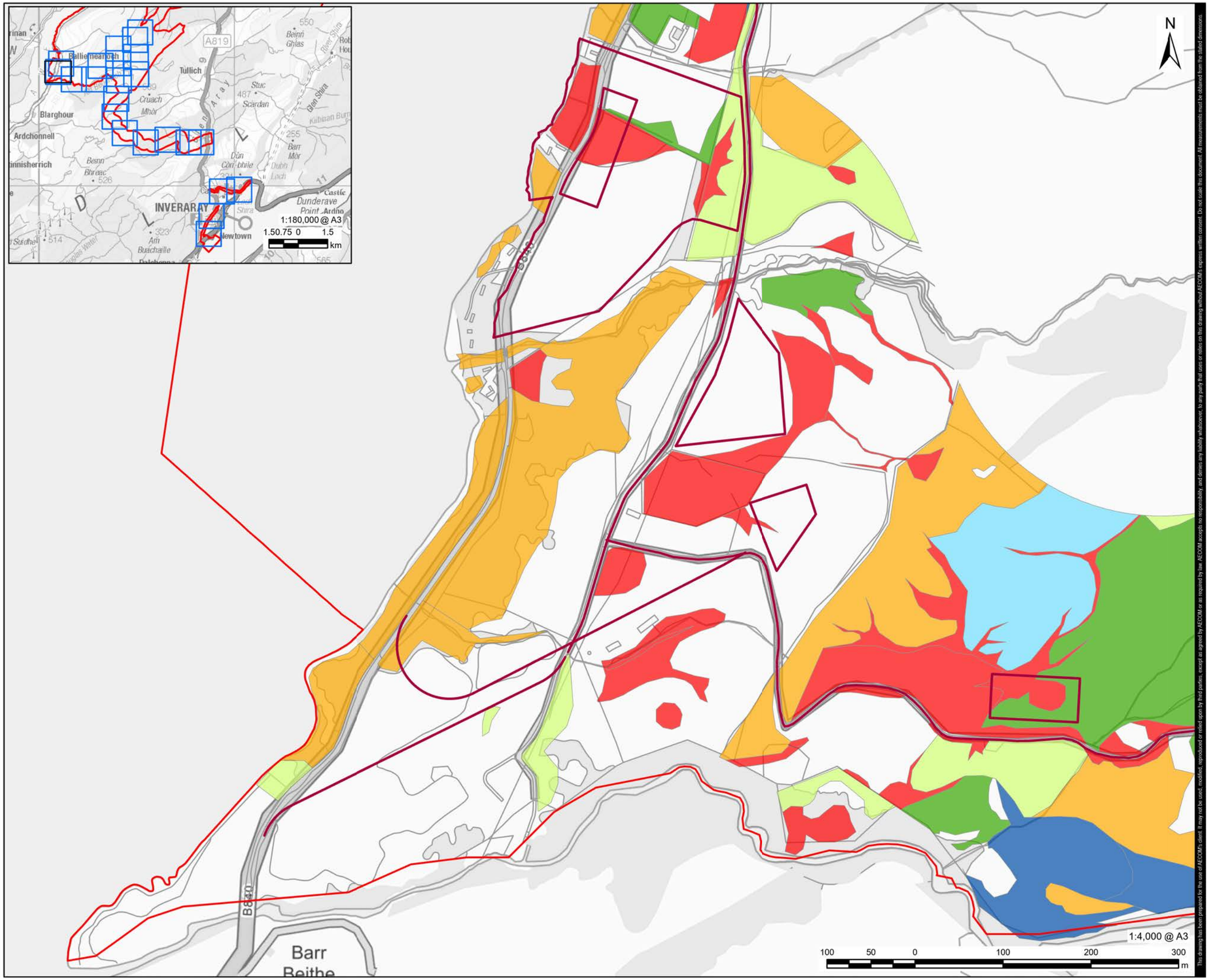
National Vegetation Classification Results and Notable Plant Species

FIGURE NUMBER

Figure 6.4 (Sheet 23 of 23)

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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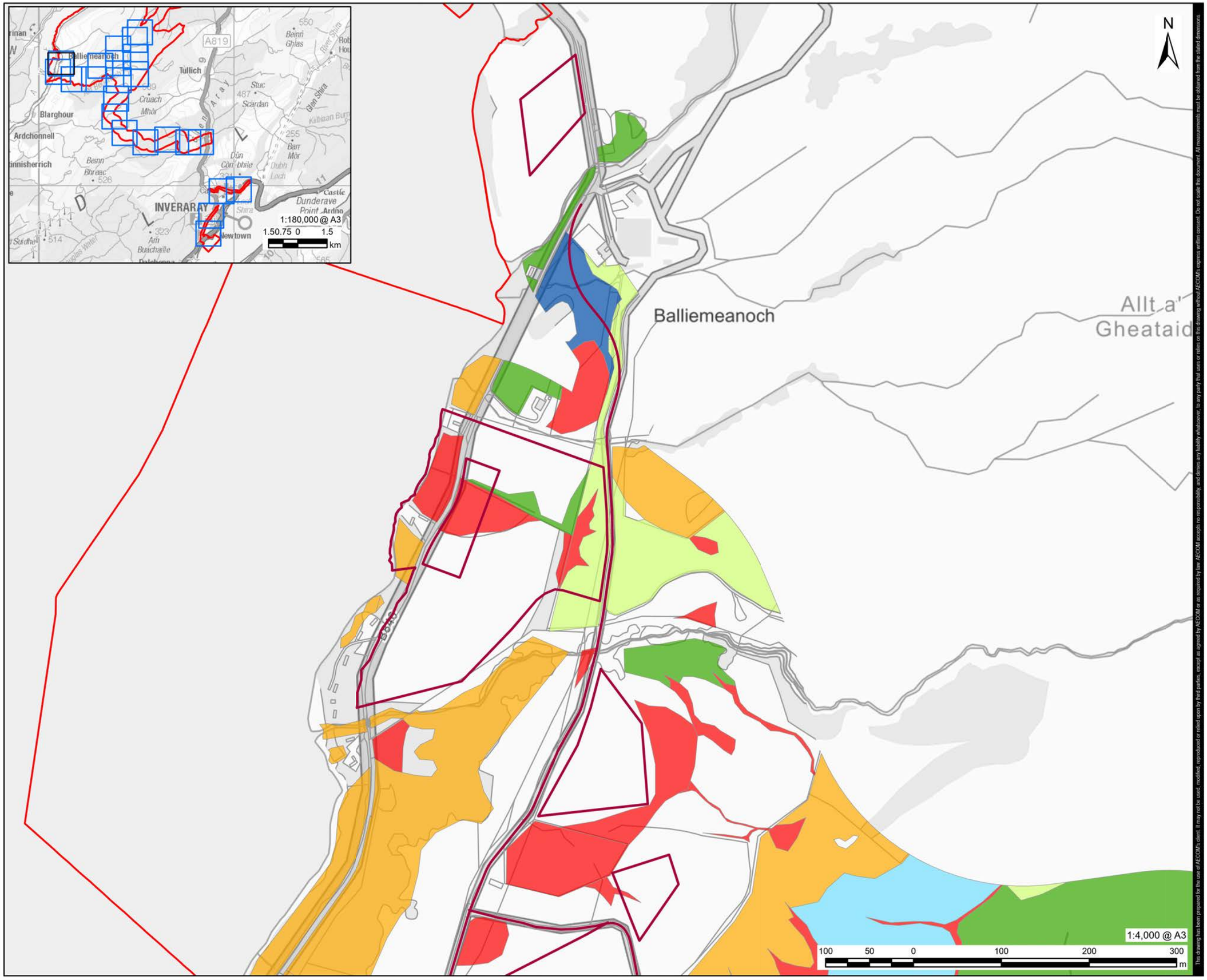
FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 1 of 23)

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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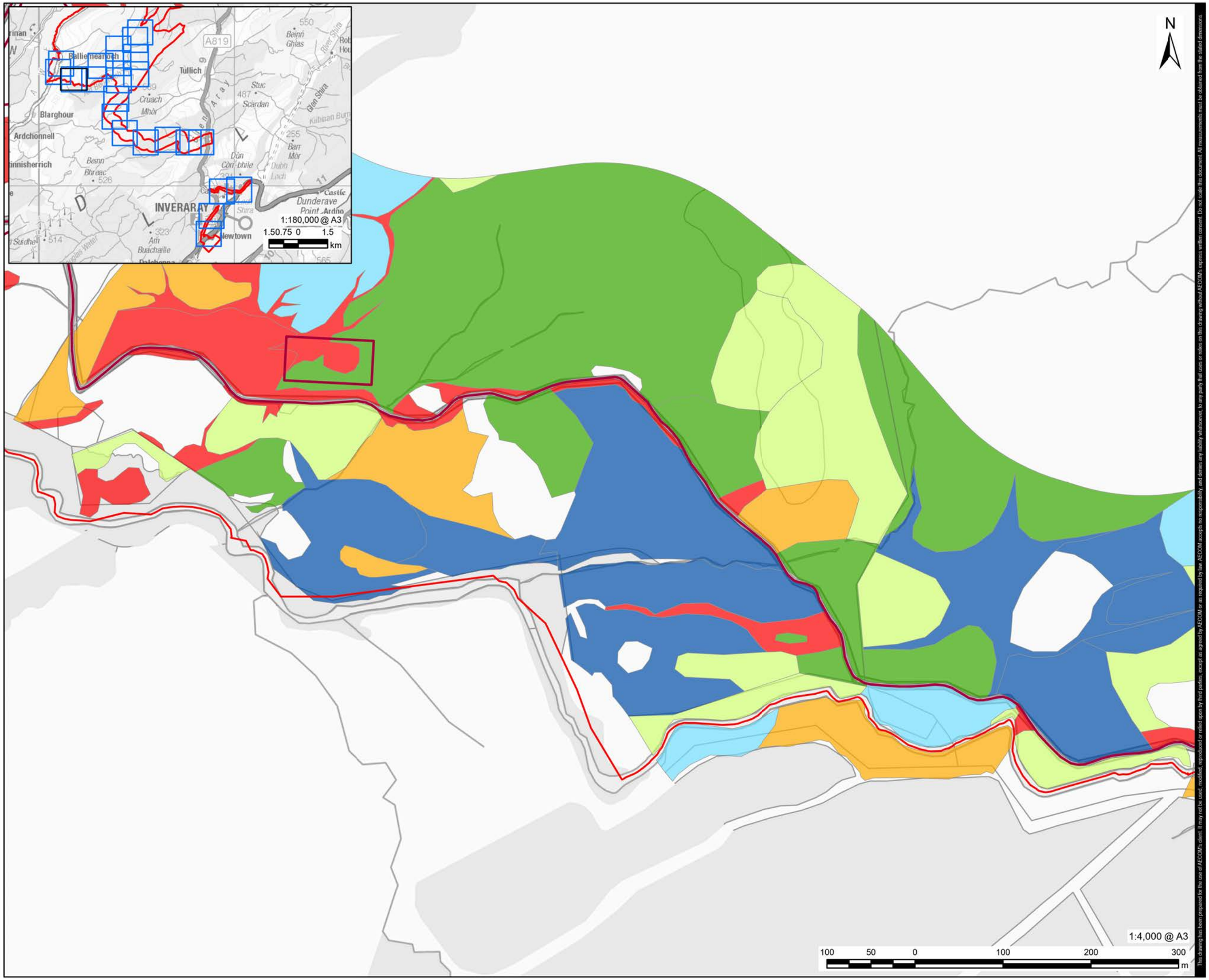
FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 2 of 23)

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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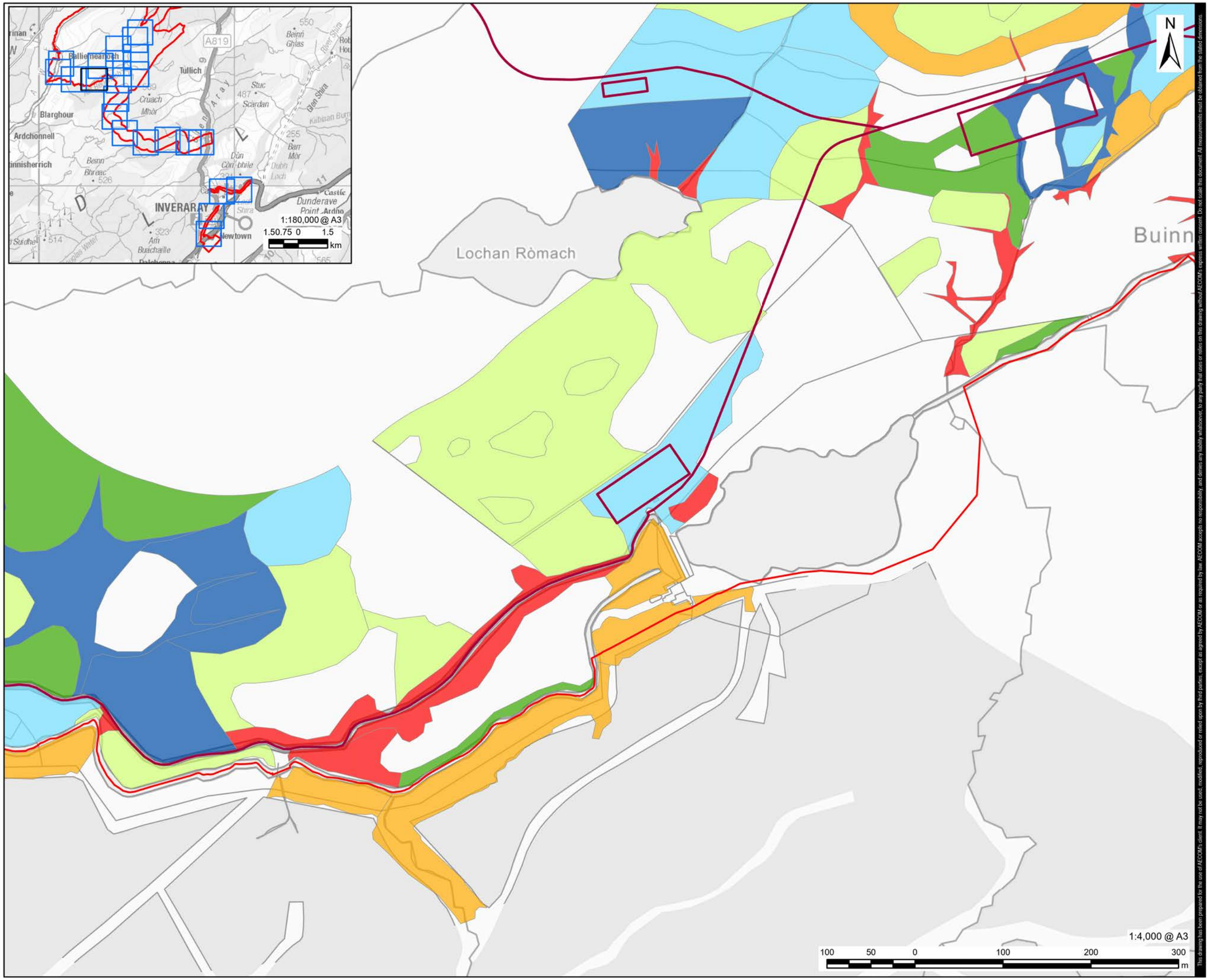
FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 3 of 23)

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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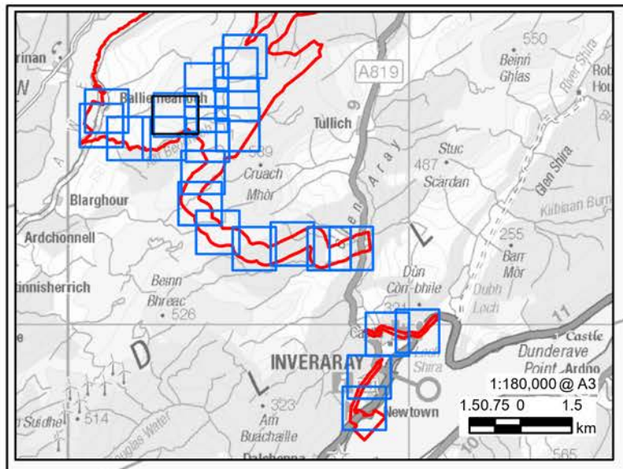
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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 4 of 23)



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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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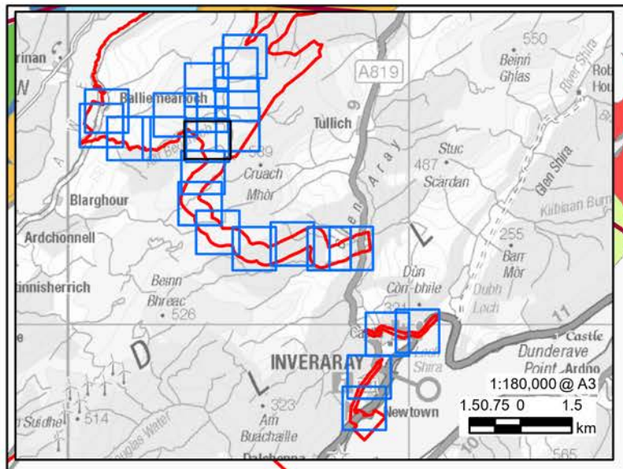
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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 5 of 23)



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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

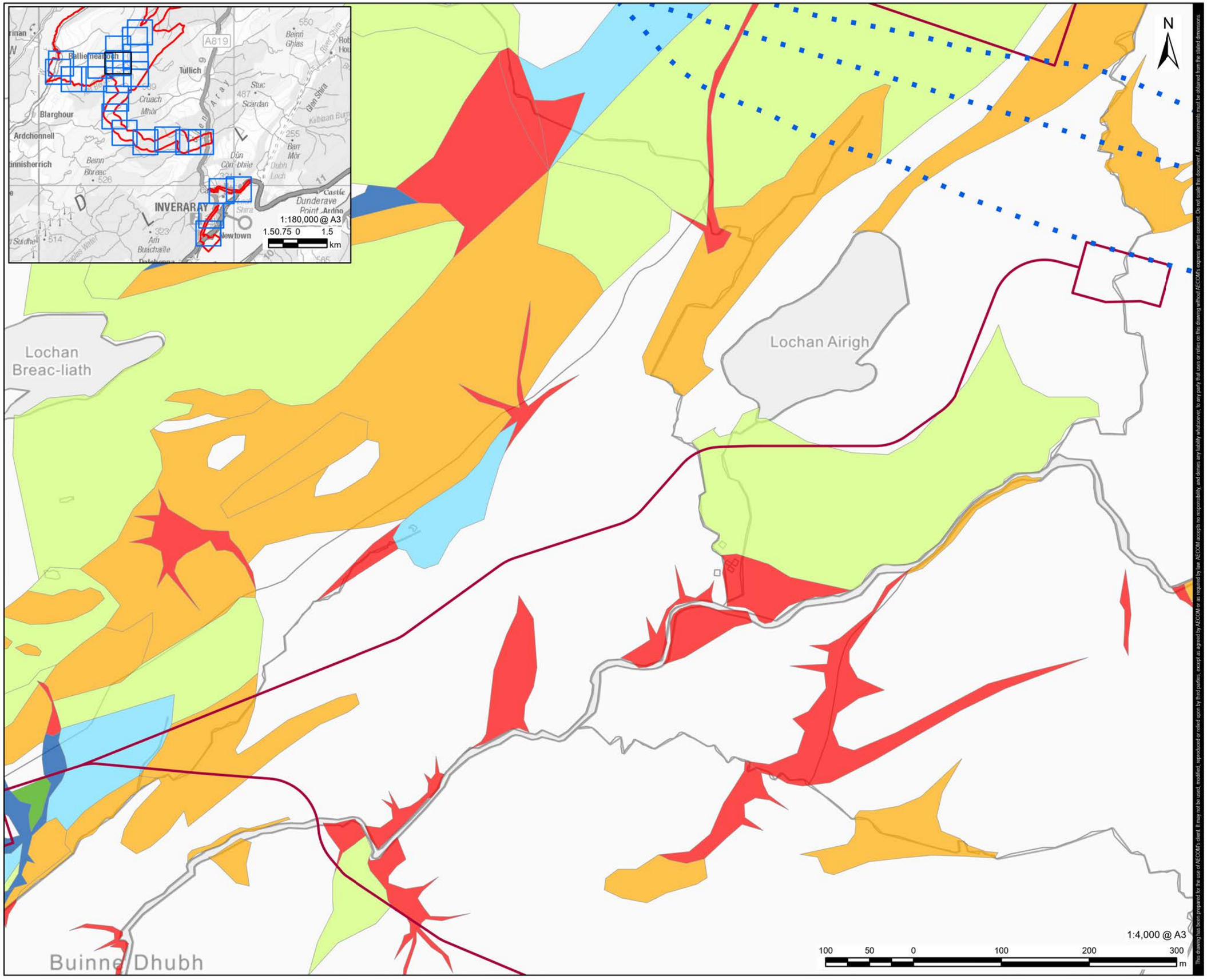
Figure 6.5 (Sheet 6 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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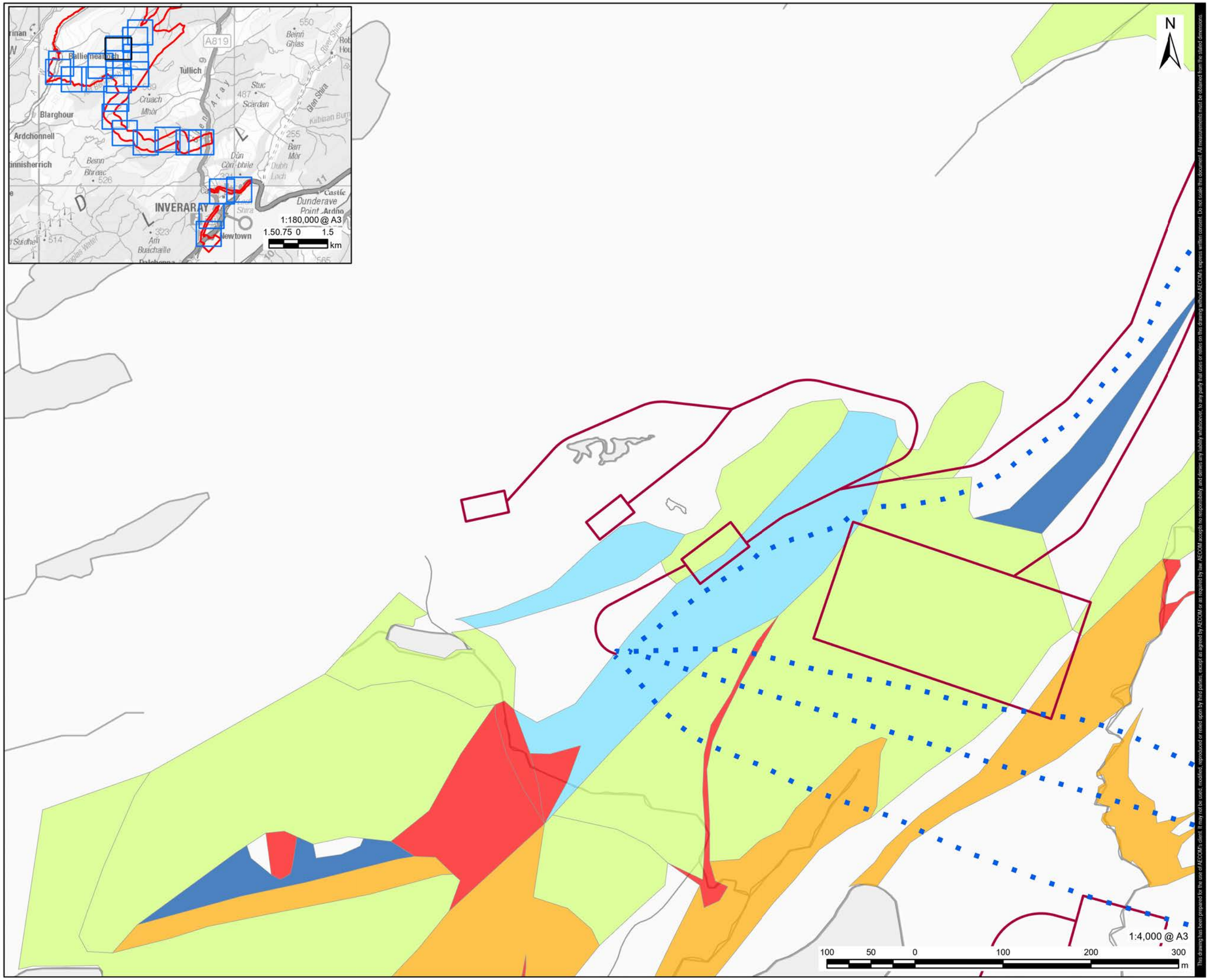
FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate (part only)

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PROJECT NUMBER

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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

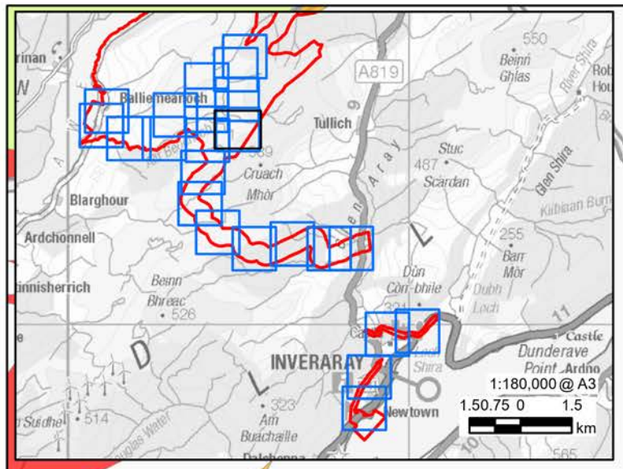
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N

1:4,000 @ A3

100 50 0 100 200 300 m

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate (part only)

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FIGURE TITLE

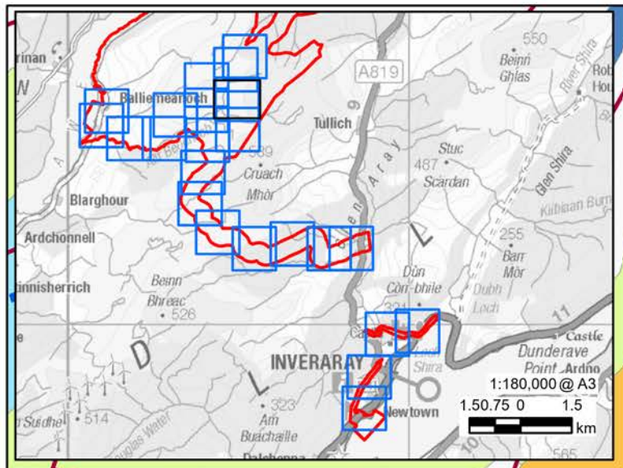
Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 9 of 23)

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N

chan Airigh

1:4,000 @ A3

100 50 0 100 200 300 m

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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PROJECT NUMBER

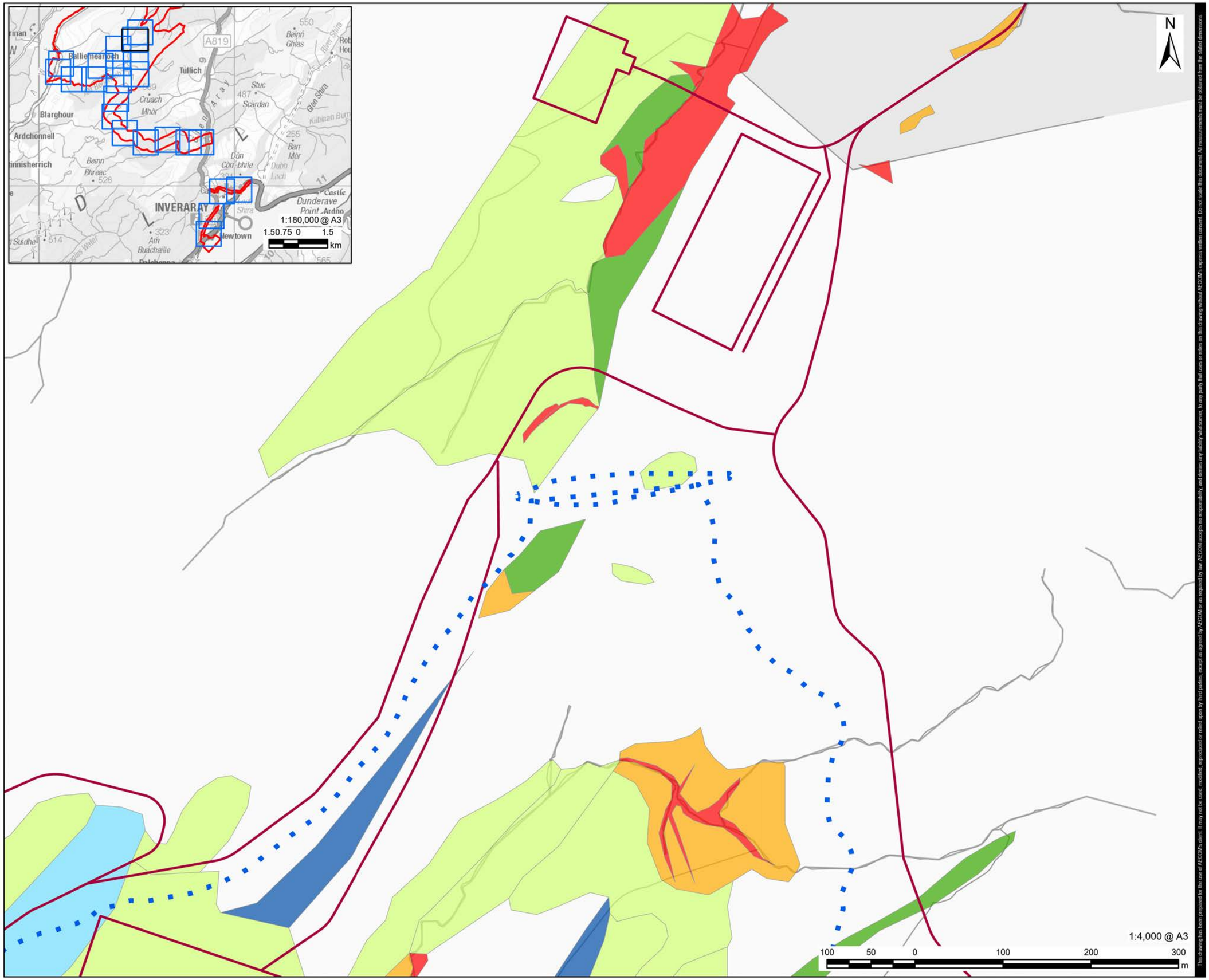
60570241

FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 10 of 23)



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CLIENT

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CONSULTANT

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Glasgow, B2 7ER
T +44(0)141 202 050

LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate to High (part only)
- Moderate
- Moderate (part only)

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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

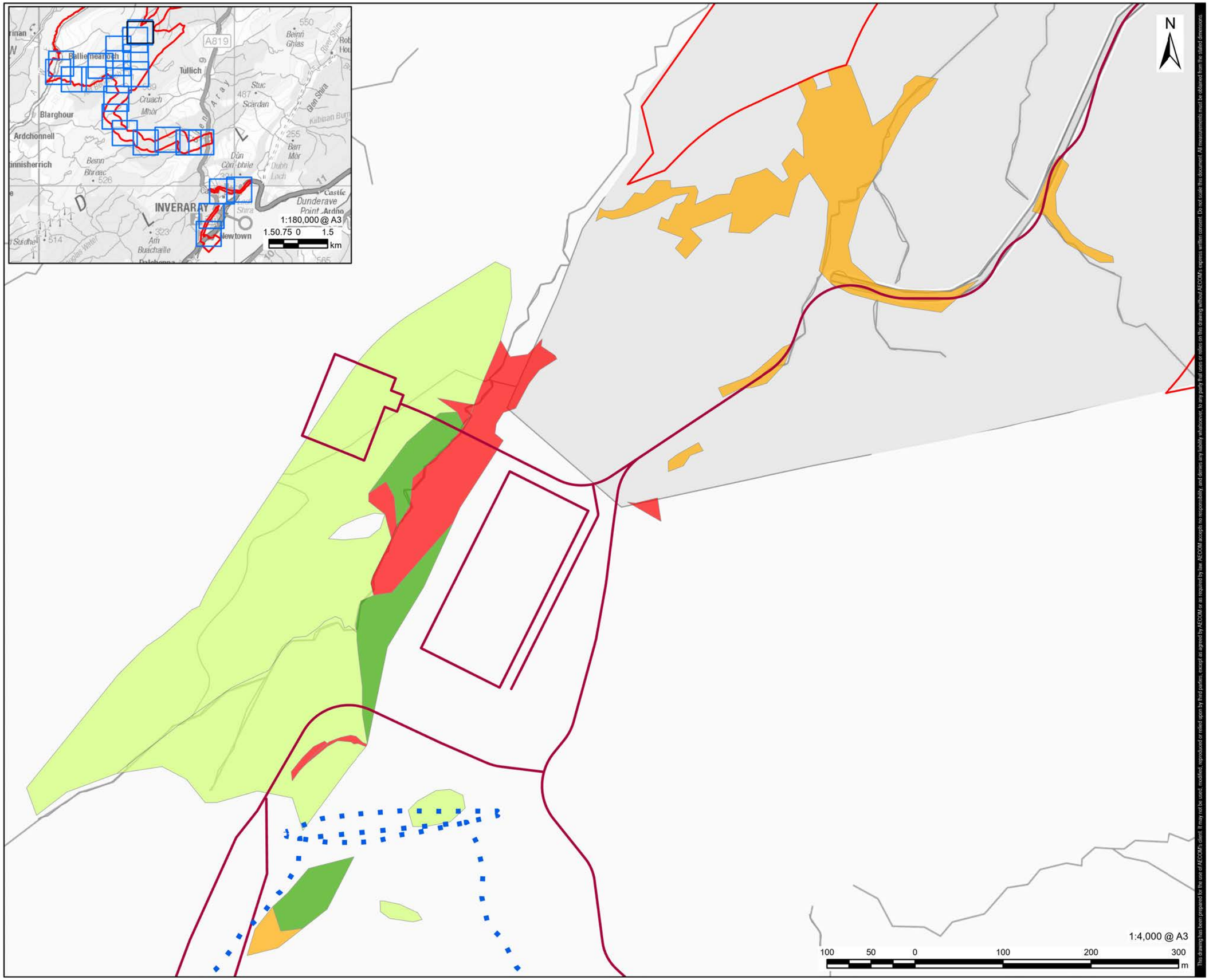
FIGURE NUMBER

Figure 6.5 (Sheet 11 of 23)

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LEGEND

- Development Boundary
- Headpond and Embankments
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate
- Moderate (part only)

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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

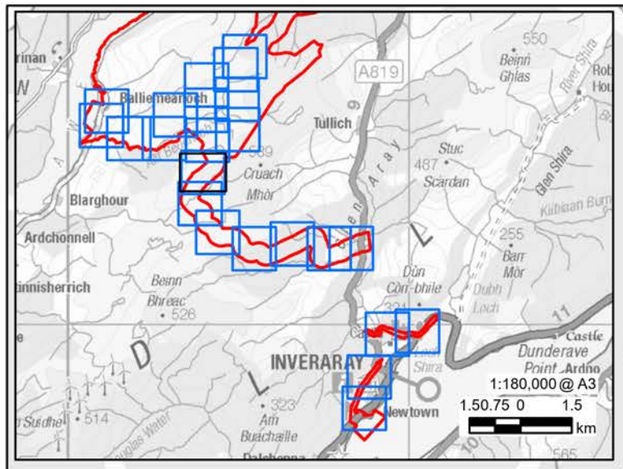
FIGURE NUMBER

Figure 6.5 (Sheet 12 of 23)

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N

1:4,000 @ A3

100 50 0 100 200 300 m

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)

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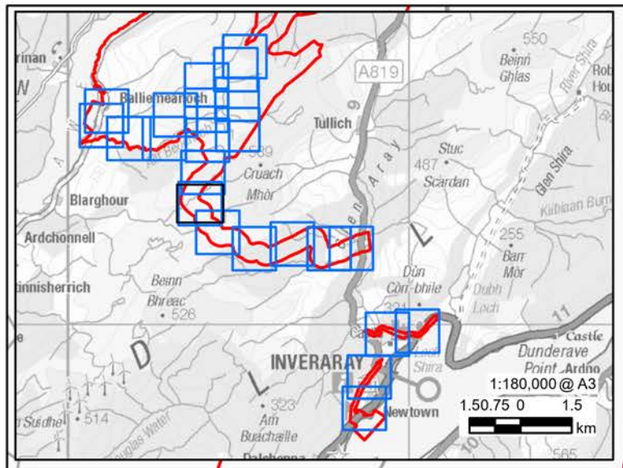
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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 13 of 23)



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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High

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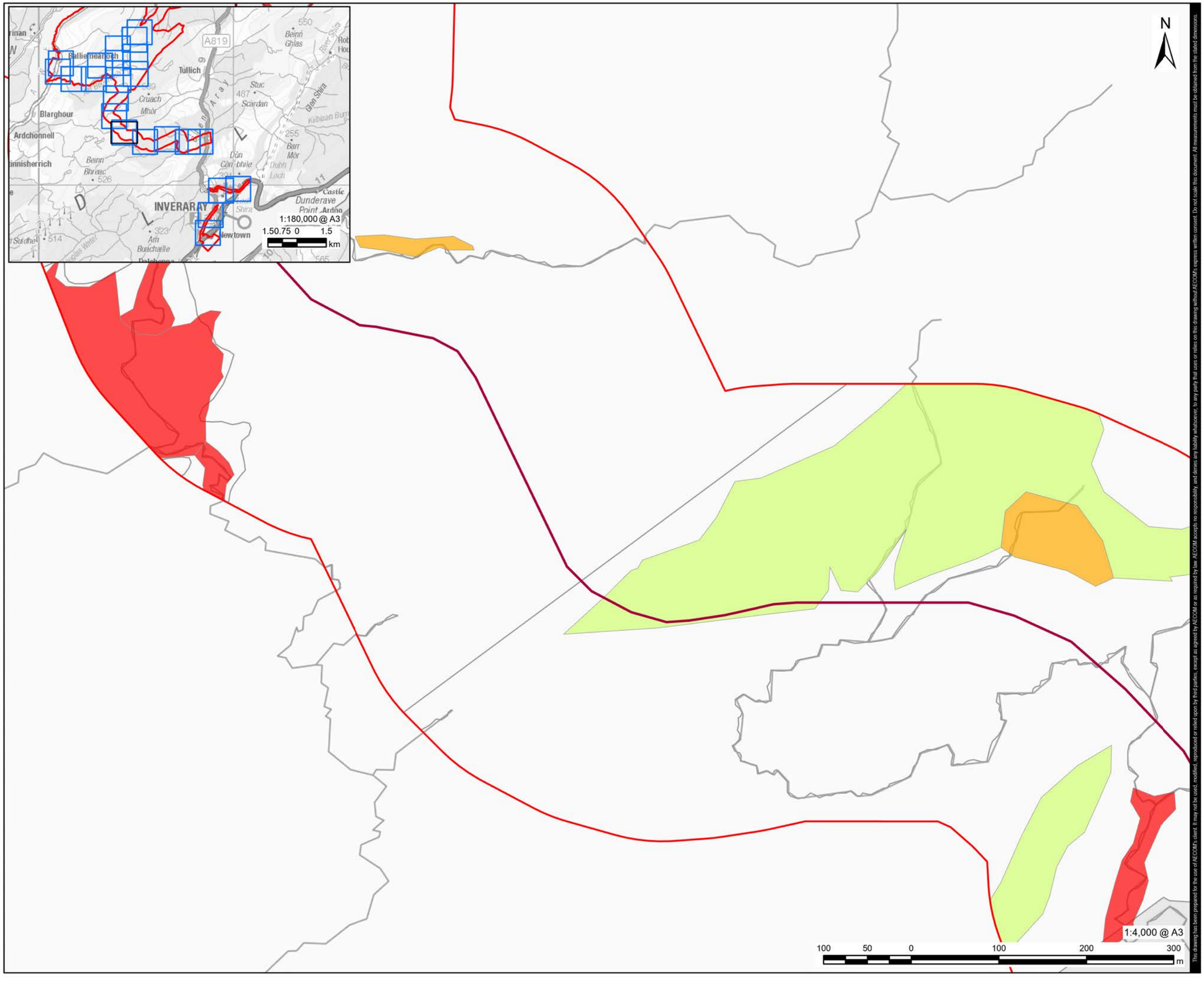
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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 14 of 23)



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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate (part only)

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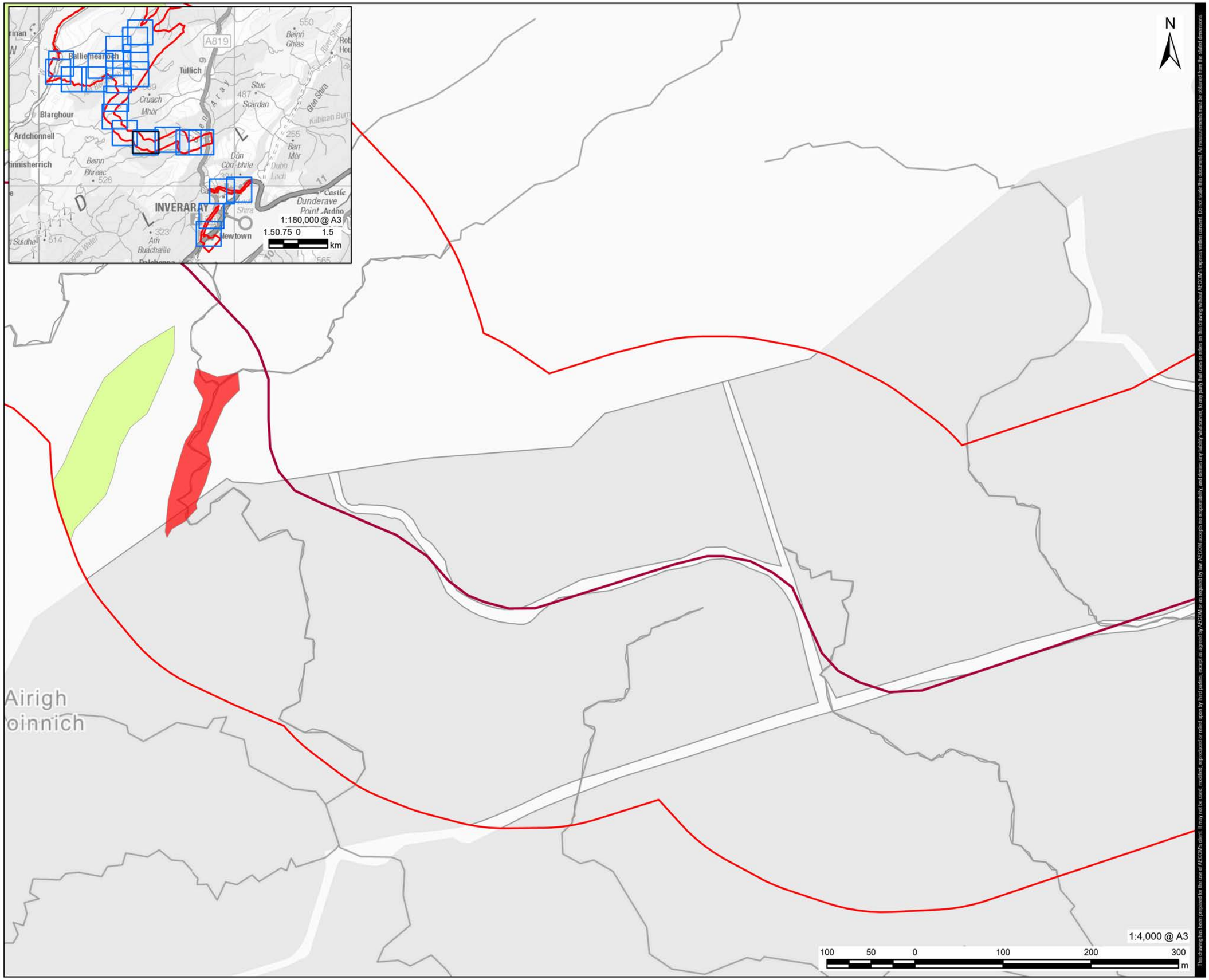
FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 15 of 23)

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate (part only)

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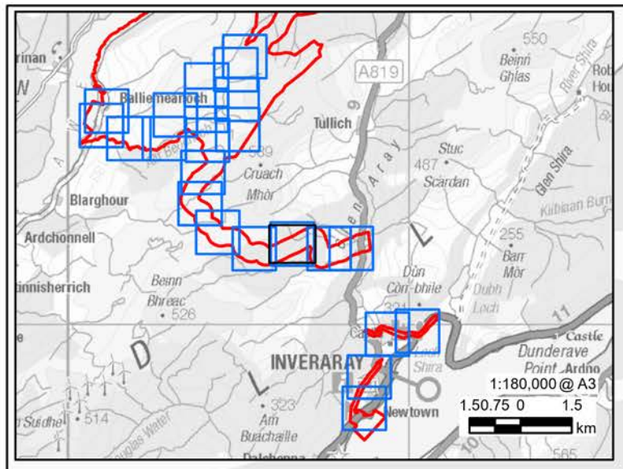
FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 16 of 23)

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LEGEND

- Development Boundary
- Above Ground Infrastructure

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FIGURE TITLE

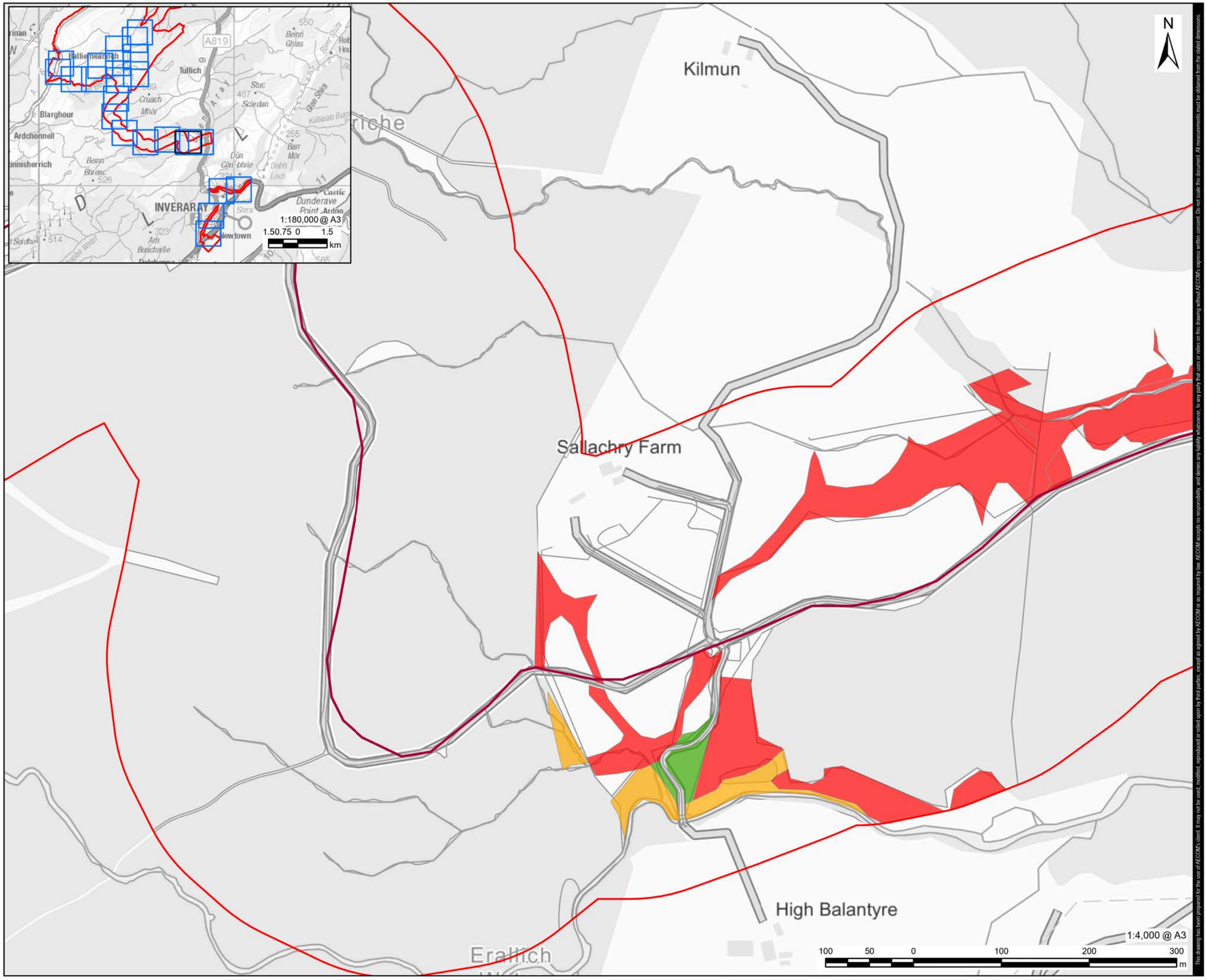
Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 17 of 23)

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate

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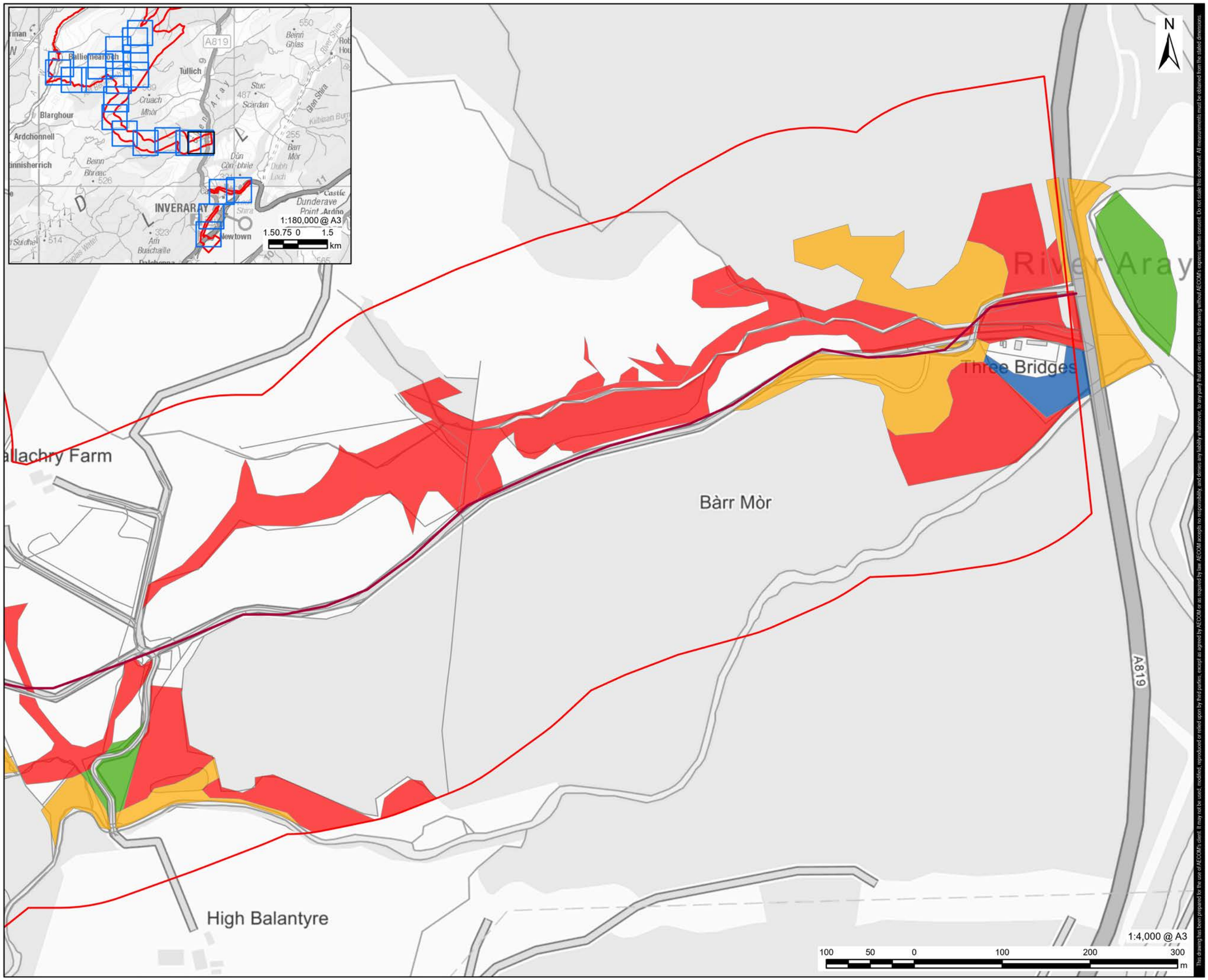
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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 18 of 23)



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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate

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ISSUE PURPOSE

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PROJECT NUMBER

60570241

FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

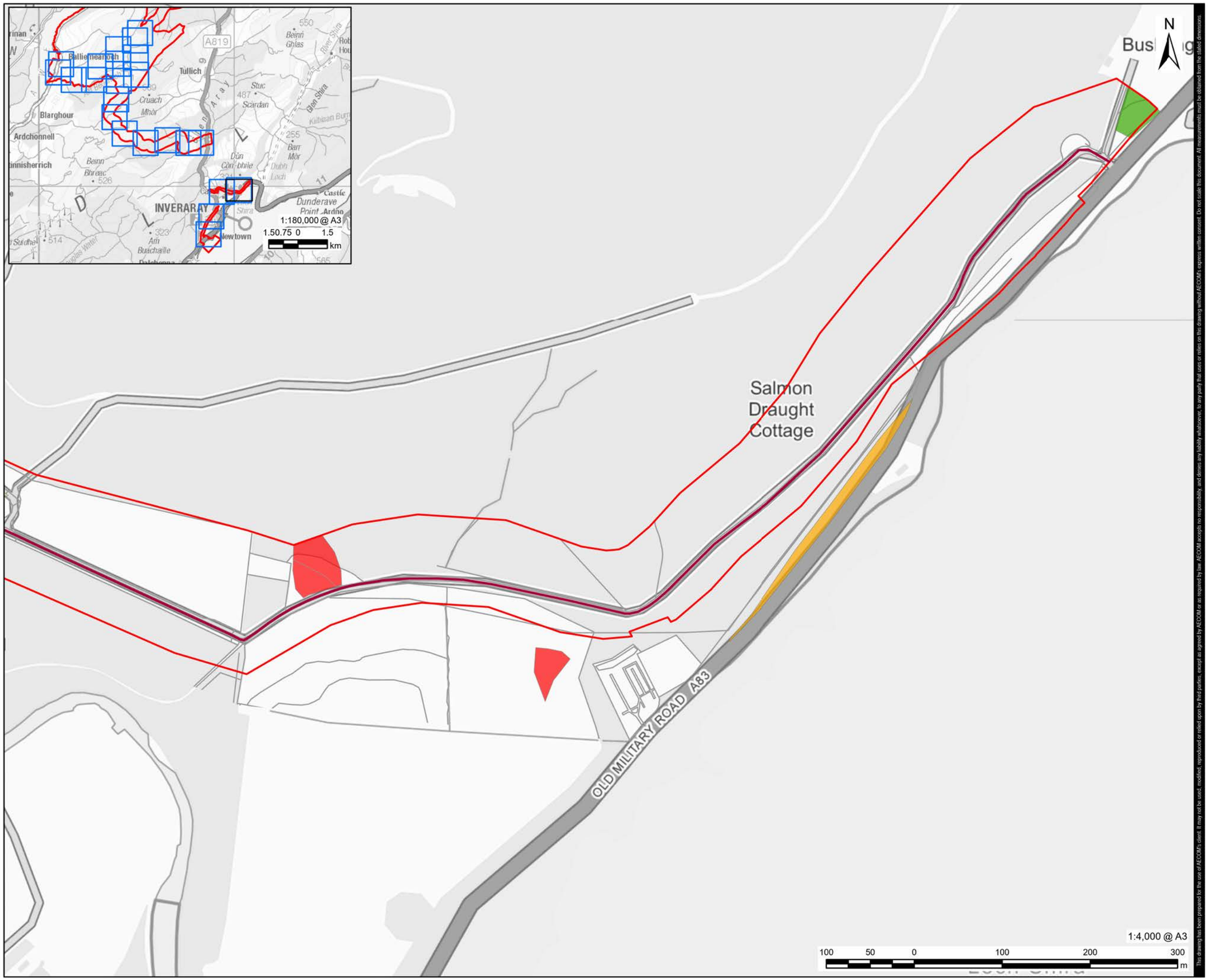
FIGURE NUMBER

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate
- Moderate (part only)

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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 20 of 23)

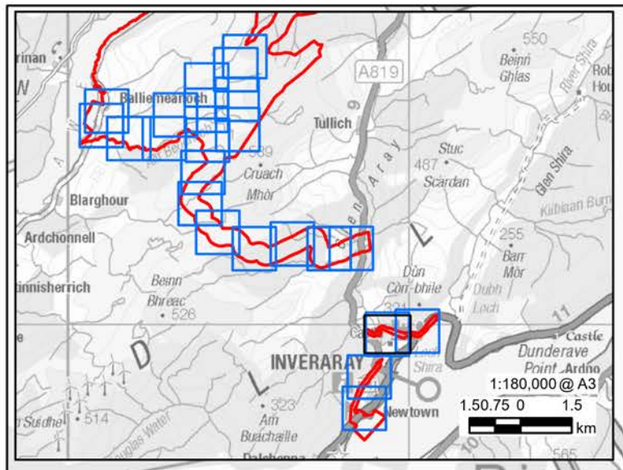
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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate
- Moderate (part only)

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FIGURE TITLE

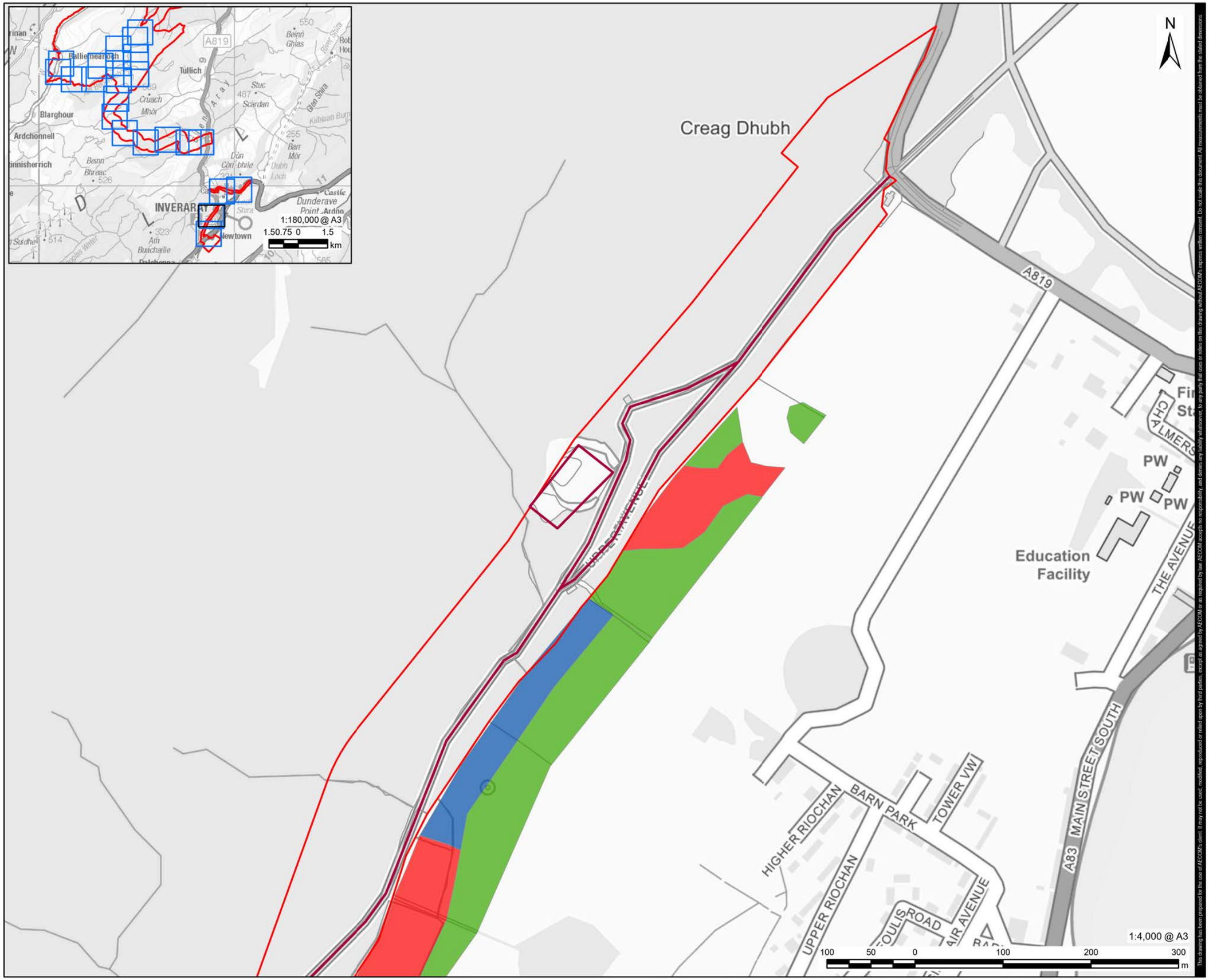
Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 21 of 23)

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- Moderate to High
- Moderate

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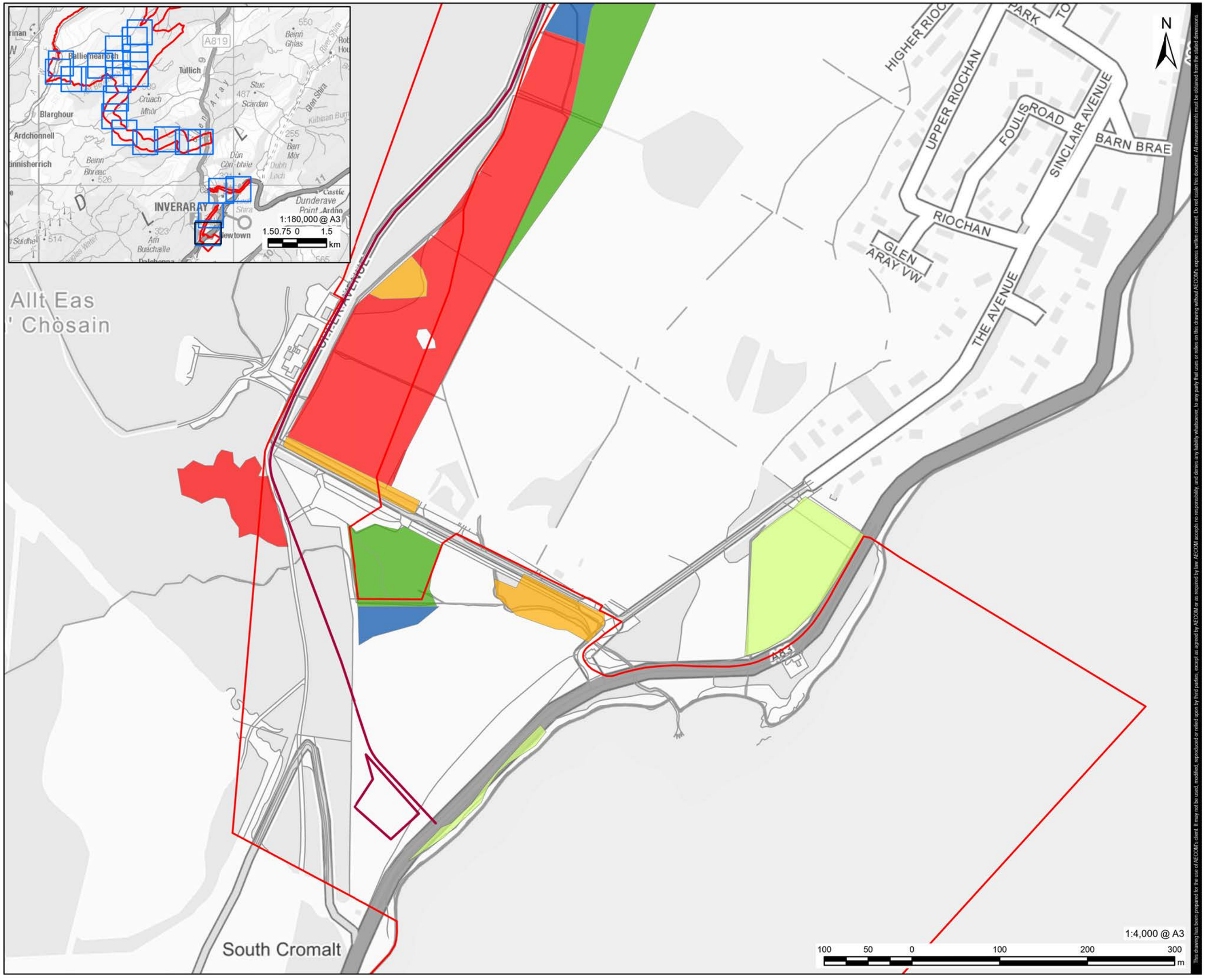
FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

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LEGEND

- Development Boundary
- Above Ground Infrastructure

Potential Ground Water Dependence

- High
- High (part only)
- Moderate to High
- Moderate
- Moderate (part only)

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FIGURE TITLE

Ground Water Dependent Terrestrial Ecosystems

FIGURE NUMBER

Figure 6.5 (Sheet 23 of 23)

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Upper Sonachan

Moorland Zone

Loch Awe

Blargour

Three Bridges

Inveraray

CT1

CT2

CT3

CT4

CT5

N

1:60,000 @ A3

2 1 0 2 4 6 km

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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Upper Control Works
- Mammal Survey Area (Maximum Extent)
- Camera Trap Locations

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FIGURE TITLE

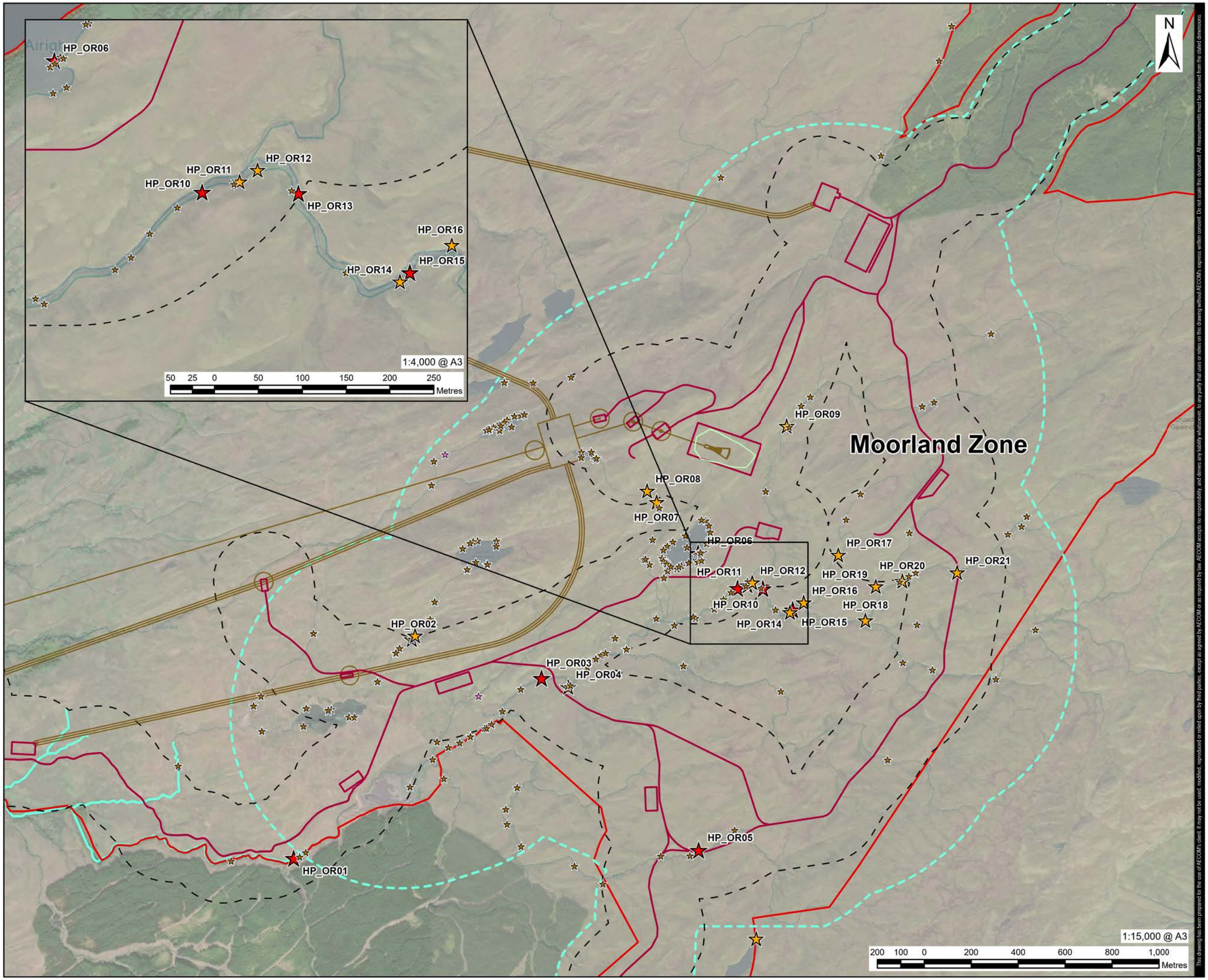
Mammal Survey Areas and Camera Trap Locations

FIGURE NUMBER

Figure 6.7

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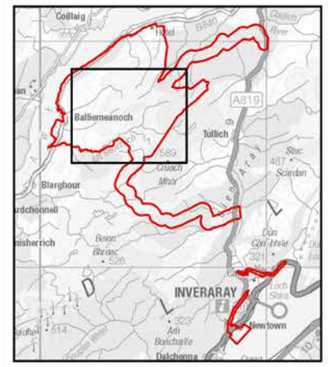
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Upper Control Works
- 200m Buffer on Above Ground Infrastructure
- Survey Area
- Surveyed in 2019 only

Otter Survey Results

- Holt
- Layup
- Spraint
- Feeding Remains



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PROJECT NUMBER

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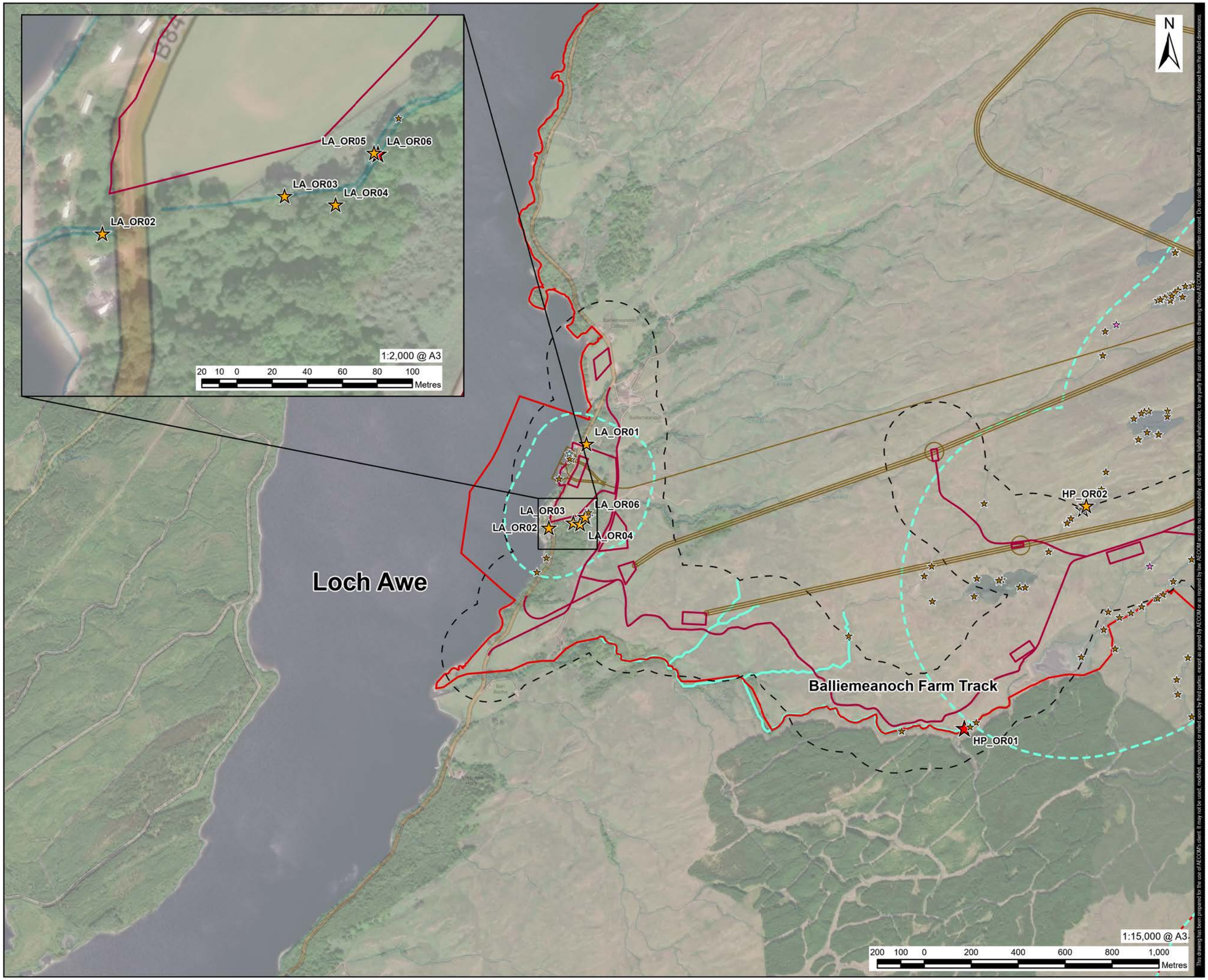
FIGURE TITLE

Otter Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.8 (Sheet 1 of 6)

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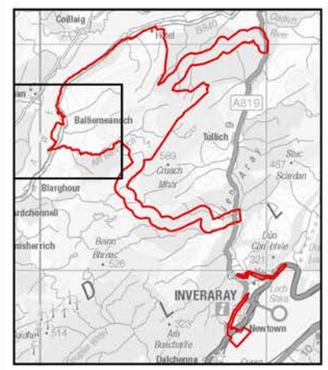
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- 200m Buffer on Above Ground Infrastructure
- Survey Area
- Surveyed in 2019 only

Otter Survey Results

- Holt
- Layup
- Spraint
- Anal jelly
- Feeding Remains



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Otter Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.8 (Sheet 2 of 6)

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Inveraray NE

Inveraray

Inveraray SW

Inv_OR01
Inv_OR02
Inv_OR03
Inv_OR04
Inv_OR05
Inv_OR06
Inv_OR07
Inv_OR08
Inv_OR09
Inv_OR10
Inv_OR11

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N

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200 100 0 200 400 600 800 1,000 Metres

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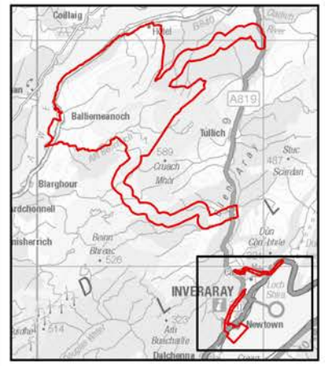
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- 200m Buffer on Above Ground Infrastructure
- Survey Area

Otter Survey Results

- Holt
- Layup
- Spraint



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PROJECT NUMBER

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FIGURE TITLE

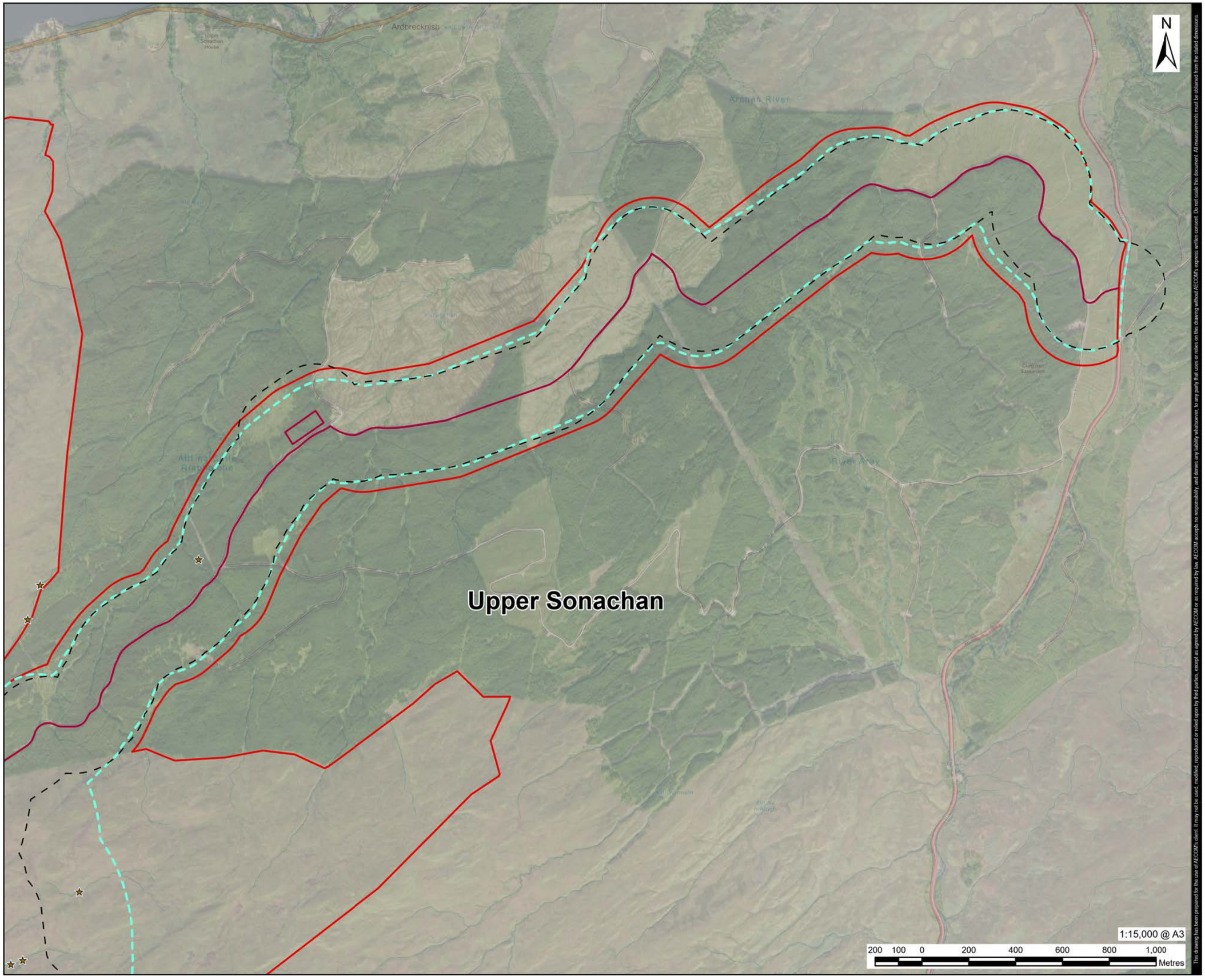
Otter Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.8 (Sheet 3 of 6)

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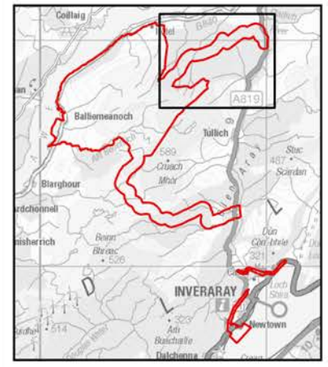
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- 200m Buffer on Above Ground Infrastructure
- Survey Area

Otter Survey Results

- ★ Spraint



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

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FIGURE TITLE

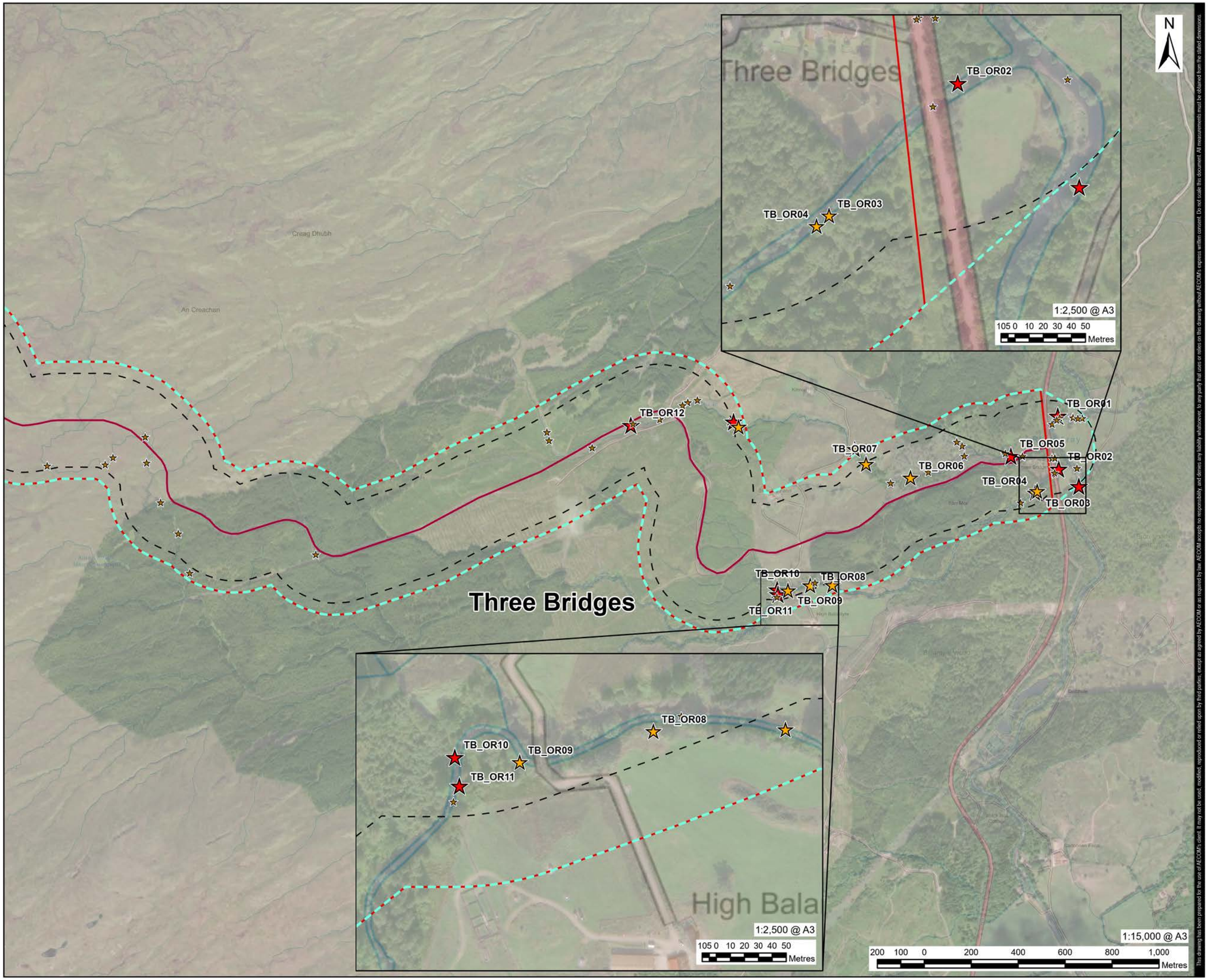
Otter Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.8 (Sheet 4 of 6)

Revision: 0 Drawn: BM Checked: CC Approved: RH Date: 2025-05-14

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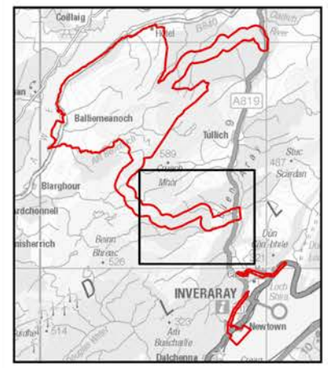
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- 200m Buffer on Above Ground Infrastructure
- Survey Area

Otter Survey Results

- Holt
- Layup
- Spraint



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PROJECT NUMBER

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FIGURE TITLE

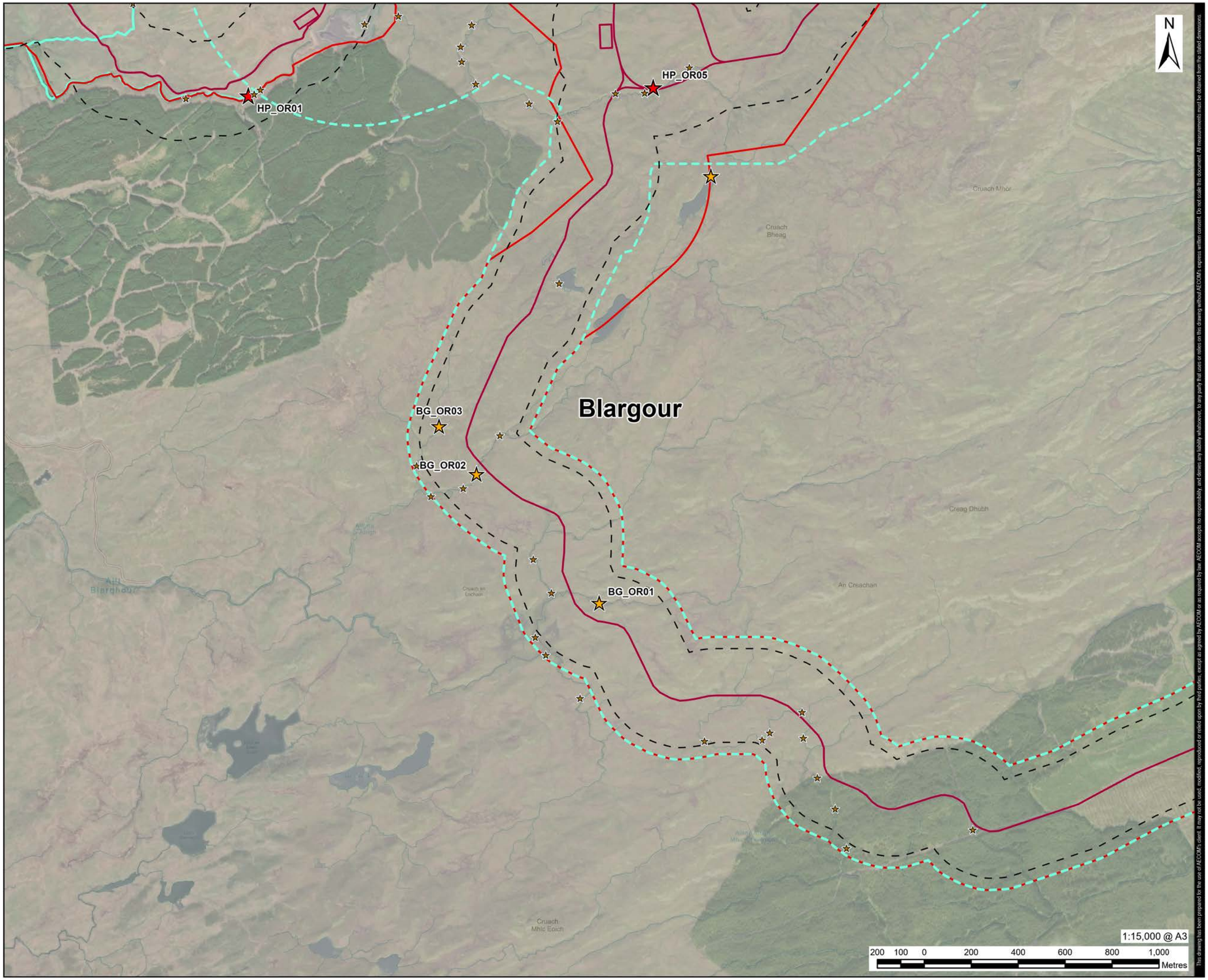
Otter Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.8 (Sheet 5 of 6)

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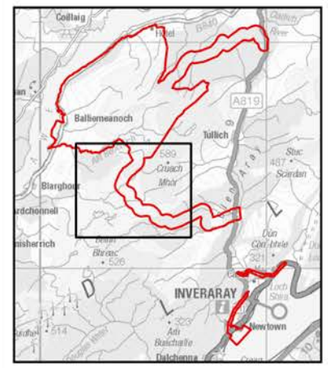
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- 200m Buffer on Above Ground Infrastructure
- Survey Area
- Surveyed in 2019 only

Otter Survey Results

- Holt
- Layup
- Spraint



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PROJECT NUMBER

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FIGURE TITLE

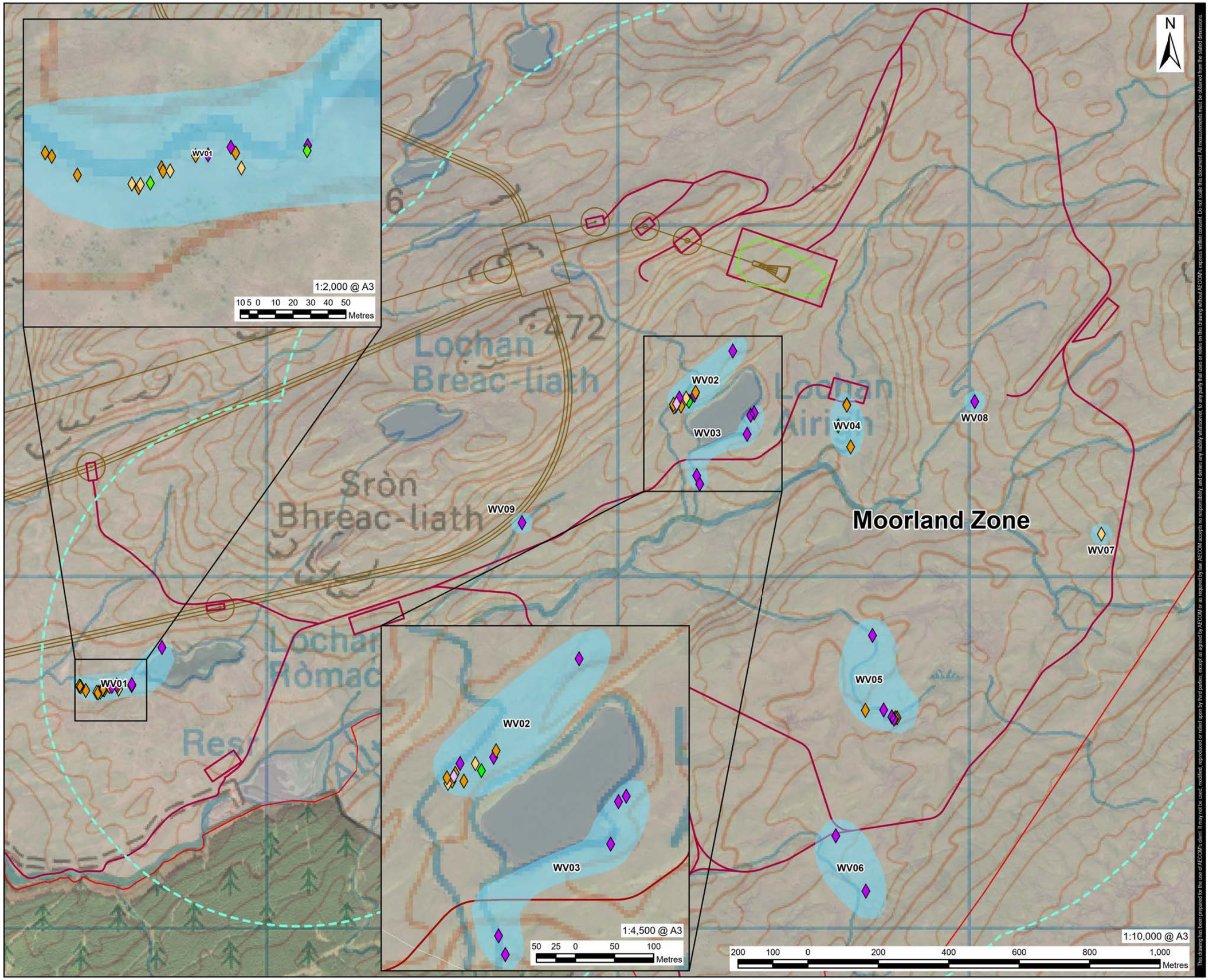
Otter Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.8 (Sheet 6 of 6)

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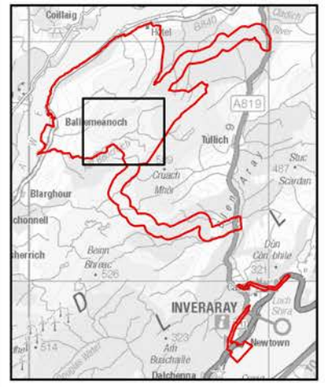
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LEGEND

- Development Boundary
- Above ground infrastructure
- Below ground infrastructure
- Upper Control Works
- Survey area

Water vole survey results

- Nest
- Burrow
- Latrine
- Dropping
- Feeding remains
- Run
- Areas of water vole evidence



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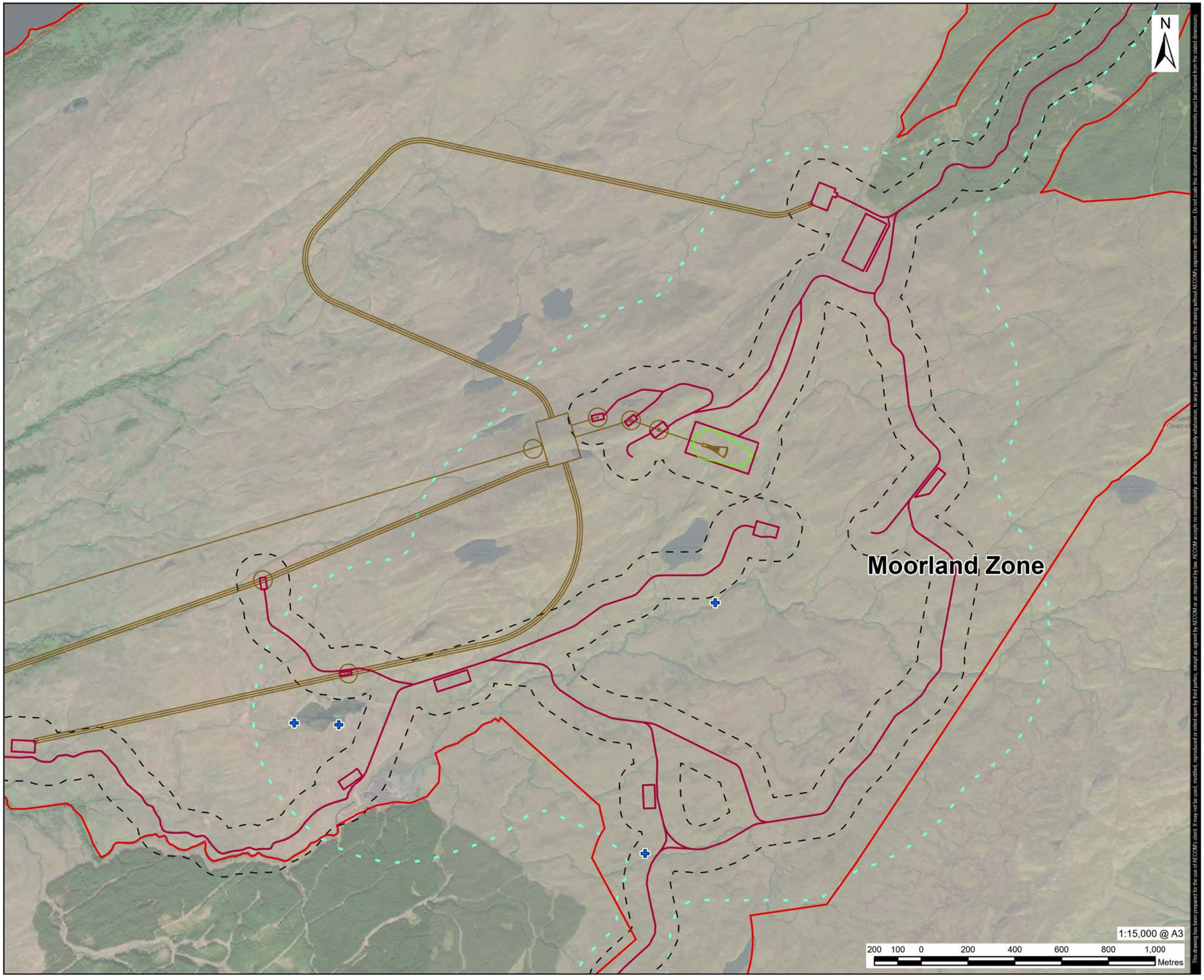
Water Vole Survey Results & Incidental Records

FIGURE NUMBER

Figure 6.9

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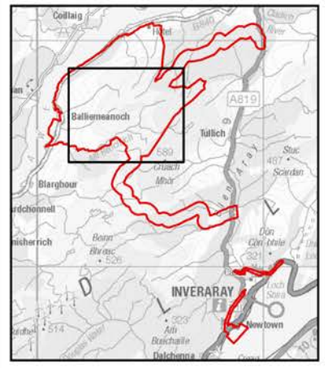
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LEGEND

- Development Boundary
- Above ground infrastructure
- Below ground infrastructure
- Upper Control Works
- 100 m Buffer on Above Ground Infrastructure
- Survey Area

Pine marten evidence

- Droppings



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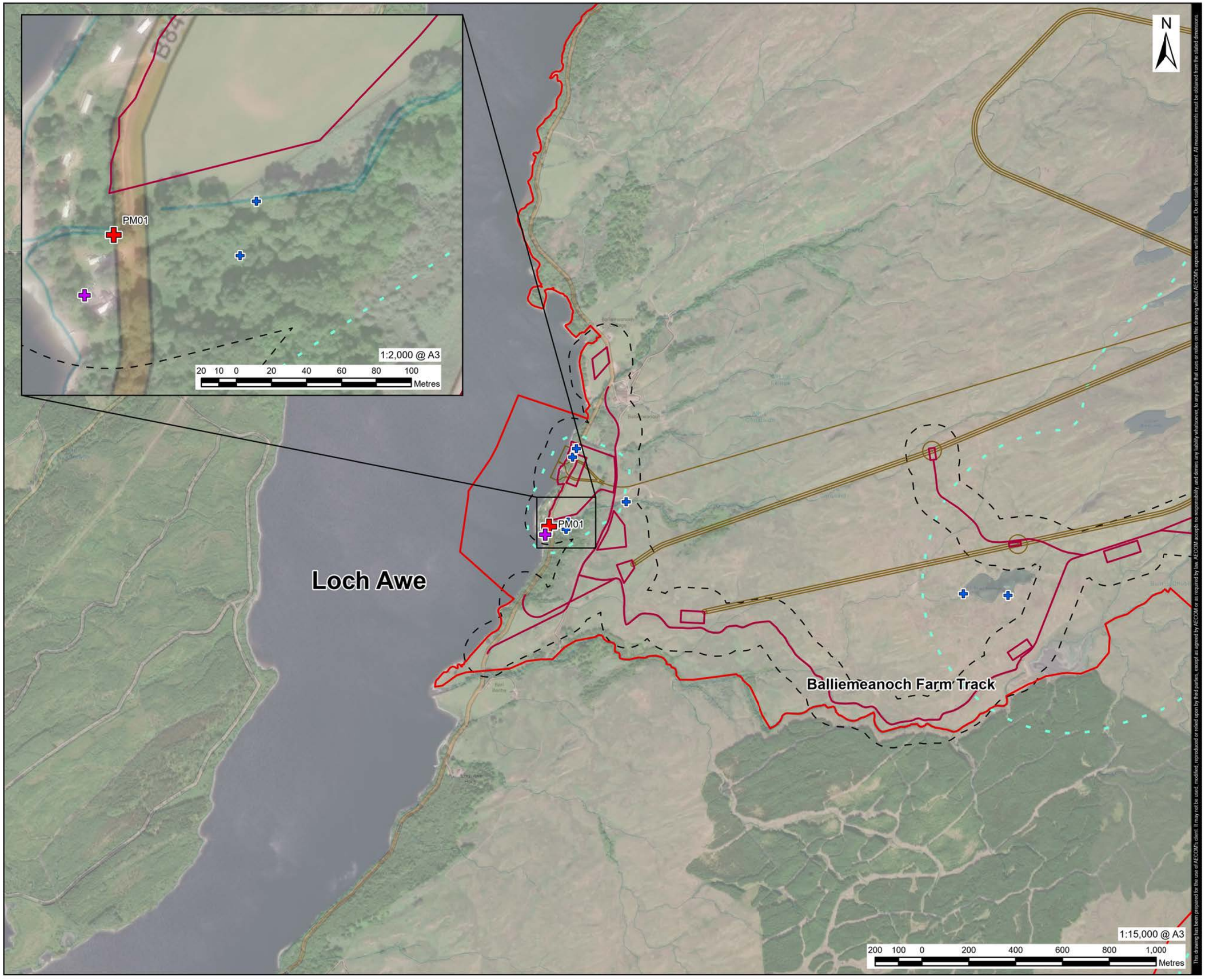
FIGURE TITLE

Badger, Pine Martin and Red Squirrel Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.10 (Sheet 1 of 6)

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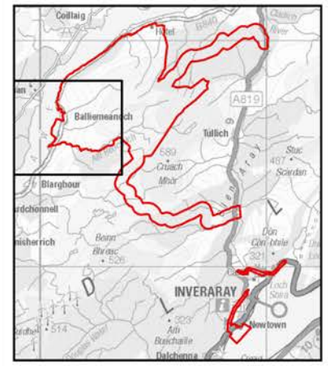
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LEGEND

- Development Boundary
- Above ground infrastructure
- Below ground infrastructure
- 100 m Buffer on Above Ground Infrastructure
- Survey Area

Pine marten evidence

- Den
- Pine Marten Live
- Droppings



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FIGURE TITLE

Badger, Pine Martin and Red Squirrel Survey Results and Incidental Records

FIGURE NUMBER

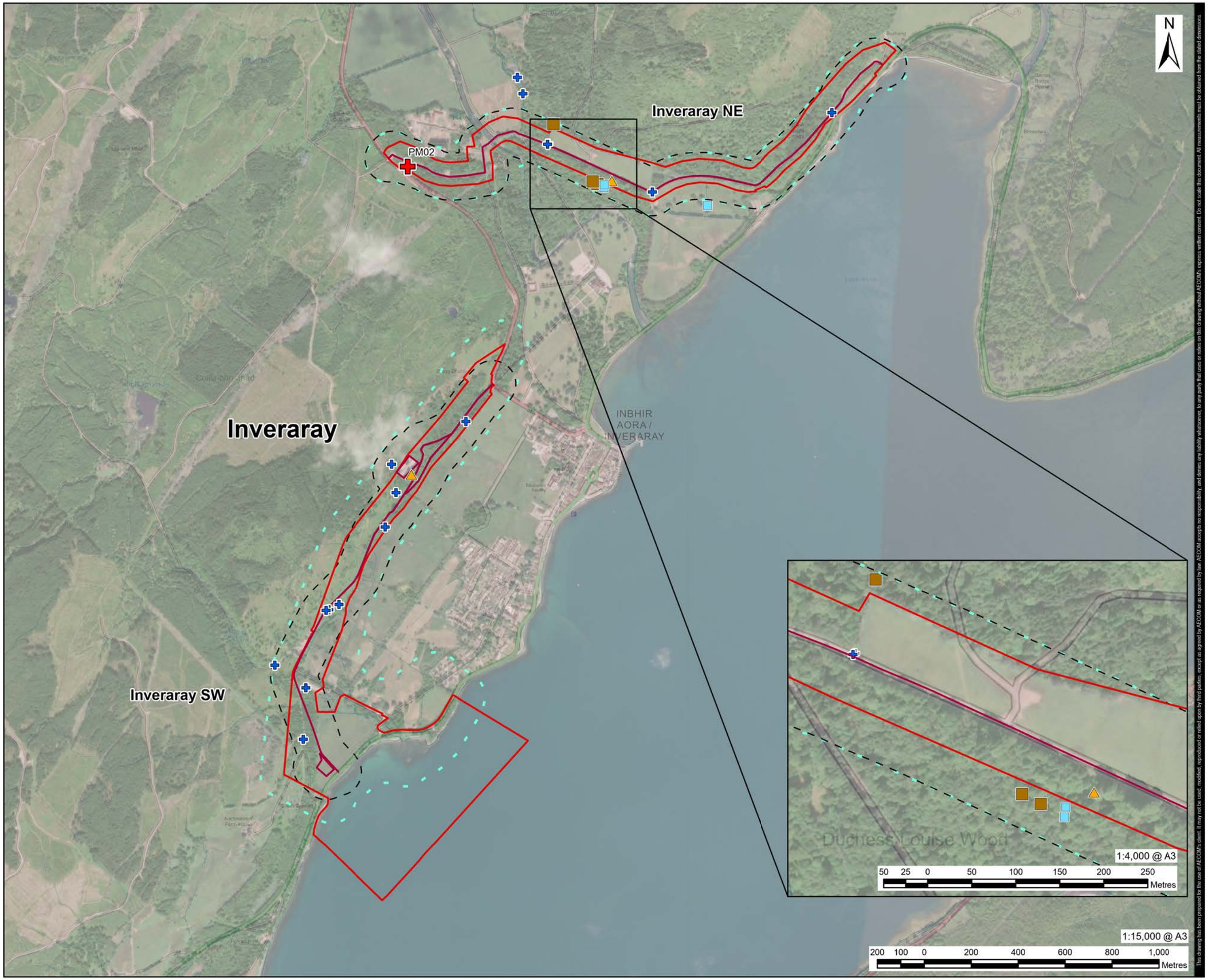
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LEGEND

- Development Boundary
- Above ground infrastructure
- Below ground infrastructure
- 100 m Buffer on Above Ground Infrastructure
- Survey Area

Badger Evidence

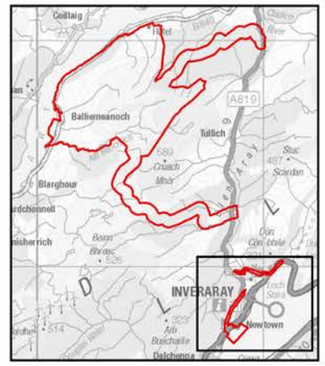
- Latrine
- Snuffle Hole

Pine marten evidence

- Den
- Droppings

Red Squirrel

- Red Squirrel Sighting



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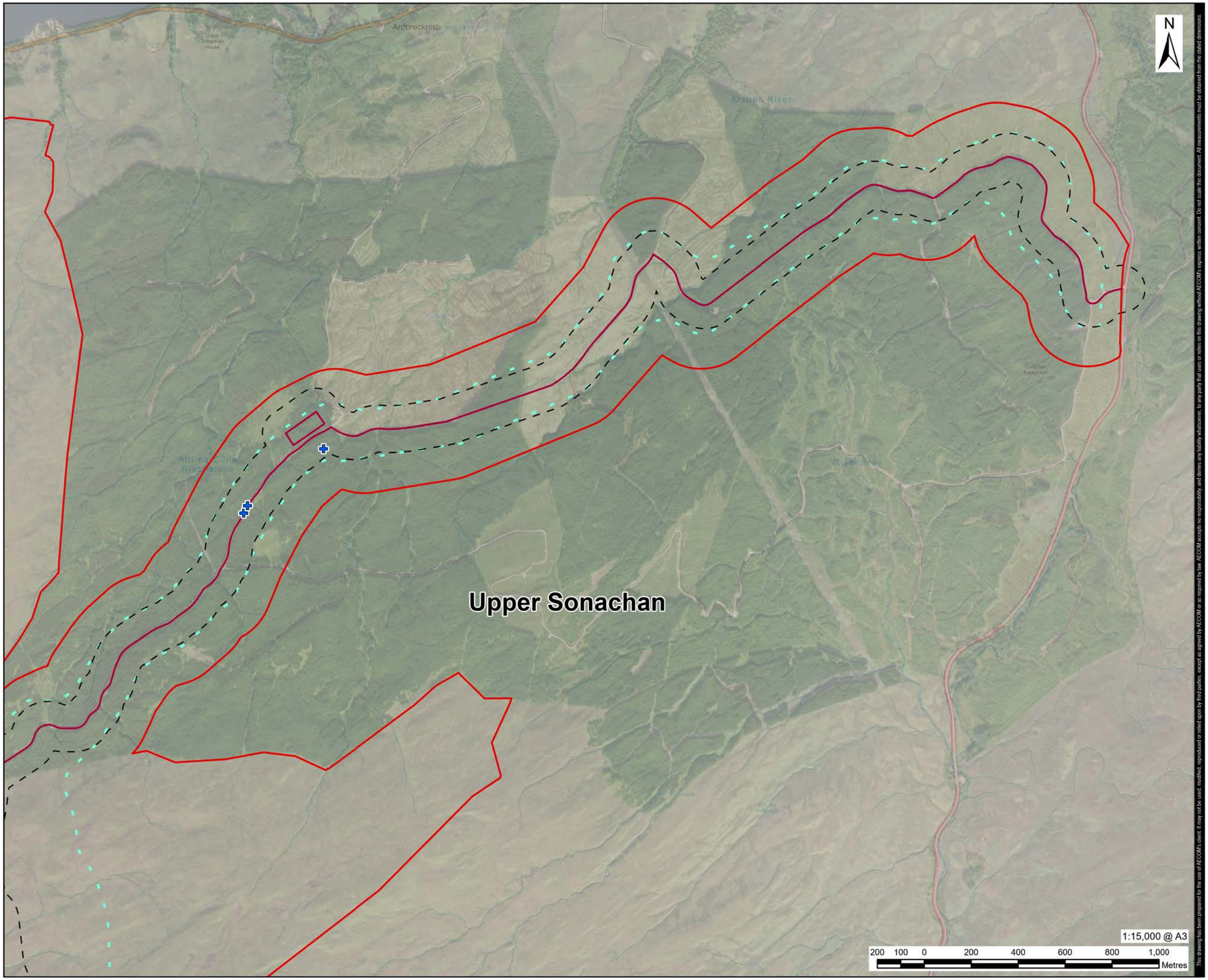
Badger, Pine Martin and Red Squirrel Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.10 (Sheet 3 of 6)

Revision: 1 Drawn: BM Checked: CC Approved: RH Date: 2025-05-14

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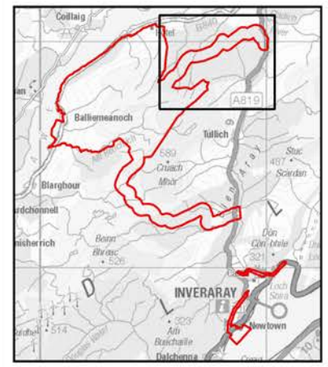
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LEGEND

- Development Boundary
- Above ground infrastructure
- Below ground infrastructure
- 100 m Buffer on Above Ground Infrastructure
- Survey Area

Pine marten evidence

- Droppings



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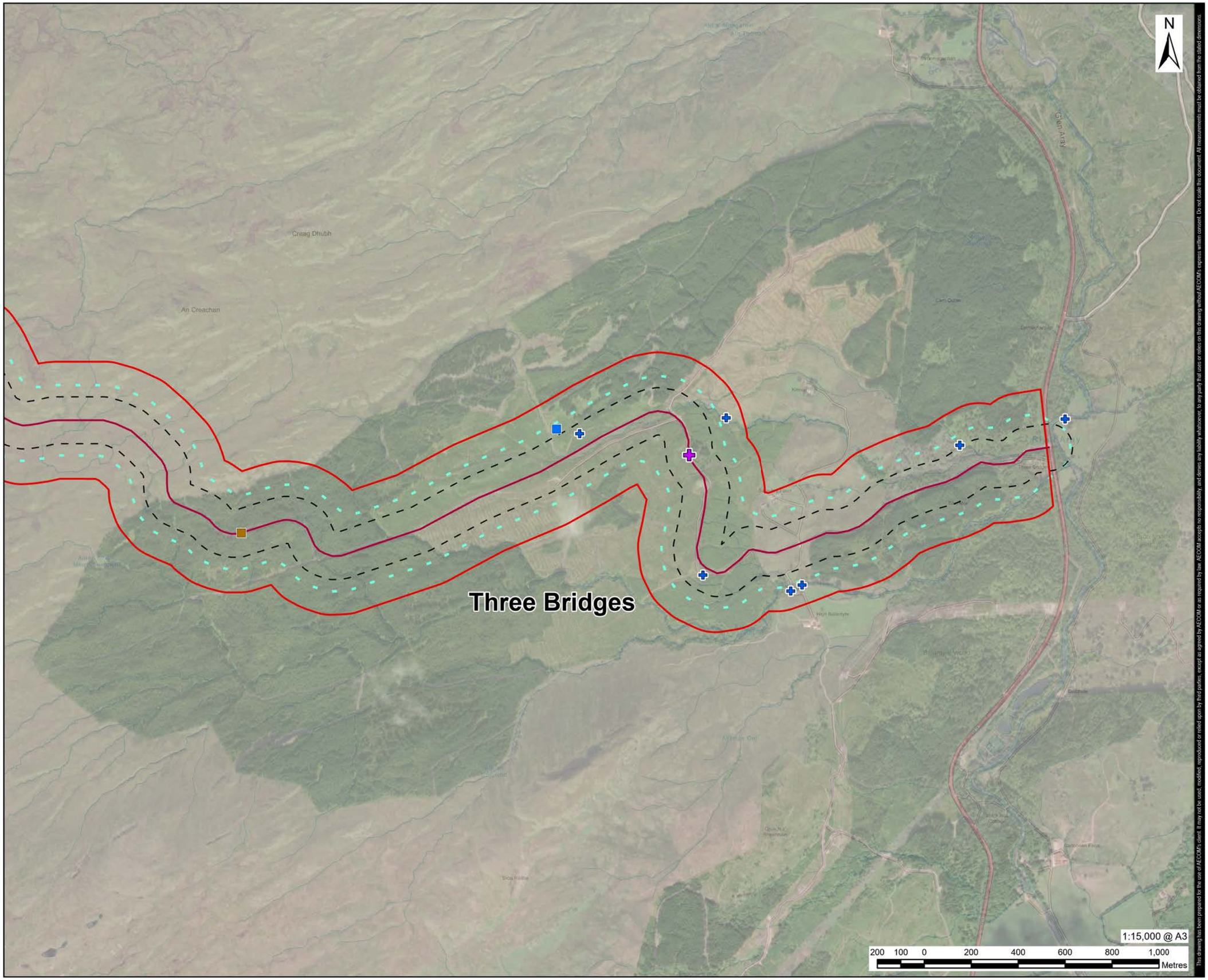
Badger, Pine Martin and Red Squirrel Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.10 (Sheet 4 of 6)

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LEGEND

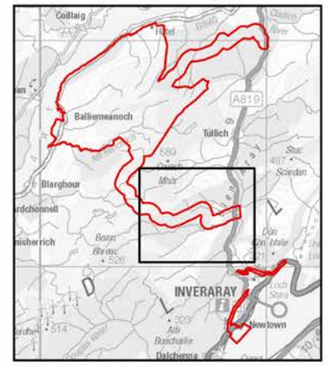
- Development Boundary
- Above ground infrastructure
- Below ground infrastructure
- 100 m Buffer on Above Ground Infrastructure
- Survey Area

Badger Evidence

- Single Dung
- Foraged Bee Nest

Pine marten evidence

- Pine Marten Live
- Droppings



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

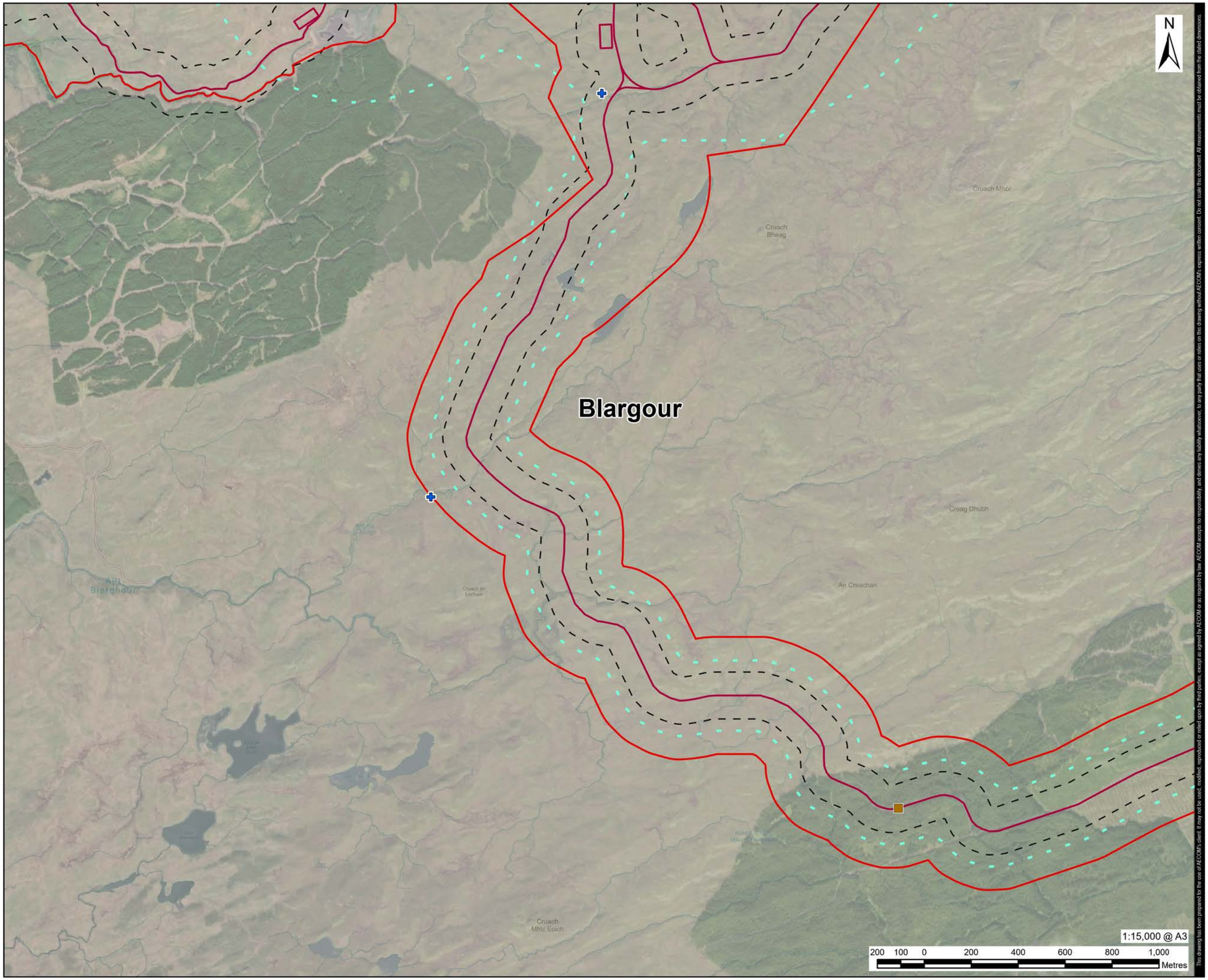
Badger, Pine Martin and Red Squirrel Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.10 (Sheet 5 of 6)

Revision: 1 Drawn: BM Checked: CC Approved: RH Date: 2025-05-14

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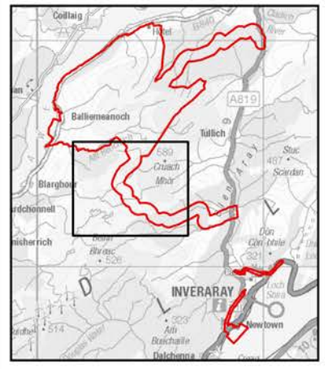
LEGEND

- Development Boundary
- Above ground infrastructure
- Below ground infrastructure
- 100 m Buffer on Above Ground Infrastructure
- Survey Area

Badger Evidence
- Single Dung

Pine marten evidence
- Droppings

Red Squirrel
- Red Squirrel Sighting



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ISSUE PURPOSE

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FIGURE TITLE

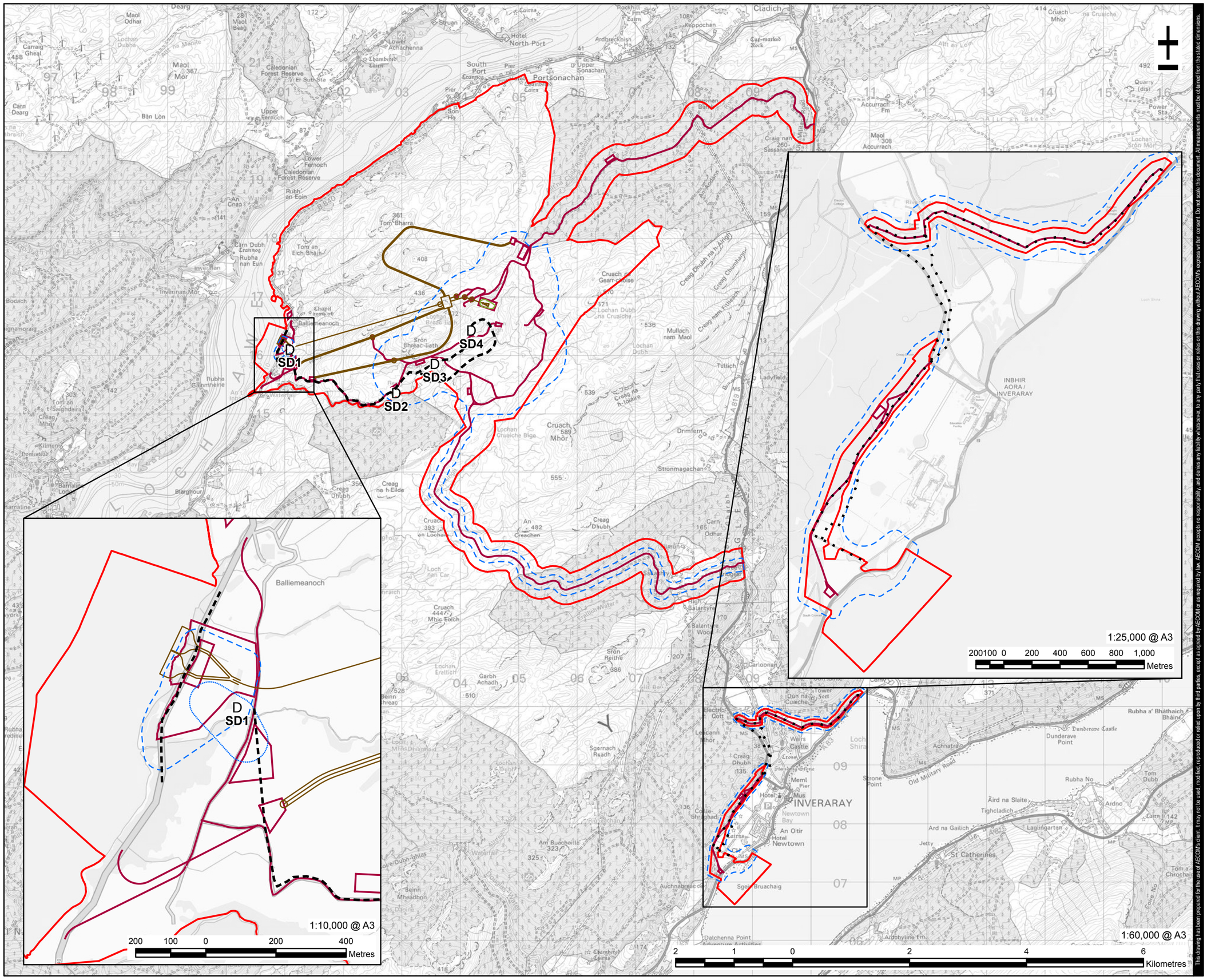
Badger, Pine Martin and Red Squirrel Survey Results and Incidental Records

FIGURE NUMBER

Figure 6.10 (Sheet 6 of 6)

Revision: 1 Drawn: AM Checked: BM Approved: RH Date: 2025-05-13

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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Upper Control Works
- Survey areas (2021, 2023)
- Survey area (2019 - Allt a' Chrosaid only)
- Transect 1 route (2019)
- Transect 2 route (2021)
- D Static detector location

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PROJECT NUMBER

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FIGURE TITLE

Bat Survey Areas, Transect Routes and Static Detector Locations

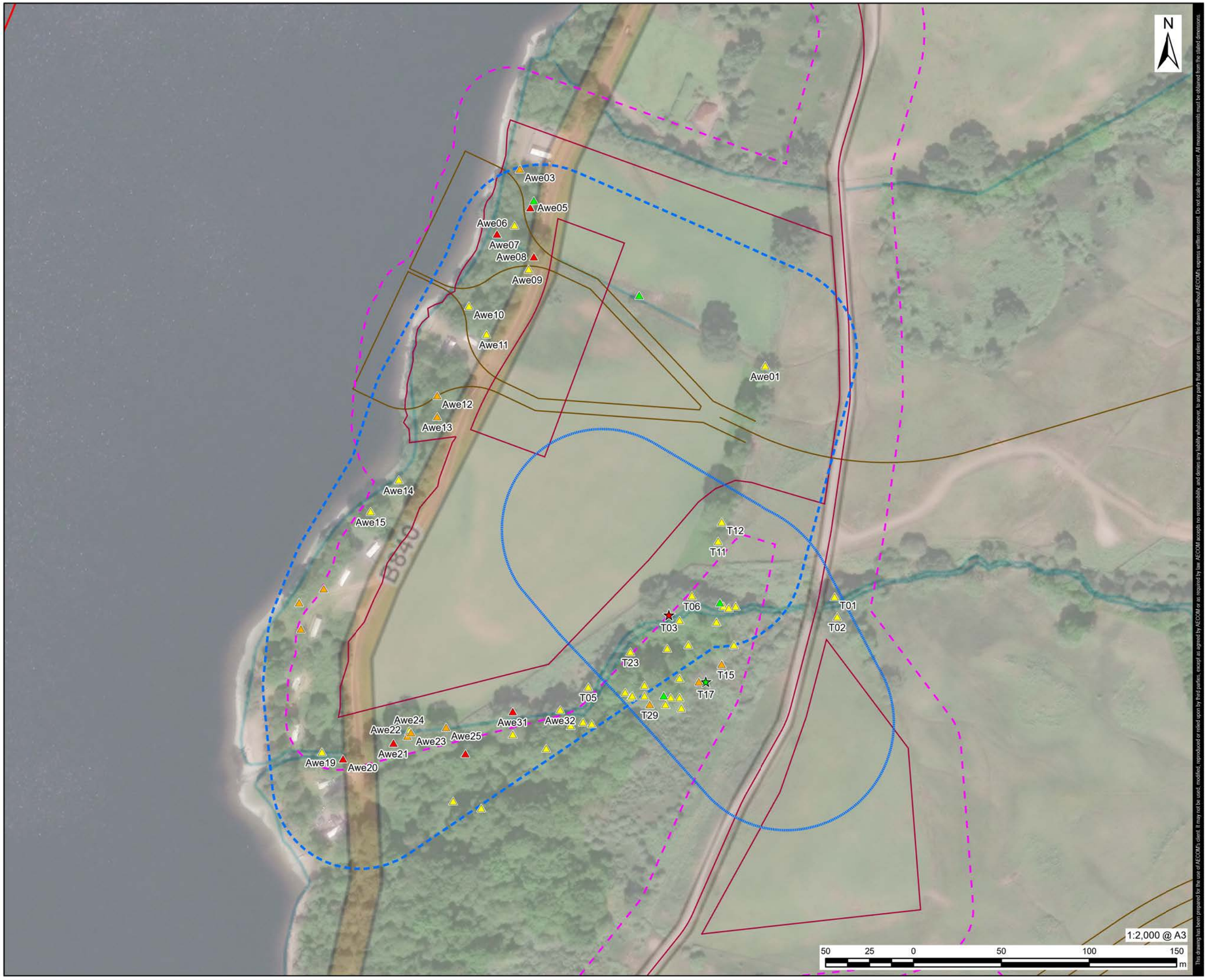
FIGURE NUMBER

Figure 6.11

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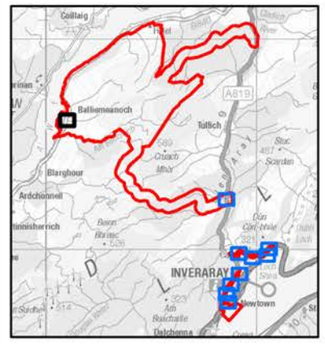
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Survey area (2019 - Allt a' Chrosaid only)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- High BRS (confirmed roost)
- Low BRS (confirmed roost)
- High BRS
- Moderate BRS
- Low BRS



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

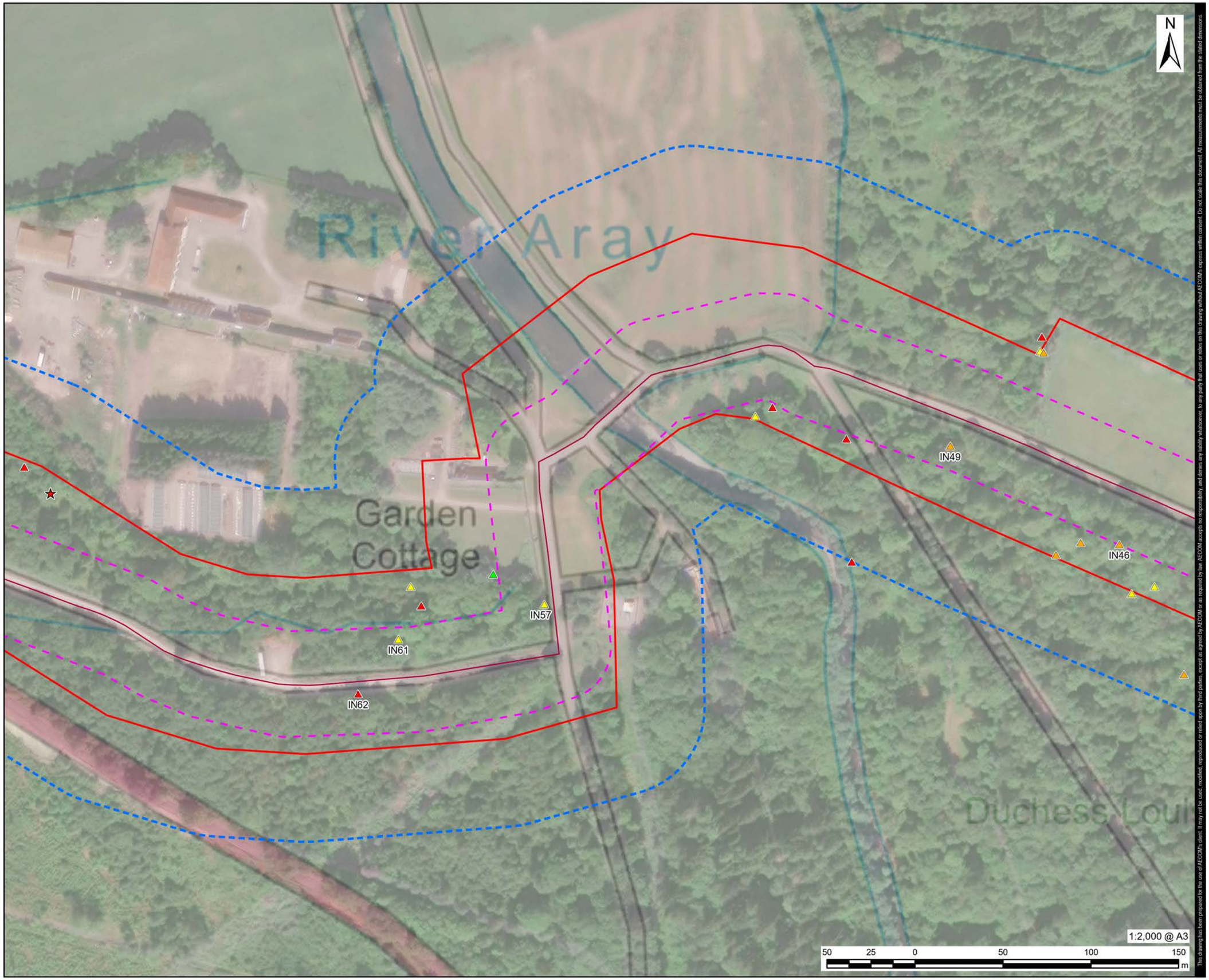
Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 1 of 10)

Revision: 1 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14

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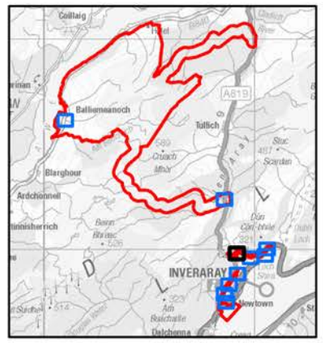
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- High BRS
- Moderate BRS
- Low BRS



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

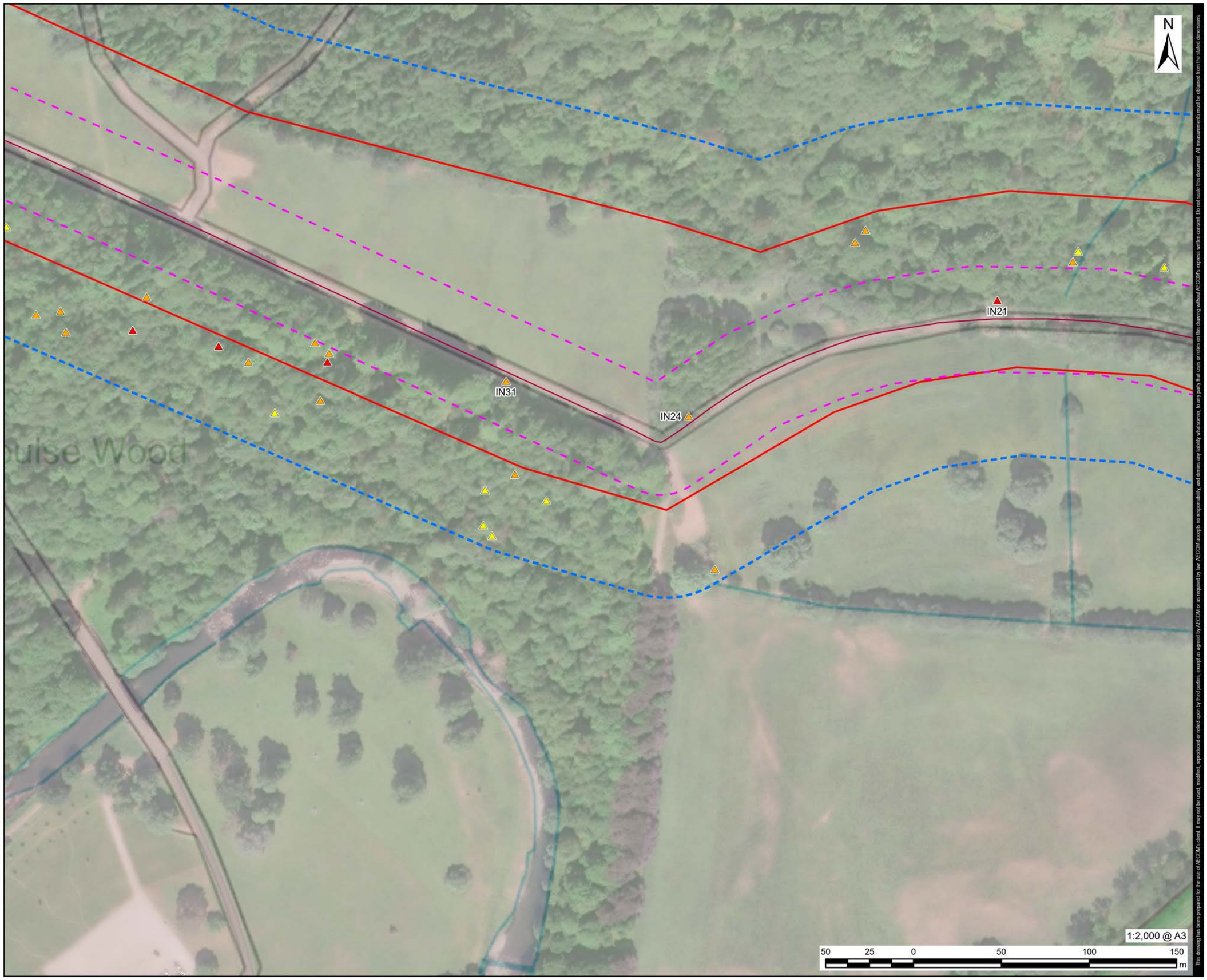
Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 2 of 10)

Revision: 1 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14

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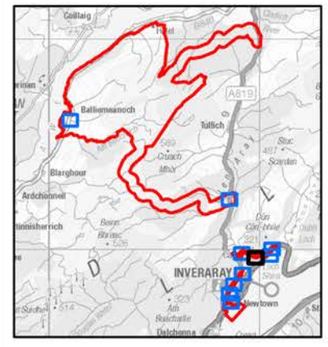
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- High BRS
- Moderate BRS



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 3 of 10)

Revision: 1 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14

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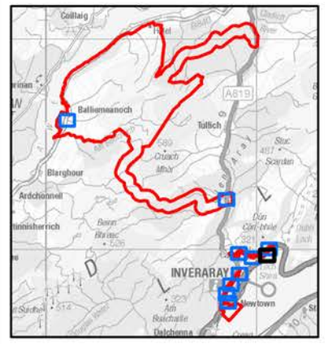
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- High BRS
- Moderate BRS
- Low BRS



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

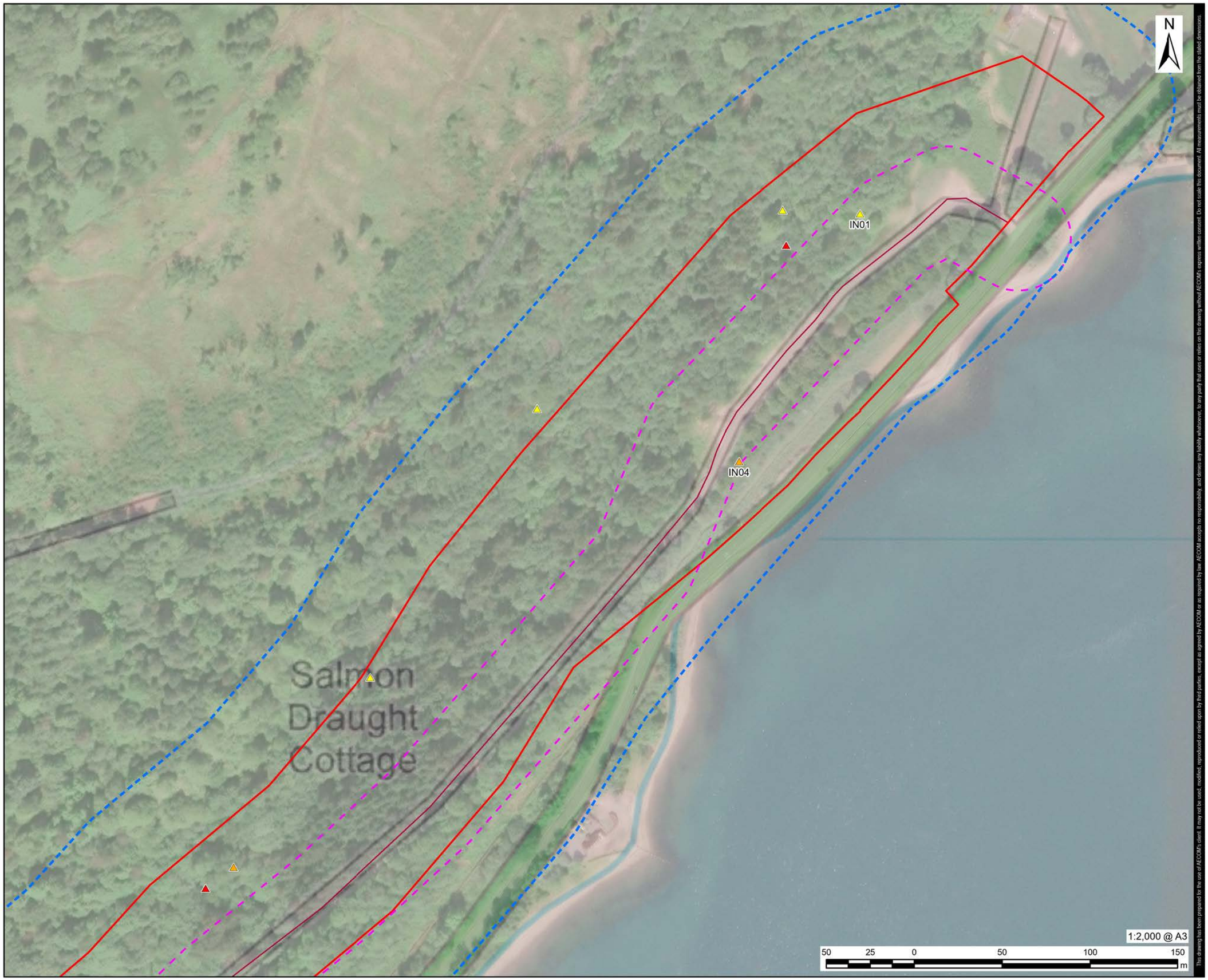
Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 4 of 10)

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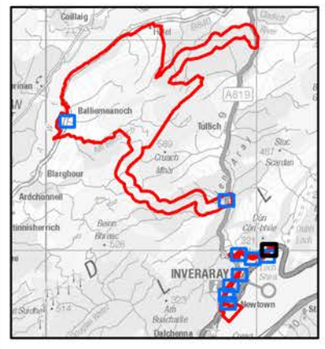
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- Moderate BRS
- Low BRS



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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 5 of 10)

Revision: 1 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14

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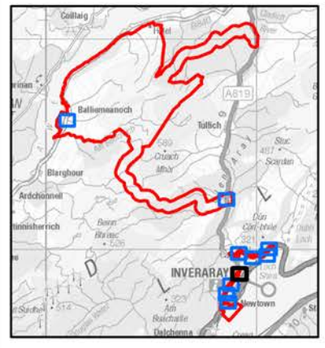
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- High BRS
- Low BRS



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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

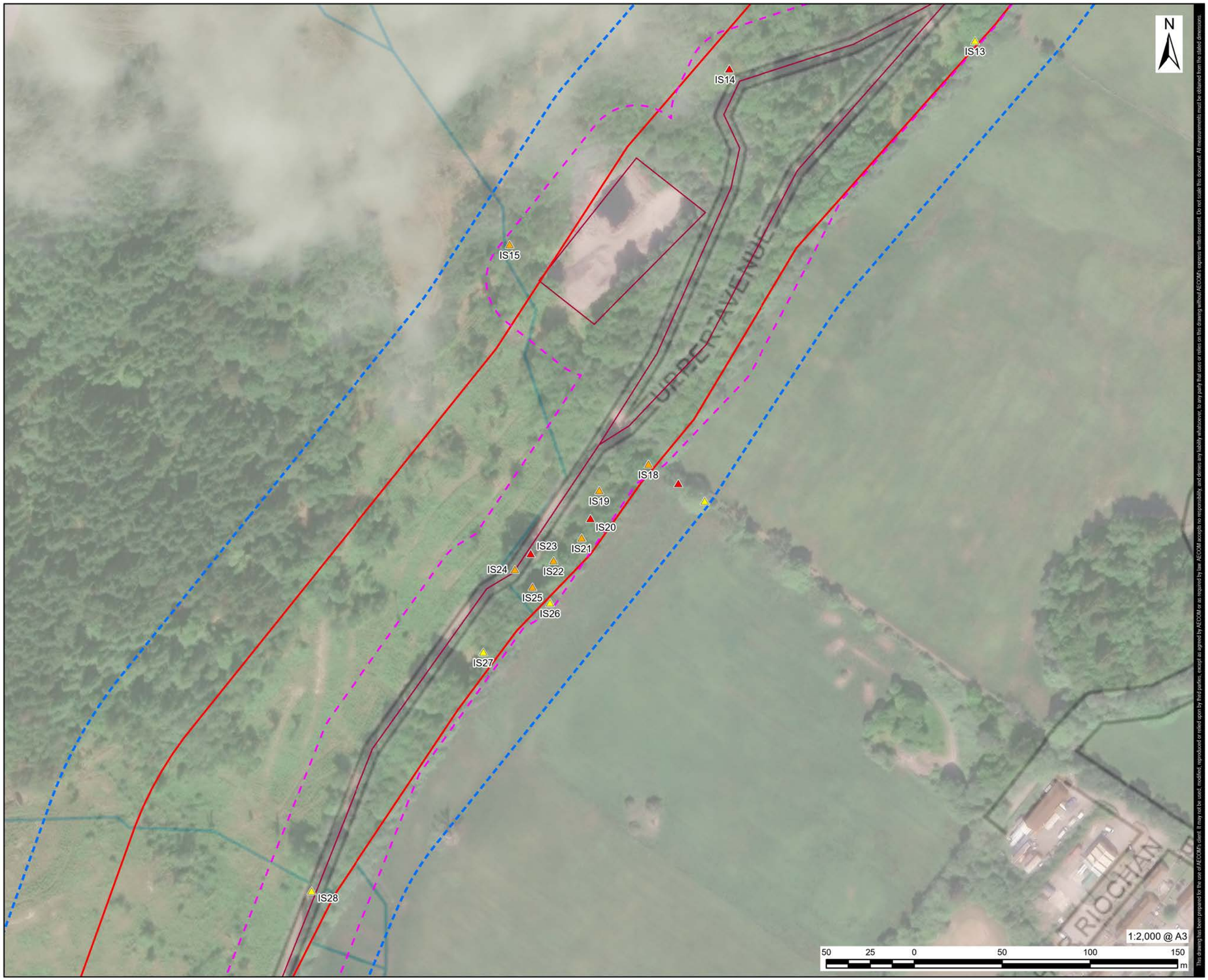
Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 6 of 10)

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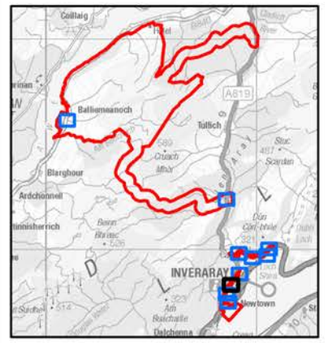
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- High BRS
- Moderate BRS
- Low BRS



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PROJECT NUMBER

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FIGURE TITLE

Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 7 of 10)

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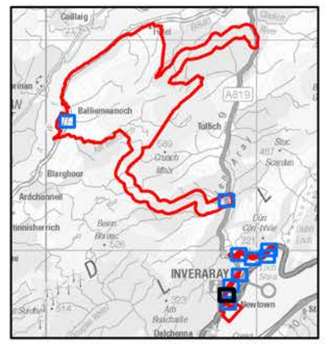
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- Moderate BRS
- Low BRS



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PROJECT NUMBER

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FIGURE TITLE

Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 8 of 10)

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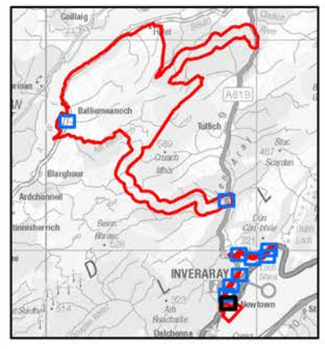
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)



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PROJECT NUMBER

60570241

FIGURE TITLE

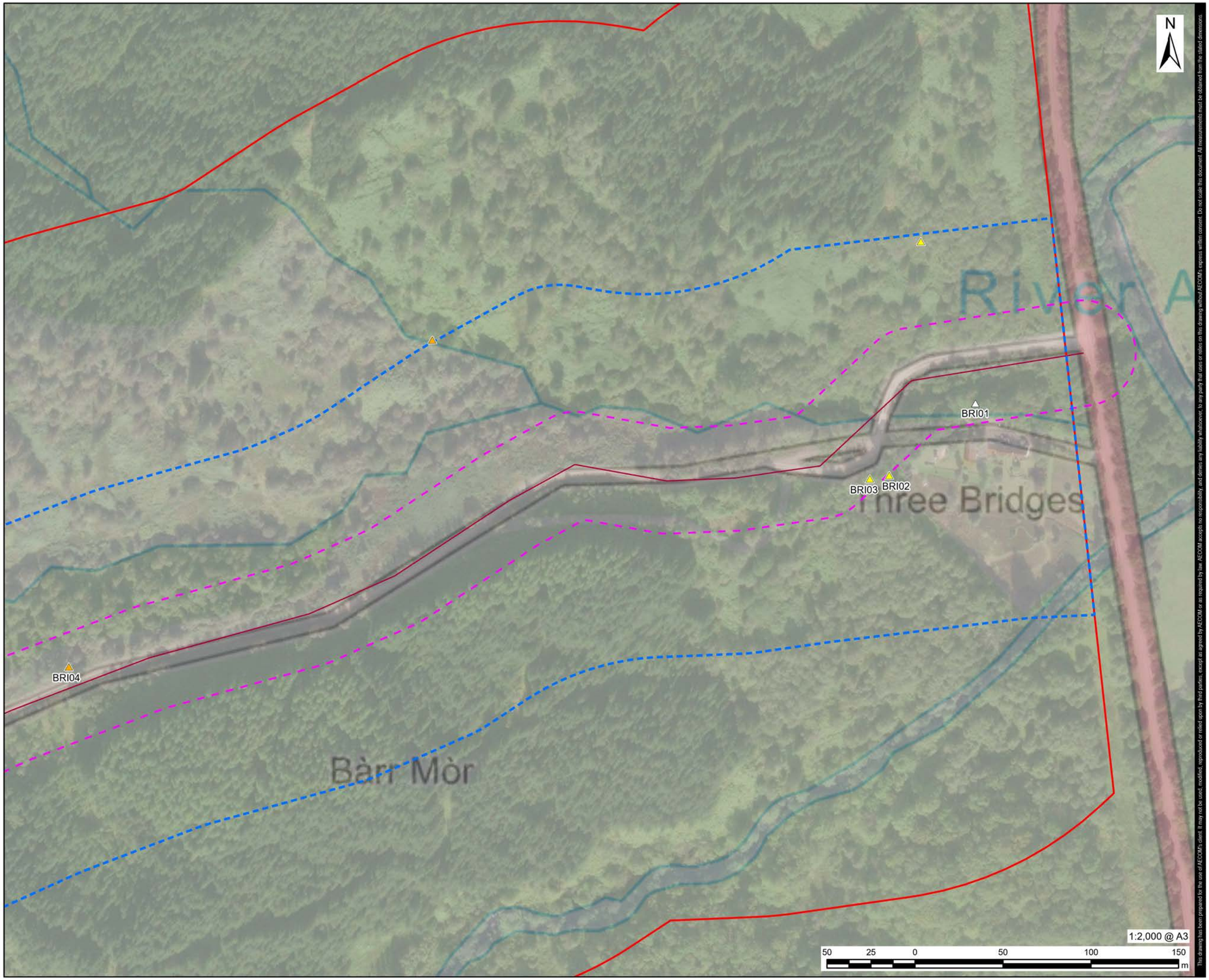
Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 9 of 10)

Revision: 1 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14

Filename: \\eu.aecomnet.com\UK\UKED4\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Balliemeanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_6.12_250122_python.aprx



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CLIENT

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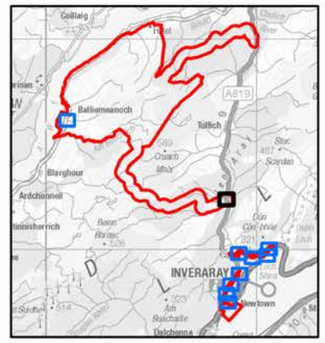
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www.aecom.com

LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Survey areas (2021, 2023)
- Zone of construction and of possible construction disturbance (30 m)

Bat roost suitability (BRS)

- Moderate BRS
- Low BRS
- No access



NOTES

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Note that BRS trees and structures are only labelled where they are within the 30 m zone of construction / construction disturbance, or further away where they were 1. subject to emergence / re-entry survey; or, 2. contain a confirmed bat roost. All trees shown are detailed in the Appendix text, including those shown as unlabelled.

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

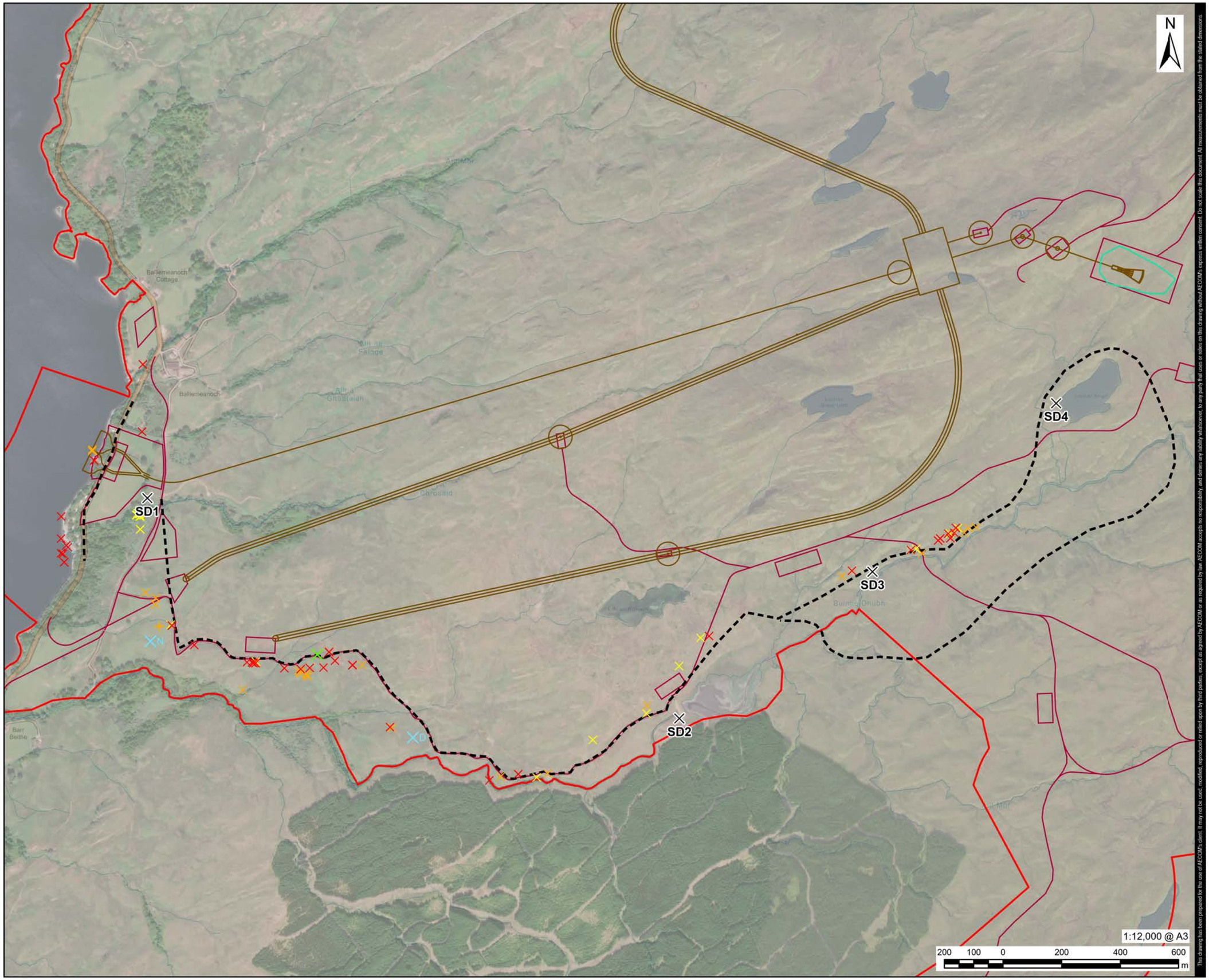
Bat Roost Suitability Assessment Results

FIGURE NUMBER

Figure 6.12 (Sheet 10 of 10)

Revision: 1 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14

Filename: \\eu.aecomnet.com\UKUKED14\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Balliemeanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_6.13_260122_python.aprx



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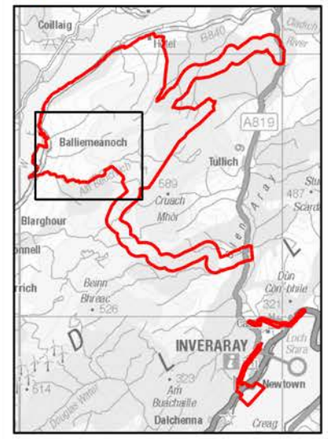
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Upper Control Works
- Transect 1 (2019)
- Static detector location

Species

- Brown long-eared bat
- *Myotis sp.*
- *Myotis sp.* (likely Daubenton's bat)
- *Myotis sp.* (likely Natterer's bat)
- *Pipistrelle sp.*
- Common pipistrelle
- Soprano pipistrelle
- *Pipistrelle sp.* social call



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PROJECT NUMBER

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FIGURE TITLE

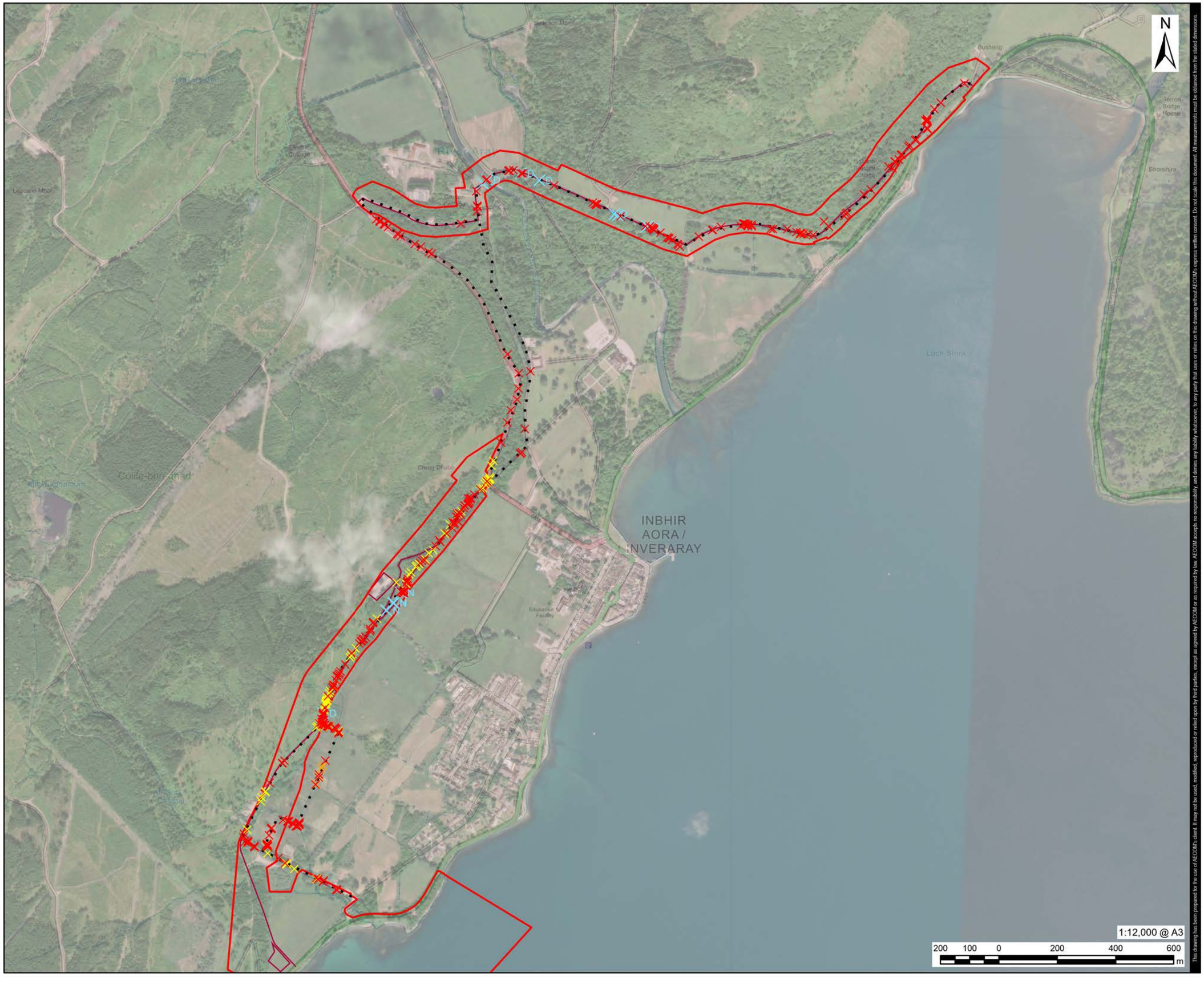
Bat Transect Survey Results

FIGURE NUMBER

Figure 6.13 (Sheet 1 of 2)

Revision: 1 Drawn: AM Checked: BM Approved: RH Date: 2025-05-14

Filename: \\eu.aecomnet.com\UKUKED\4\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Ballemeanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_6.13_260122_python.aprx



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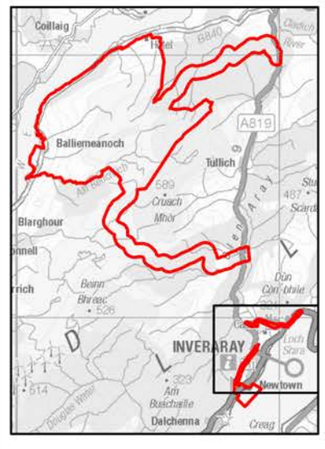
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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Below Ground Infrastructure
- Transect 2 (2021)

Species

- *Myotis sp.*
- D *Myotis sp.* (likely Daubenton's bat)
- N *Myotis sp.* (likely Natterer's bat)
- *Pipistrelle sp.*
- Common pipistrelle
- Soprano pipistrelle
- Upper Control Works



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PROJECT NUMBER

60570241

FIGURE TITLE

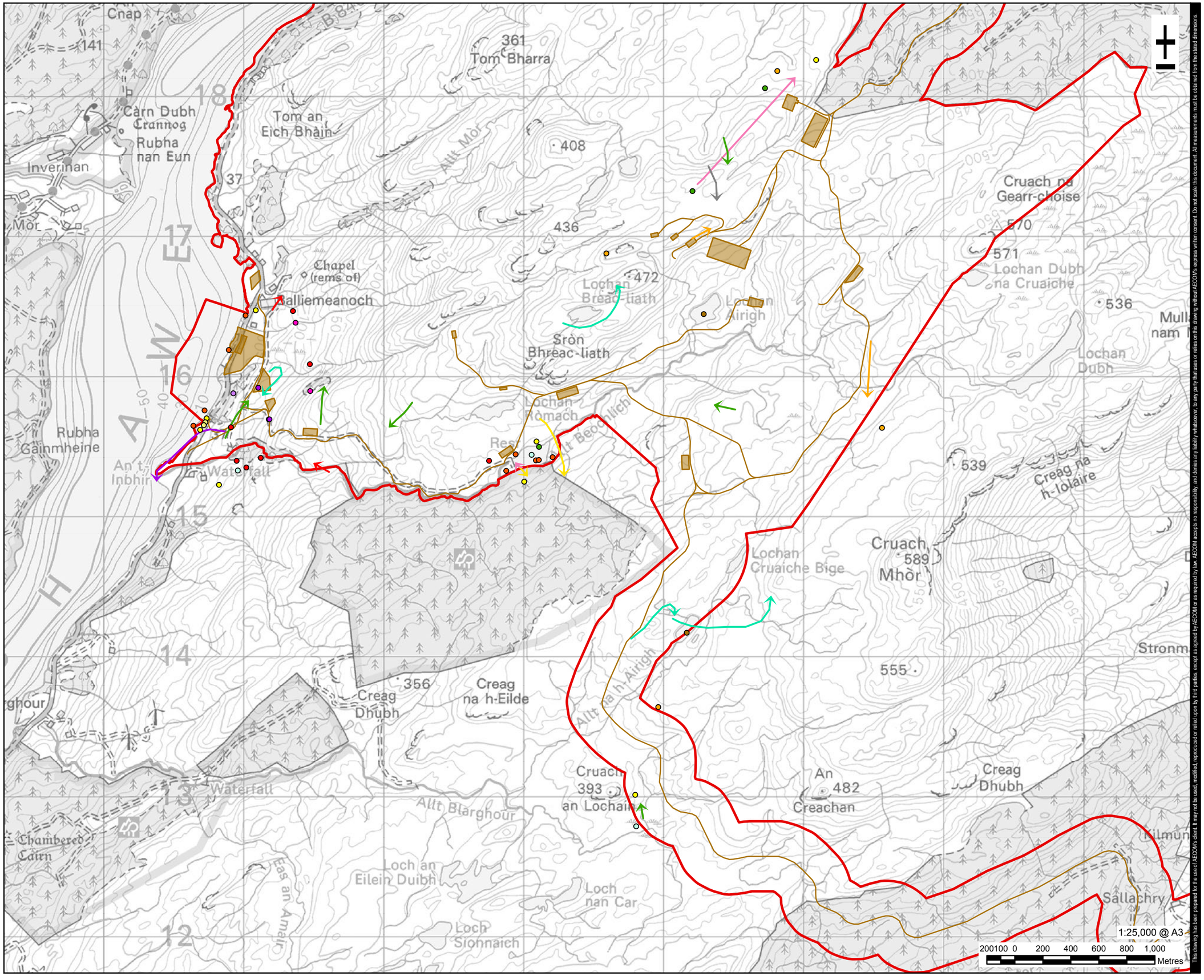
Bat Transect Survey Results

FIGURE NUMBER

Figure 6.13 (Sheet 2 of 2)

Revision: 1 Drawn: MH Checked: BM Approved: TM Date: 2025-05-14

Filename: \\eu.aecomnet.com\UKUKED\4\Jobs\PR.291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Ballemeanoch\02_Maps\00_EIA_Figures_Jan2024\Appendix_9.1_6.2_240220.aprx



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LEGEND

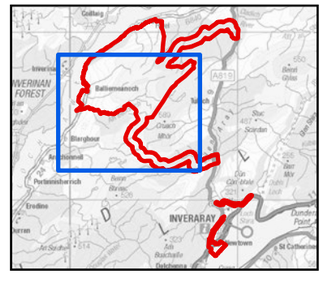
- Development Boundary
- Above Ground Infrastructure

Species

- Common Sandpiper
- Cuckoo
- Curlew
- Fieldfare
- Goldeneye
- Golden Plover
- Hooded Crow
- House Martin
- Lesser Redpoll
- Mistle Thrush
- Oyster Catcher

Recorded Flightlines

- Common Crossbill
- Curlew
- Golden Plover
- Hooded Crow
- Herring Gull
- Lesser Redpoll
- Mistle Thrush
- Oyster Catcher



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PROJECT NUMBER

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FIGURE TITLE

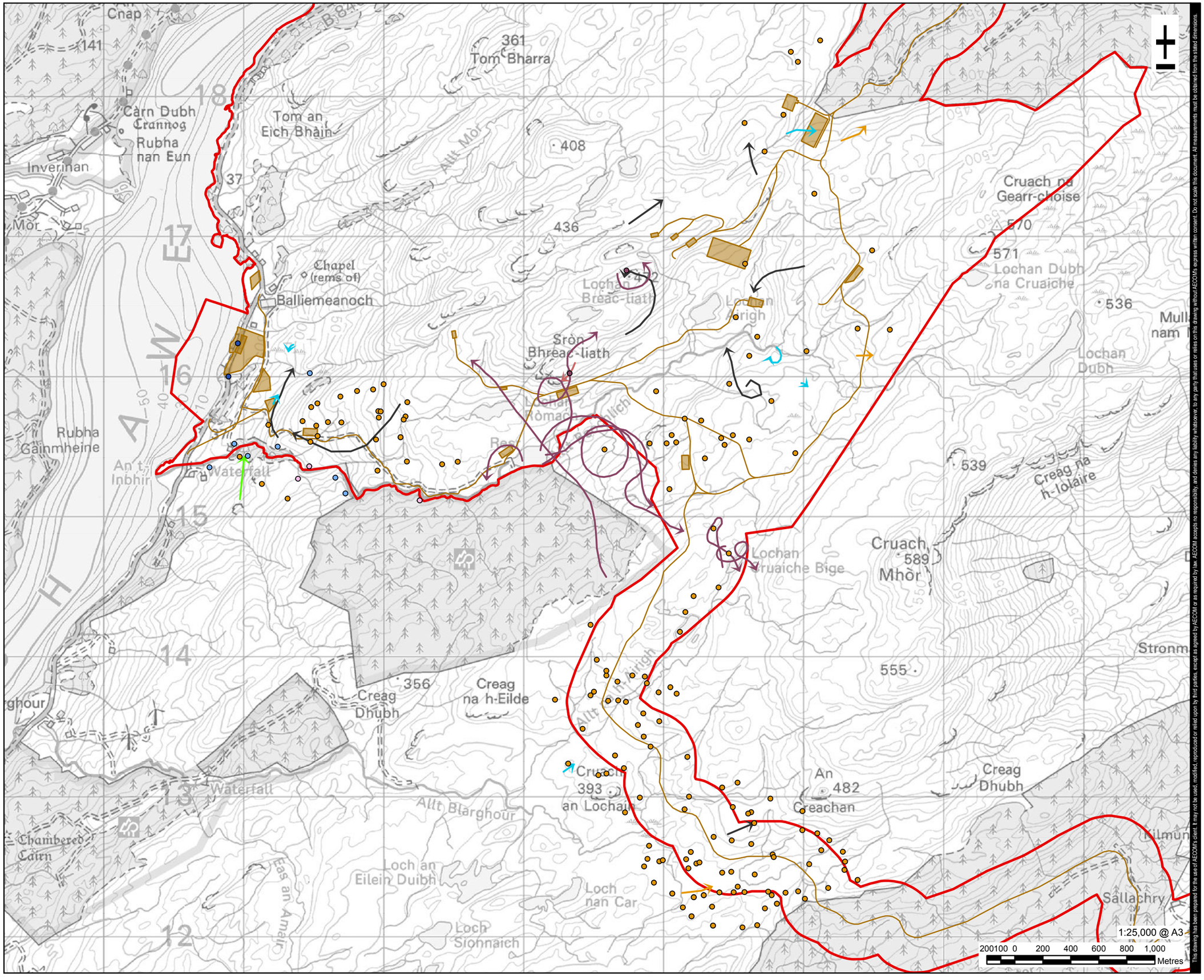
Results of Moorland Breeding Bird Surveys

FIGURE NUMBER

Figure 9.4 (Sheet 1 of 2)

Revision: 1 Drawn: MH Checked: BM Approved: TM Date: 2025-05-12

Filename: \\eu.aecomnet.com\UKUKED\4\Jobs\PR.291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Ballemeanoch\02_Maps\00_EIA_Figures_Jan2024\Appendix_9.1_6.2_240220.aprx



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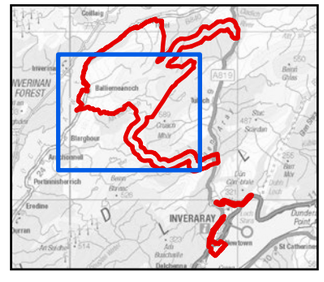
- Development Boundary
- Above Ground Infrastructure

Species

- Skylark
- Song Thrush
- Tree Pipit
- Whinchat
- White-tailed Eagle

Recorded Flightlines

- Peregrine
- Raven
- Skylark
- Siskin
- Snipe
- White-tailed Eagle



NOTES

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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

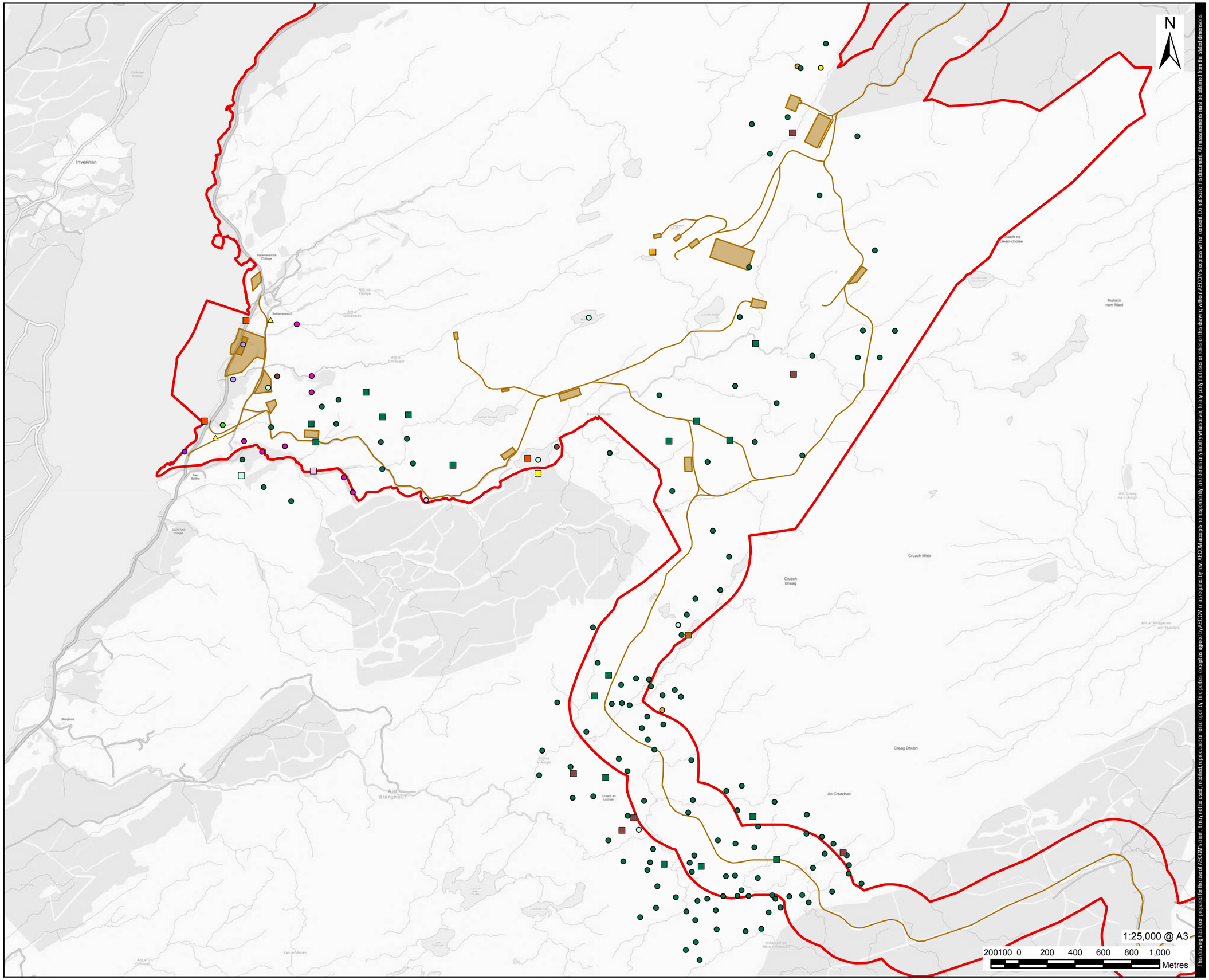
Results of Moorland Breeding Bird Surveys

FIGURE NUMBER

Figure 9.4 (Sheet 2 of 2)

Revision: 0 Drawn: MH Checked: BM Approved: TM Date: 2025-05-12

Filename: \\eu.aecomnet.com\UKUKED04\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Ballieameanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_9_241002.aprx



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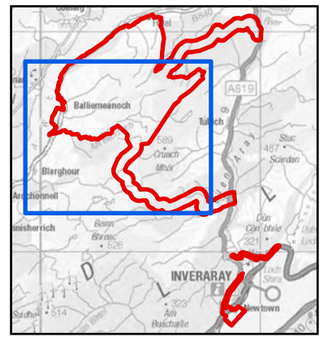
- Development Boundary
- Above Ground Infrastructure

Species

- Common Sandpiper
- Cuckoo
- Curlew
- Goldeneye
- Golden Plover
- Mistle Thrush
- Oystercatcher
- Skylark
- Spotted Flycatcher
- Snipe
- Song Thrush
- Tree Pipit
- Whinchat

Breeding Evidence

- Confirmed
- Possible
- Probable



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Results of Territory Analysis for Important Moorland Breeding Birds

FIGURE NUMBER

Figure 9.5

Revision: 0 Drawn: MH Checked: BM Approved: TM Date: 2025-05-12

Approximate black grouse lek location

Flushed birds

Dropping

N

1:55,000 @ A3

1 0.5 0 1 2 3 Kilometres

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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Black Grouse Observations

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Black Grouse Survey Results

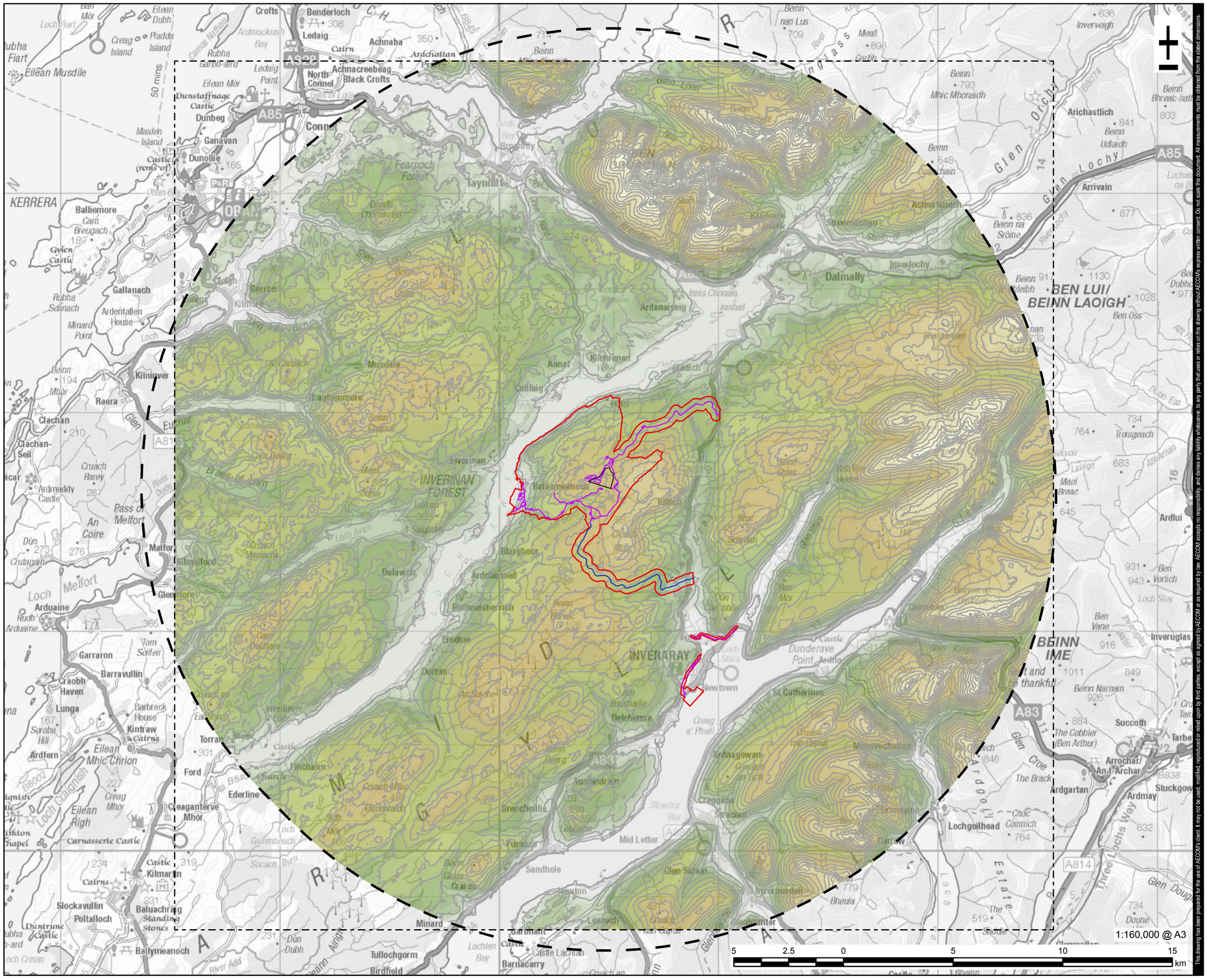
FIGURE NUMBER

Figure 9.7

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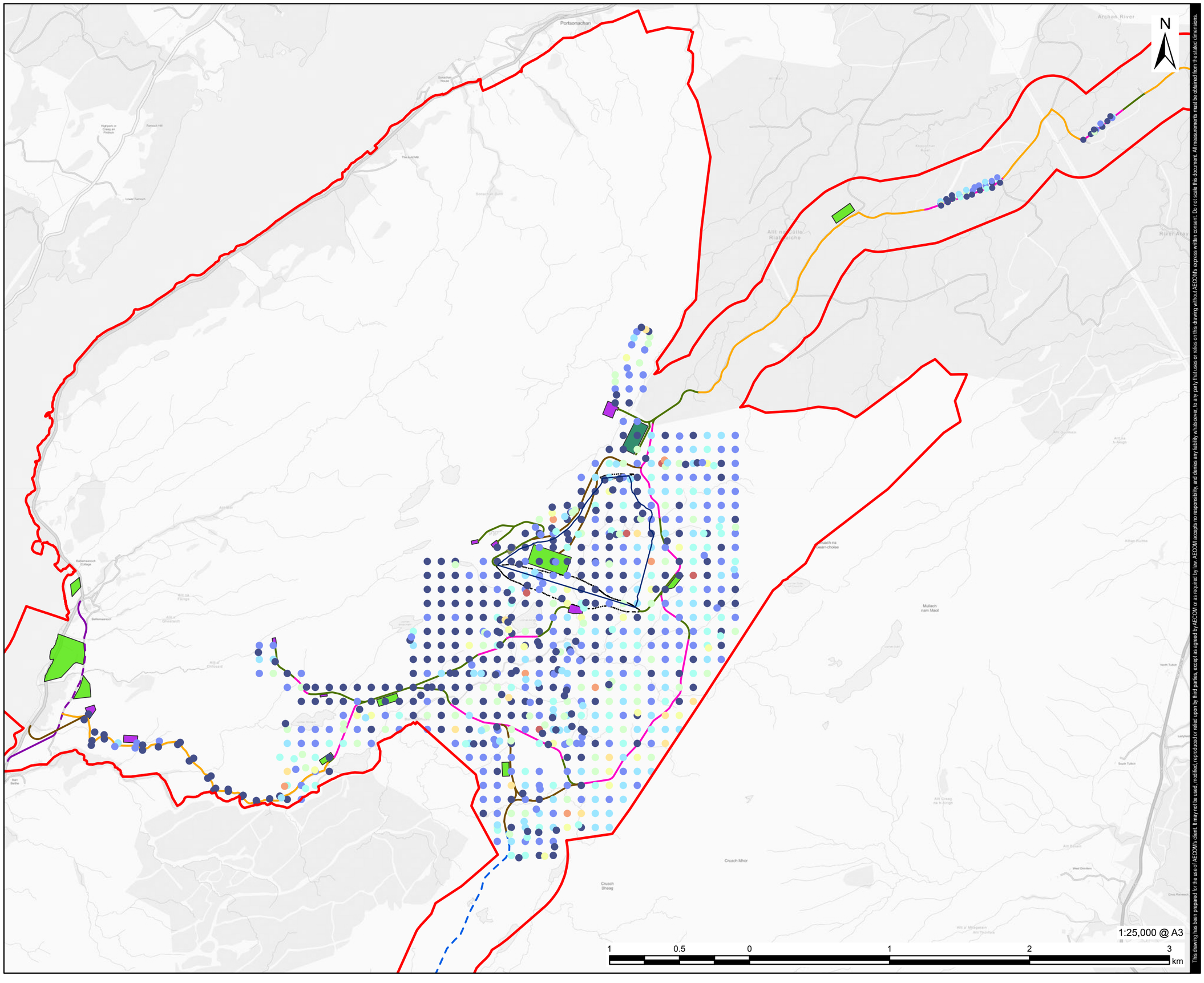
Revision: 1 Drawn: TS Checked: LG Approved: BM Date: 2025-05-12

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Development Boundary
Headpond - 5m Freeboard
20km Study Area
Limits of Elevation Model
Blarghour wind farm access track
Above Ground Infrastructure
50m contour line-OS Terrain 5
Topography (m) - OS Terrain 5
1126.08
592.46
400.87
209.29
0
Balliemeanoch
Blarghour
Glen Lonan
Glen Orchy
Glen Lochy
Glen Kinglass
Glen Liver
Glen Noe
Glen Ure
Glen Creran
Glen Feochan
Glen Euchar
Glen Craig
Glen Nant
Glen Shian
Glen Dubh
Glen Douglas
Glen Croe
Glen Shira
Glen Aray
Glen Fyne
Glen Shiel
Glen Doe
Glen Loy
Glen Spean
Glen Roy
Glen Gloy
Glen Nevis
Glen Coe
Glen Etive
Glen Strae
Glen Lyon
Glen Quaich
Glen Almond
Glen Artney
Glen Ogle
Glen Dochart
Glen Falloch
Glen Douglas
Glen Croe

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Filename: \\eu.aecomnet.com\UKUKED\4Jobs\PR.291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Ballemeanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_10.4 Peat Probe Survey Results_overview_240124_python.aprx



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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments

Peat Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01+

Above Ground Infrastructure

- B840 Diversion - Permanent, Upgrade, Excavated
- New B840 Diversion, Permanent, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Access Track - Temporary, New, Excavated
- Proposed Blarghour wind farm access track
- Lower Gate House
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

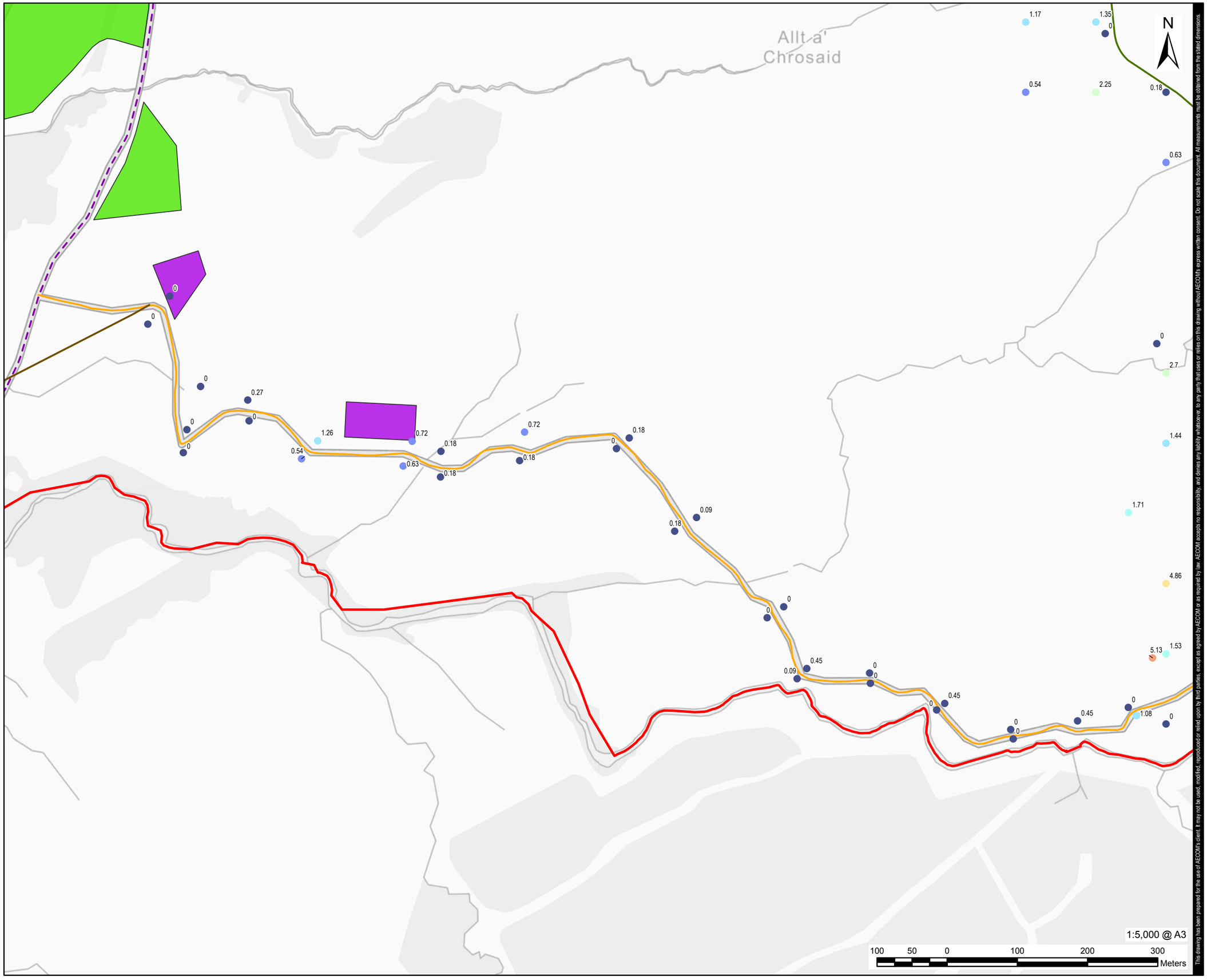
Peat Probe Survey Results (Overview)

FIGURE NUMBER

Figure 10.4 Sheet 1 of 8

Revision: 1 Drawn: FM Checked: BM Approved: CW Date: 2025-05-13

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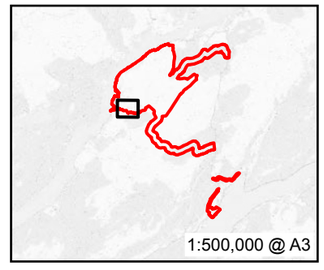
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LEGEND

- Development Boundary
- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 4.01 - 5.00
- 5.01 - 6.00

Above Ground Infrastructure

- B840 Diversion - Permanent, Upgrade, Excavated
- New B840 Diversion, Permanent, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, Upgrade, Excavated
- Access Track - Temporary, New, Excavated
- Permanent Construction Compound
- Temporary Construction Compound



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ISSUE PURPOSE

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PROJECT NUMBER

60570241

FIGURE TITLE

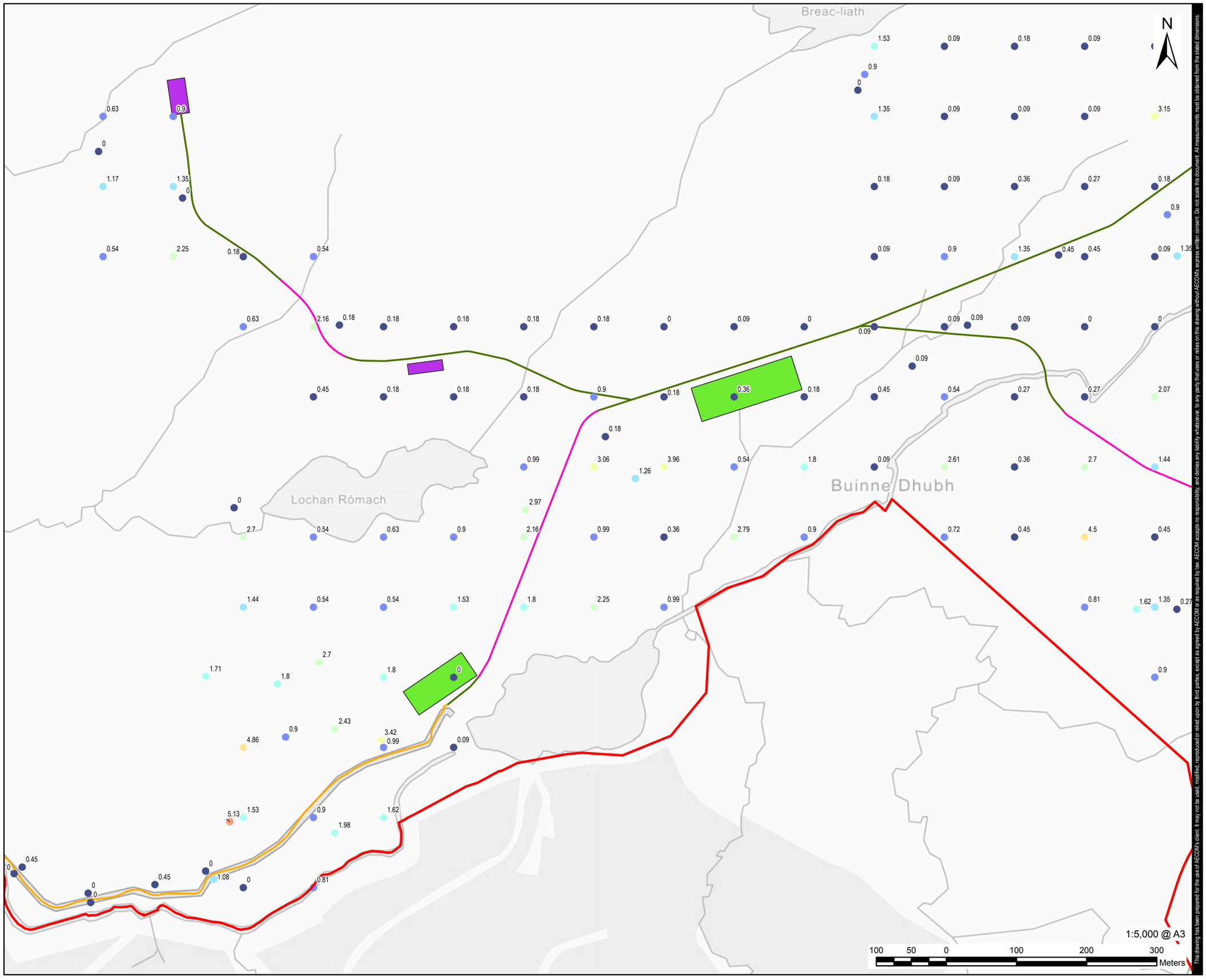
Peat Probe Survey Results

FIGURE NUMBER

Figure 10.4 Sheet 2 of 8

Revision: 1 Drawn: FM Checked: BM Approved: CW Date: 2025-05-13

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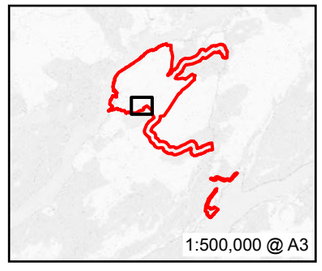
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LEGEND

- Development Boundary
- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00

Above Ground Infrastructure

- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Permanent Construction Compound
- Temporary Construction Compound



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FIGURE TITLE

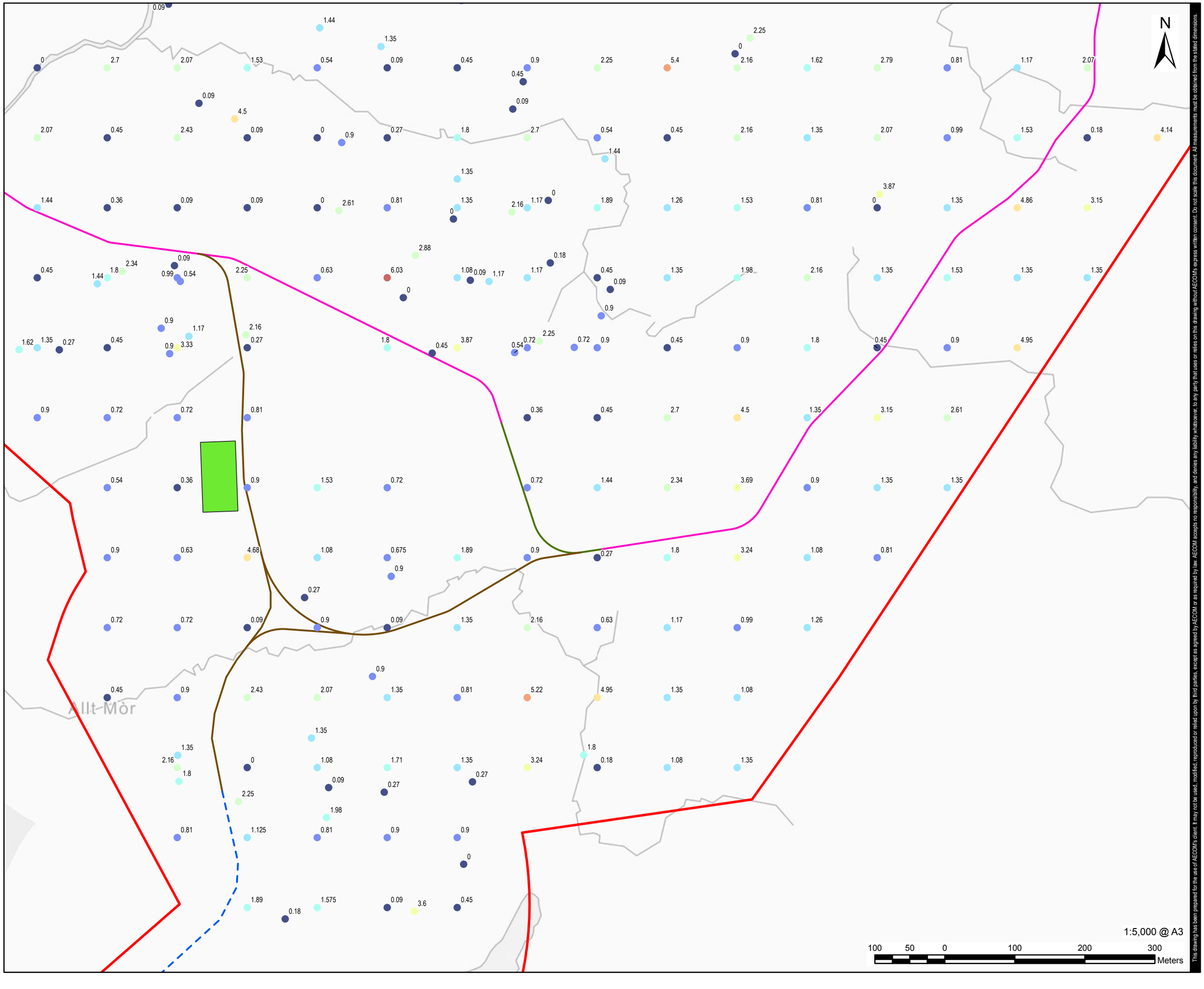
Peat Probe Survey Results

FIGURE NUMBER

Figure 10.4 Sheet 3 of 8

Revision: 1 Drawn: FM Checked: BM Approved: CW Date: 2025-05-13

Filename: \\eu.aecomnet.com\UKUKED04\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Ballemeanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_10.4 Peat Probe Survey Results_overview_240124_python.aprx



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BALLIEMEANOCH PUMPED STORAGE HYDRO

CLIENT

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CONSULTANT

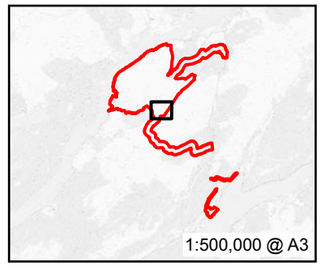
AECOM Limited
177 Bothwell Street
Glasgow, B2 7ER
T +44(0)141 202 0500
www.aecom.com

LEGEND

- Development Boundary
- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01+

Above Ground Infrastructure

- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Temporary, New, Excavated
- Proposed Blarghour wind farm access track
- Temporary Construction Compound



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

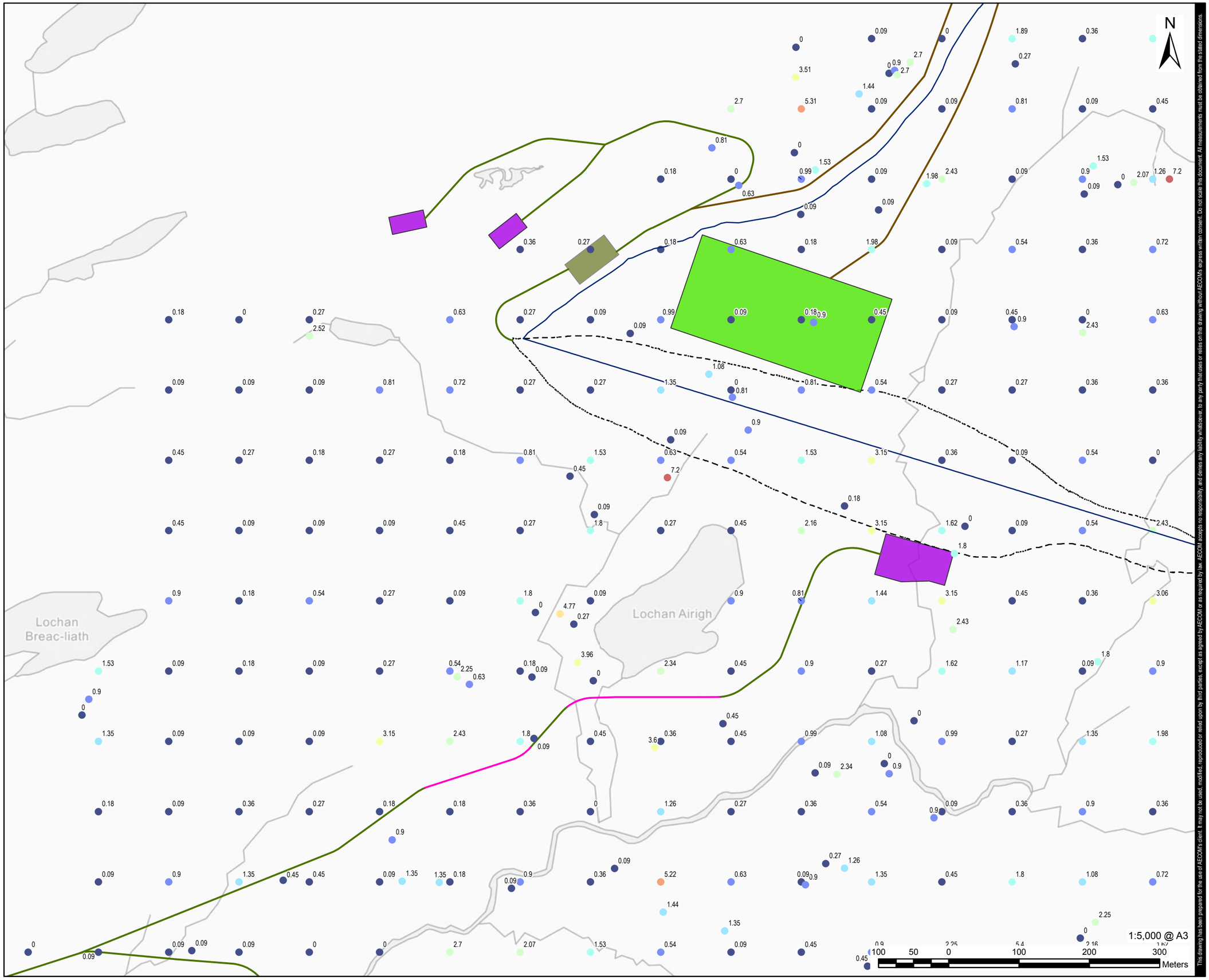
Peat Probe Survey Results

FIGURE NUMBER

Figure 10.4 Sheet 4 of 8

Revision: 1 Drawn: FM Checked: BM Approved: CW Date: 2025-05-13

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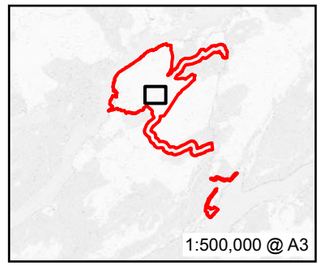
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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments
- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01+

Above Ground Infrastructure

- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Temporary, New, Excavated
- Permanent Construction Compound
- Temporary Construction Compound
- Upper Gate House



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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Peat Probe Survey Results

FIGURE NUMBER

Figure 10.4 Sheet 5 of 8

Revision: 1 Drawn: FM Checked: BM Approved: CW Date: 2025-05-13

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N

1:5,000 @ A3

100 50 0 100 200 300 Meters

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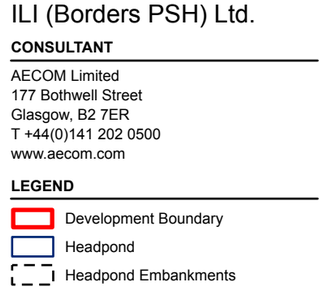
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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments
- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01+

Above Ground Infrastructure

- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Temporary, New, Excavated
- Permanent Construction Compound
- Temporary Construction Compound



1:500,000 @ A3

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Peat Probe Survey Results

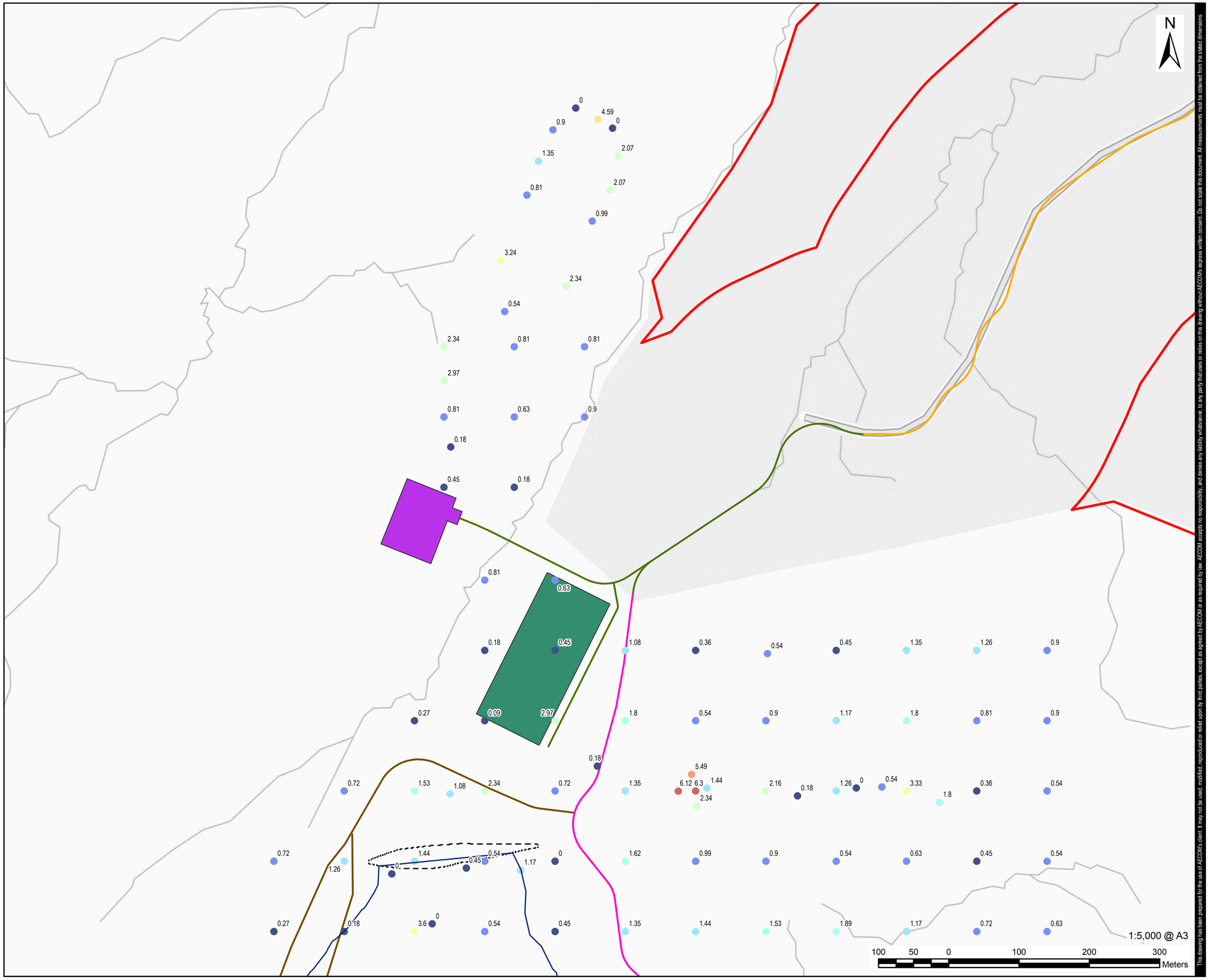
FIGURE NUMBER

Figure 10.4 Sheet 6 of 8

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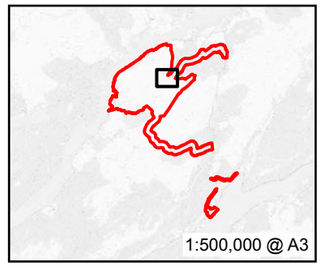
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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments
- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01+

Above Ground Infrastructure

- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Access Track - Temporary, New, Excavated
- Lower Gate House
- Permanent Construction Compound



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ISSUE PURPOSE

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PROJECT NUMBER

60570241

FIGURE TITLE

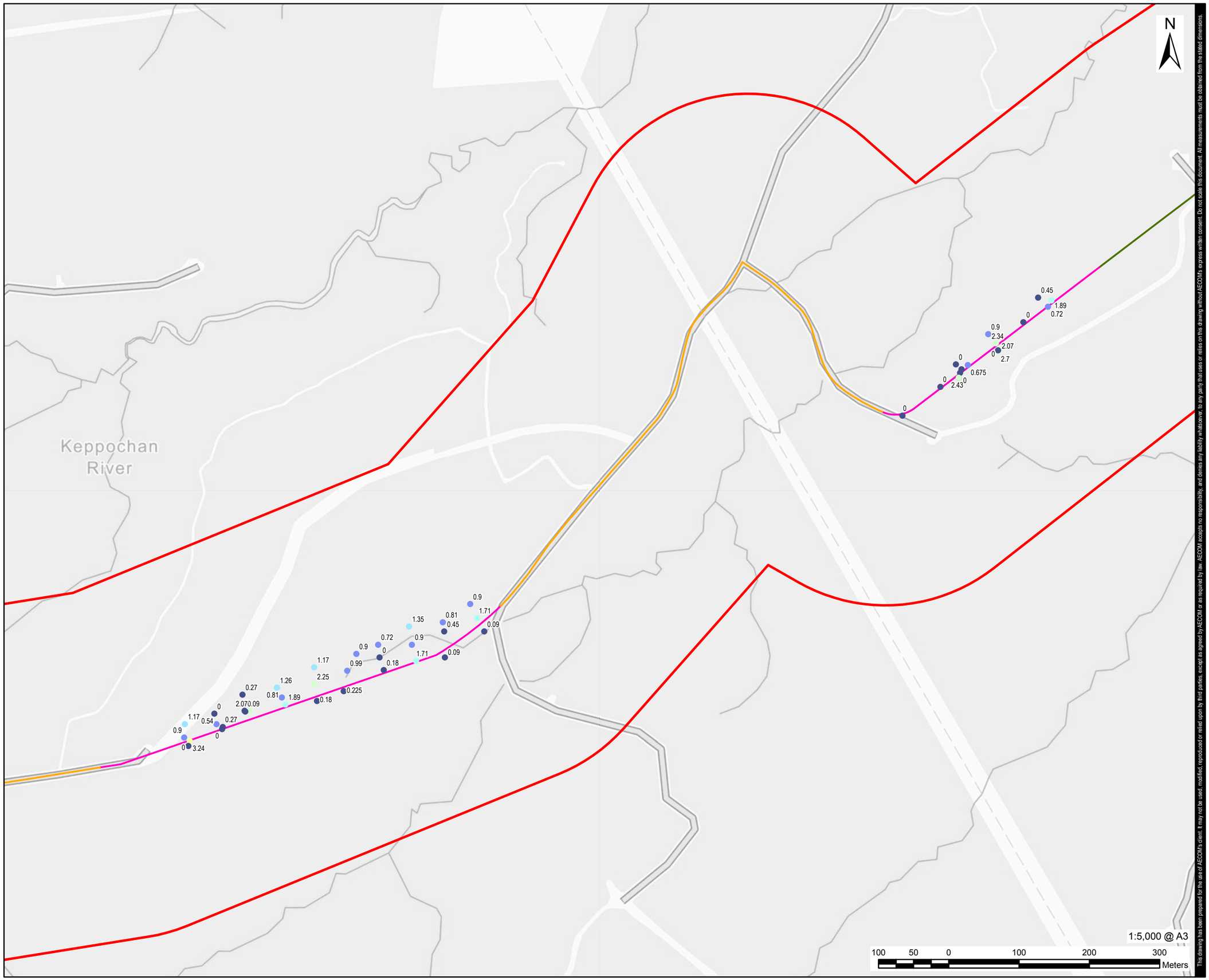
Peat Probe Survey Results

FIGURE NUMBER

Figure 10.4 Sheet 7 of 8

Revision: 1 Drawn: FM Checked: BM Approved: CW Date: 2025-05-13

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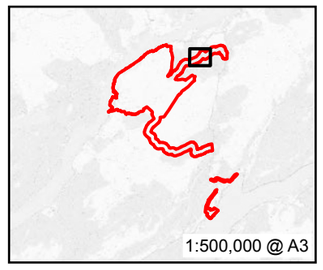
- Development Boundary

Peat Probes

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00

Above Ground Infrastructure

- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated



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ISSUE PURPOSE

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PROJECT NUMBER

60570241

FIGURE TITLE

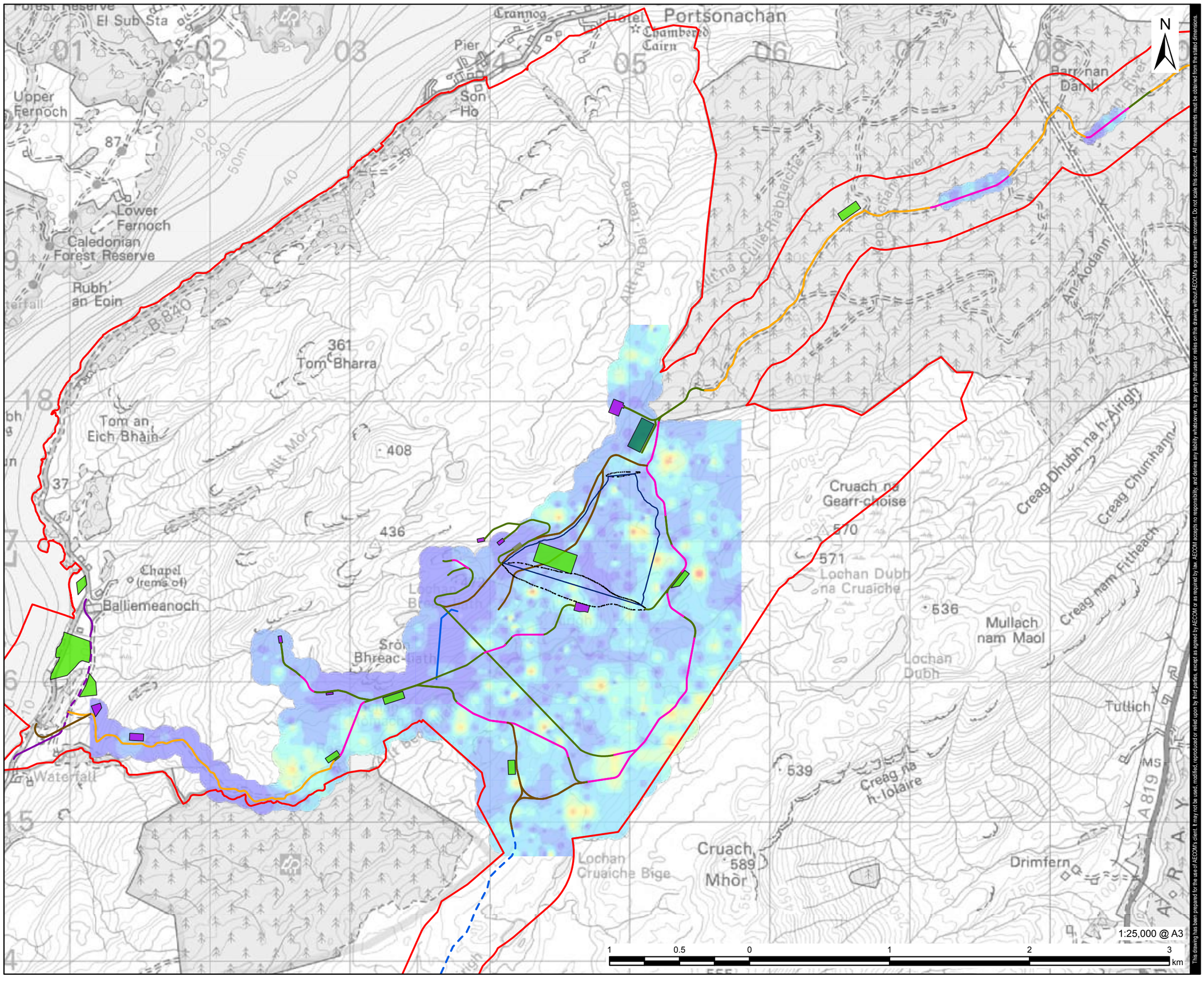
Peat Probe Survey Results

FIGURE NUMBER

Figure 10.4 Sheet 8 of 8

Revision: 0 Drawn: BM Checked: BM Approved: CW Date: 2025-05-14

Filename: \\eu.aecomnet.com\UKUKED\4\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Balliemeanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_10.5 Peat Excavation_241204.aprx



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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments

Peat Probes

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.0 - 3.00
- 3.0 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01+

Above Ground Infrastructure

- B840 Diversion - Permanent, Upgrade, Excavated
- New B840 Diversion, Permanent, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Access Track - Temporary, New, Excavated
- Proposed Blarghour wind farm access track
- Lower Gate House
- Marine Facility
- Permanent Construction Compound
- Lower Gate House
- Temporary Construction Compound
- Upper Gate House

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

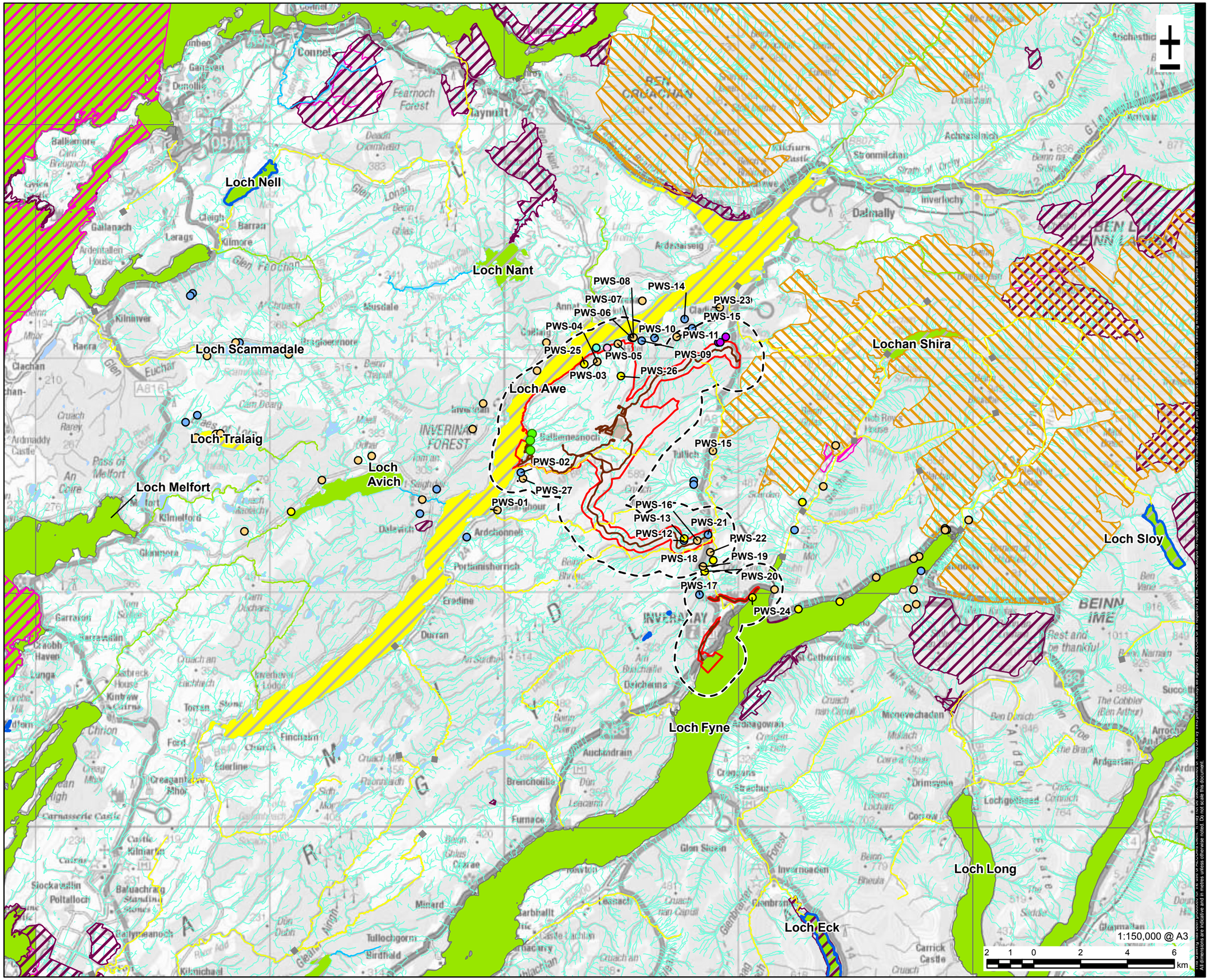
Peat Excavation

FIGURE NUMBER

Figure 10.5

Revision: 0 Drawn: AR Checked: BM Approved: OT Date: 2025-05-13

Filename: \\eu.aecomnet.com\UKUKED\4\Jobs\PR_291676_IU_Portfolio_EIA\400_Technical\437_GIS\Ballieneanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_11.1_11.2_11.3_240110.aprx



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LEGEND

- Development Boundary
- Development Boundary - 1km Buffer
- Above Ground Infrastructure
- Headpond
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- Drinking Water Protection Areas

WFD Status

- Good ecological status
- Good ecological potential
- Moderate ecological potential
- non WFD Loch/Lochan
- High ecological status
- Good ecological status
- Moderate ecological status
- Moderate ecological potential
- Other watercourse
- SEPA Car Licences
- SEPA Monitoring Points

Private Water Supplies

- Unknown
- Groundwater Spring
- Surface Watercourse
- Surface Loch
- Surface Rainwater

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Surface Water and Groundwater Receptors and Attributes - Wider Context

FIGURE NUMBER

Figure 11.1

Revision: 0 Drawn: AR Checked: BM Approved: OT Date: 2025-05-13

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PWS-06
PWS-08
PWS-10
PWS-11
PWS-15
PWS-07
PWS-09
PWS-05
LA4
LA3
LA2
PWS-04
PWS-03
PWS-25
PWS-26
LA11
LA15
C2
C1
LA14
LA5
LA1
LA7
LA12
LA13
C3
LA10
LA9
PWS-15
LA6
PWS-02
LA8
PWS-27

Loch Awe
Beag
Caledonian Forest Reserve
El Sub Sta
Upper Fernoch
Lower Achan
Chambered Cairn
Upper Sonachan
Potsonachan
Hotel
Cup-marked Rock
Keppochan
Son Ho
Barrachan Dam
Craig nan Sassanach
Tom Bharra
Tom an Eich Bhain
Allt Mor
Cruach na Gearr-choise
Creag Dhubh na Lochaine
Creag Churnhann
Creag nam Fitheach
Lochan Dubh na Cruaiche
Lochan Breac-liath
Srón Bhreac-liath
Lochan Romach
Mullach nam Maol
Tuttich
Ladyfield
Creag na h-Iolaire
Cruach Mhòr
Lochan Cruaiche Bige
Drimfern
Stronmagachan
Ardrishaig
Ballimeanoch
Chapel (remains of)
Water
Allt na Cuile Riabhaiche
Allt a Chrosaid
Allt Beochlich
Allt na Dail Ferna
Allt na Fainge
Allt a' Ghreataidh
Alt Mor
Unnamed Lochs

Name	ID
Loch Breac-liath	LA1
Allt na Cuile Riabhaiche and tributaries	LA2
Keppochan River and tributaries	LA3
Archan River and tributaries	LA4
Allt a Chrosaid and small (unnamed) lochan	LA5
Allt Beochlich and tributaries	LA6
Lochan Airigh	LA7
Beochlich Lochan	LA8

Name	ID
Lochan Dubh	LA9
Lochan Romach	LA10
Allt na Dail Ferna	LA11
Allt na Fainge	LA12
Allt a' Ghreataidh	LA13
Alt Mor	LA14
Unnamed Lochs	LA15

1:30,000 @ A3

0.5 0.25 0 0.5 1 1.5 km

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Glasgow G2 7ER
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LEGEND

- Development Boundary
- Development Boundary - 1km Buffer
- Above Ground Infrastructure
- Headpond
- Special Protection Area

WFD Status

- Moderate ecological potential
- non WFD Loch/Lochan
- Good ecological status
- Moderate ecological status
- Other watercourse
- SEPA Car Licences
- SEPA Monitoring Points

Private Water Supplies

- Unknown
- Groundwater Spring
- Surface Watercourse
- Surface Loch
- Surface Rainwater

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60570241

FIGURE TITLE

Surface Water and Groundwater Receptors and Attributes - Headpond Study Area

FIGURE NUMBER

Figure 11.2a

Revision: 0 Drawn: AR Checked: BM Approved: OT Date: 2025-05-13

Filename: \\eu.aecomnet.com\UKUKED04\Jobs\PR-291676_IU_Portfolio_EIA\400_Technical\437_GIS\Balliemeanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_11.1_11.2_11.3_240110.aprx

PWS-13
PWS-12
PWS-21
LF6
PWS-16
PWS-22
LF5
PWS-18
PWS-19
LF4
PWS-20
PWS-17
LF1
LF3
PWS-24
LF2

Name	ID
River Aray and tributaries	LF1
Crom Allt and tributaries	LF2
Allt Riabhachan	LF3
Allt Bail' a' Ghobhainn	LF4
Erallich Water	LF5
Allt Phàruig	LF6

Loch Fyne

1:40,000 @ A3

1 0.5 0 1 2 3 km

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LEGEND

- Development Boundary
- Development Boundary - 1km Buffer
- Above Ground Infrastructure
- Site of Special Scientific Interest
- Special Protection Area
- Drinking Water Protection Areas

WFD Status

- Good ecological status
- Moderate ecological status
- Moderate ecological potential
- Other watercourse

Private Water Supplies

- Unknown
- Groundwater Spring
- Surface Watercourse

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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

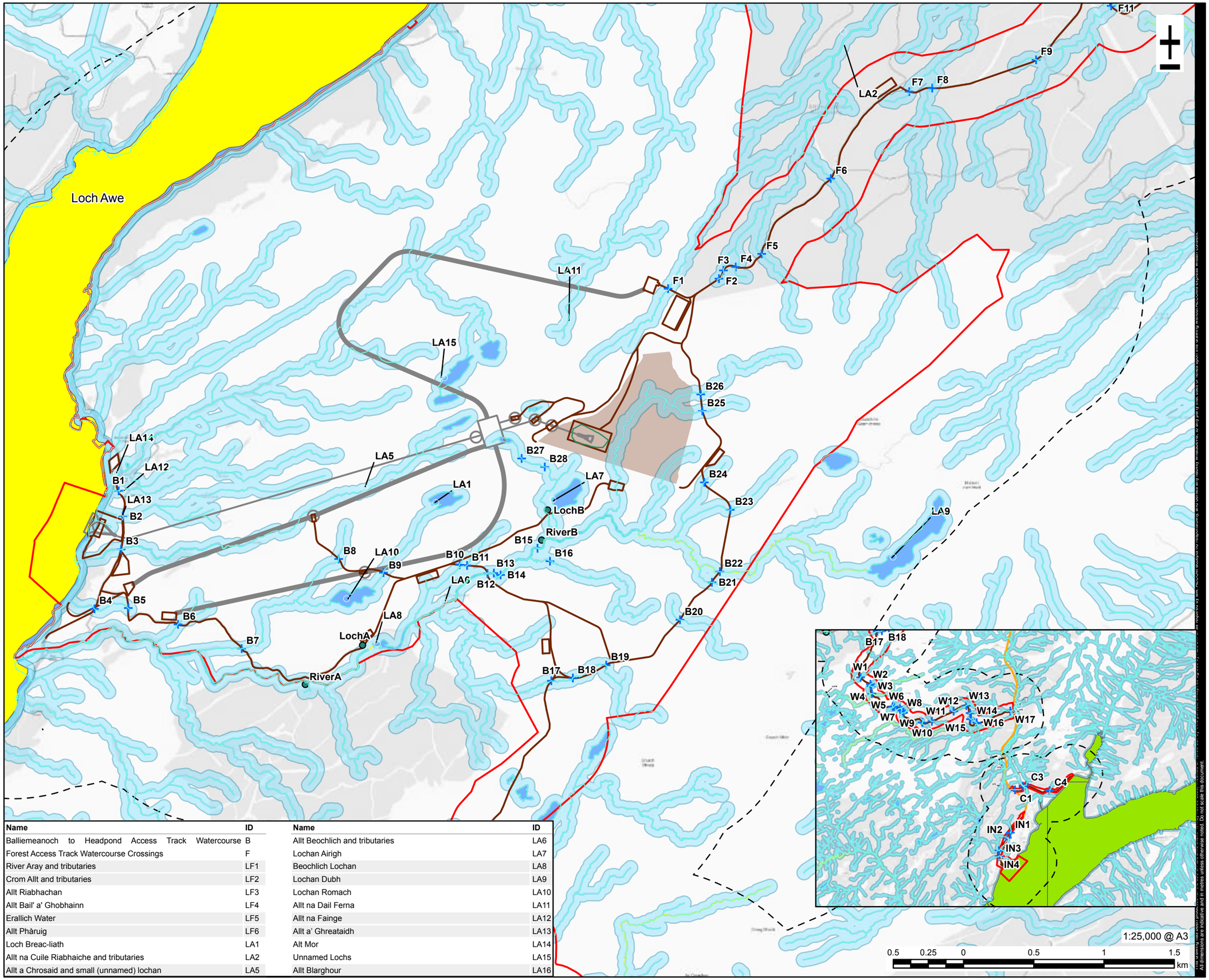
Surface Water and Groundwater Receptors and Attributes - Loch Fyne Study Area

FIGURE NUMBER

Figure 11.2b

Revision: 0 Drawn: AR Checked: BM Approved: OT Date: 2025-05-13

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Name	ID	Name	ID
Balliemeanoch to Headpond Access Track Watercourse	B	Allt Beochlich and tributaries	LA6
Forest Access Track Watercourse Crossings	F	Lochan Airigh	LA7
River Aray and tributaries	LF1	Beochlich Lochan	LA8
Crom Allt and tributaries	LF2	Lochan Dubh	LA9
Allt Riabhachan	LF3	Lochan Romach	LA10
Allt Bail' a' Ghobhainn	LF4	Allt na Dail Ferna	LA11
Erallich Water	LF5	Allt na Fainge	LA12
Allt Phàruig	LF6	Allt a' Ghreataidh	LA13
Loch Breac-liath	LA1	Alt Mor	LA14
Allt na Cuile Riabhaiche and tributaries	LA2	Unnamed Lochs	LA15
Allt a Chrosaid and small (unnamed) lochan	LA5	Allt Blarghour	LA16

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LEGEND

- Development Boundary
- Development Boundary - 1km Buffer
- AECOM Sampling Points
- Above Ground Infrastructure
- Below Ground Infrastructure
- Upper Control Works
- Headpond
- Access Public Road

WFD Status

- Good ecological status
- Moderate ecological potential
- Moderate ecological status
- Other watercourse
- 50m Buffer Zone
- Surface Waterbody
- Water Crossing

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FIGURE TITLE

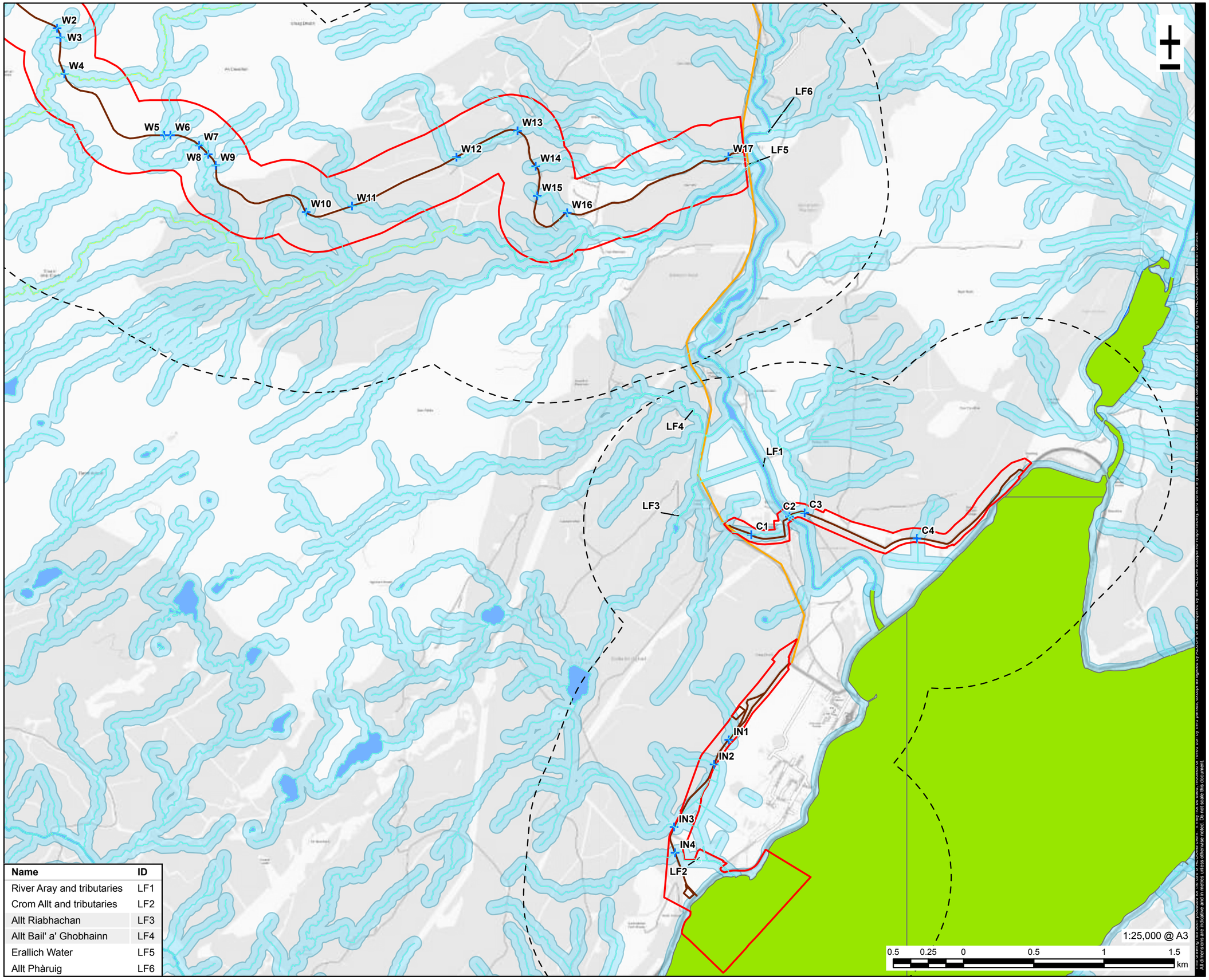
Surface Water and Groundwater Receptors and Attributes - Headpond Study Area

FIGURE NUMBER

Figure 11.3a

Revision: 0 Drawn: AR Checked: BM Approved: OT Date: 2025-05-13

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Name	ID
River Aray and tributaries	LF1
Crom Allt and tributaries	LF2
Allt Riabhachan	LF3
Allt Bail' a' Ghobhainn	LF4
Erallich Water	LF5
Allt Phàruig	LF6

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LEGEND

- Development Boundary
- Development Boundary - 1km Buffer
- Above Ground Infrastructure
- Access Public Road

WFD Status

- Good ecological status
- Moderate ecological status
- Other watercourse
- 50m Buffer Zone
- Surface Waterbody
- Water Crossing

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60570241

FIGURE TITLE

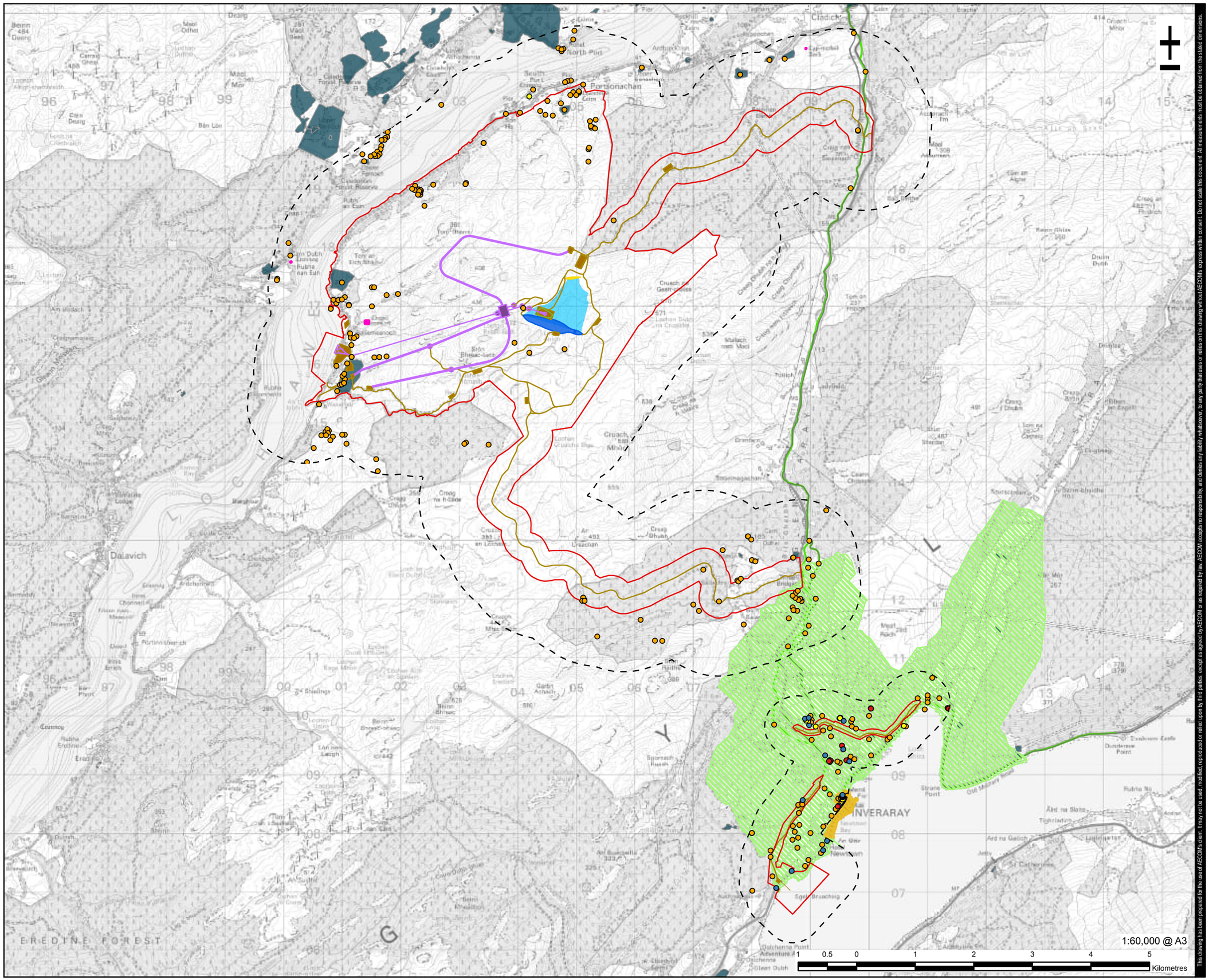
Surface Water and Groundwater Receptors and Attributes - Loch Fyne Study Area

FIGURE NUMBER

Figure 11.3b

Revision: 0 Drawn: MH Checked: LC Approved: JS Date: 2025-05-13

Filename: \\eu.aecomnet.com\UKUKED04\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Ballieameanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_13.3_240214_python.aprx



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www.aecom.com

LEGEND

- Development Boundary
- Study Area
- Headpond
- Headpond Embankment 1
- Headpond Embankment 2
- Upper Control Works
- Below Ground Infrastructure - Polyline
- Above Ground Infrastructure - Polyline
- Below Ground Infrastructure - Polygon
- Above Ground Infrastructure - Polygon
- Non-designated Assets
- Listed Building - Category A
- Listed Building - Category B
- Listed Building - Category C
- Scheduled Monument
- Conservation Area
- Garden or Designed Landscape
- Canmore - Area
- WoSAS - Linears

NOTES

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FIGURE TITLE

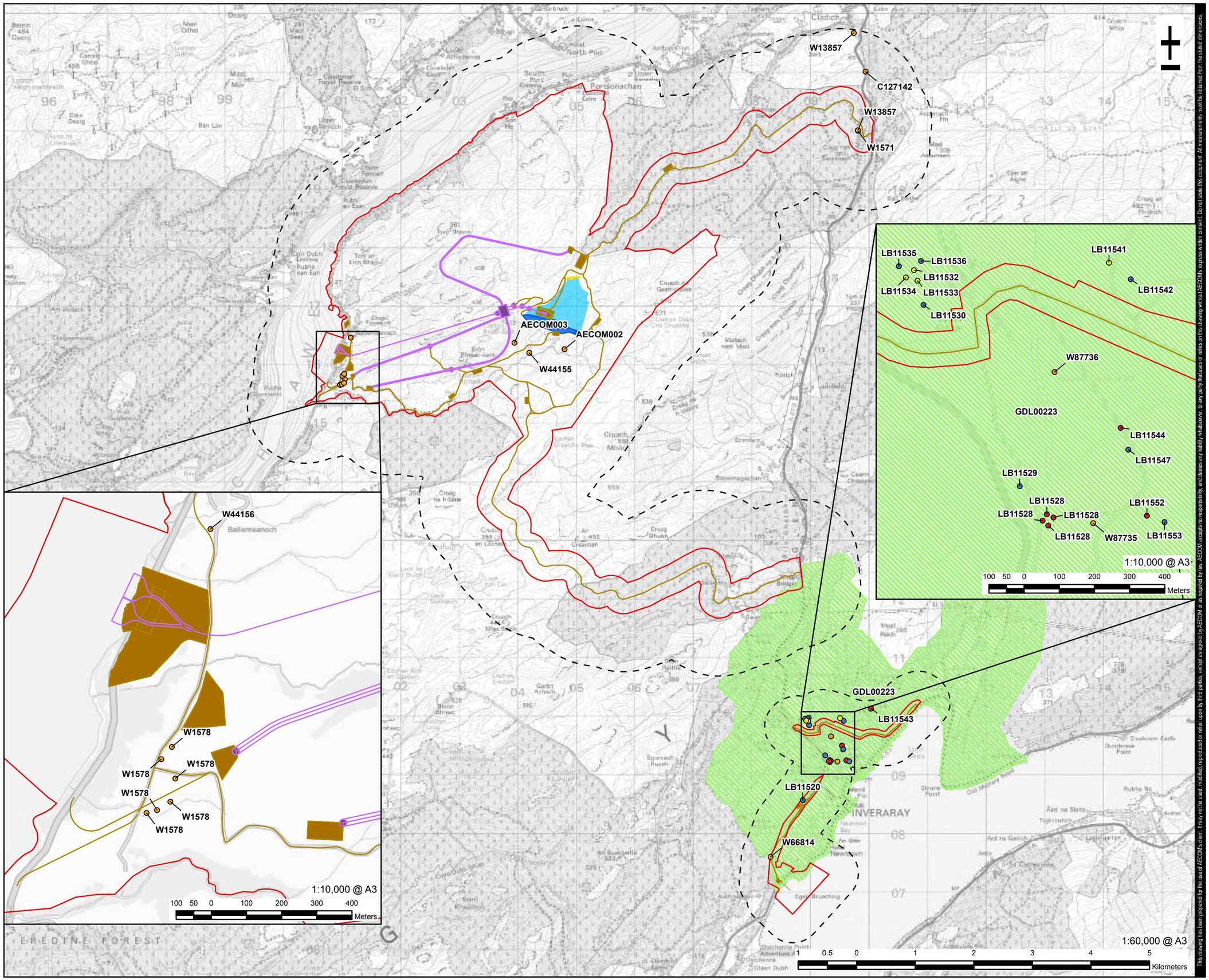
Proposed Works and Heritage Assets within Study Area

FIGURE NUMBER

Figure 13.3

Revision: 1 Drawn: MH Checked: LC Approved: JS Date: 2025-05-13

Filename: \\eu.aecomnet.com\UK\UKED4\Jobs\PR-291678_ILI_Portfolio_EIA\400_Technical\437_GIS\Balliemeanoch\02_Maps\00_EIA_Figures_Jan2024\Fig_13.6_240214_python.aprx



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LEGEND

- Development Boundary
- Study Area
- Headpond
- Headpond Embankment 1
- Headpond Embankment 2
- Upper Control Works
- Above Ground Infrastructure - Polyline
- Below Ground Infrastructure - Polyline
- Above Ground Infrastructure - Polygon
- Below Ground Infrastructure - Polygon
- Listed Building - Category A
- Listed Building - Category B
- Listed Building - Category C
- Non-designated Assets
- Garden or Designed Landscape

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FIGURE TITLE

Heritage Assets Assessed in Impact Assessment

FIGURE NUMBER

Figure 13.6

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SM4186

SM4175

SM4227

GDL00223

LB11543

LB11520

INVERARAY

LB11535
LB11536
LB11532
LB11534
LB11533
LB11530
LB11541
LB11542
LB11544
GDL00223
LB11547
LB11529
LB11528
LB11528
LB11528
LB11528
LB11552
LB11553

1:10,000 @ A3

100 50 0 100 200 300 400 Meters

1:80,000 @ A3

1 0.5 0 1 2 3 4 5 Kilometres

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LEGEND

- Development Boundary
- Study Area
- Wider 3km Study Area
- Headpond
- Embankment 1
- Embankment 2
- Upper Control Works
- Above Ground Infrastructure - Polyline
- Below Ground Infrastructure - Polyline
- Above Ground Infrastructure - Polygon
- Below Ground Infrastructure - Polygon
- Listed Building - Category A
- Listed Building - Category B
- Listed Building - Category C
- Scheduled Monument
- Garden or Designed Landscape

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FIGURE TITLE

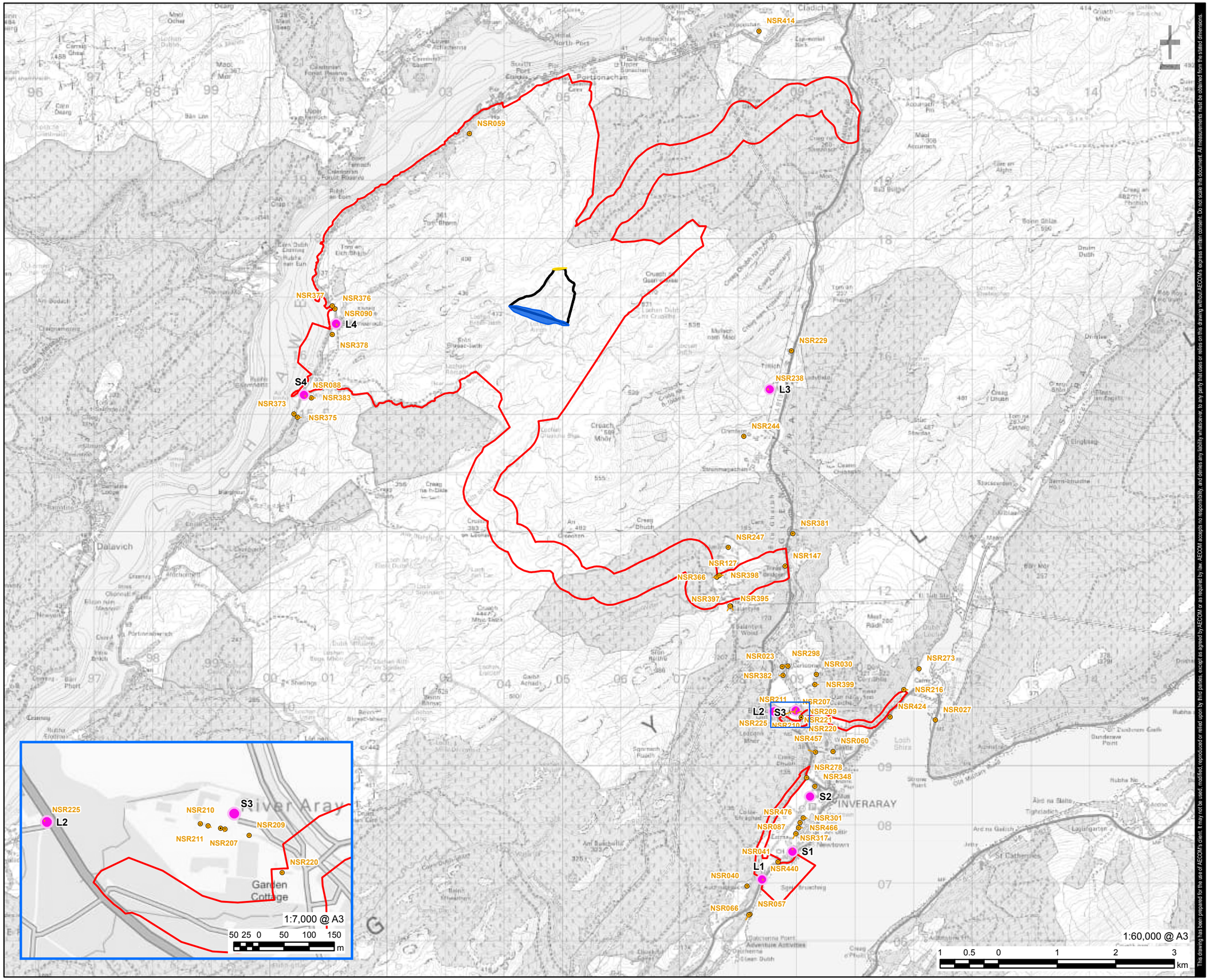
Heritage Assets Assessed for Impacts on Setting

FIGURE NUMBER

Figure 13.8

Revision: 0 Drawn: KH Checked: BM Approved: AS Date: 2025-05-12

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LEGEND

- Development Boundary
- Noise Monitoring Location
- Address Point Selected for Quantitative Assessment
- Headpond Embankment 1
- Headpond Embankment 2
- Headpond Waterbody

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FIGURE TITLE

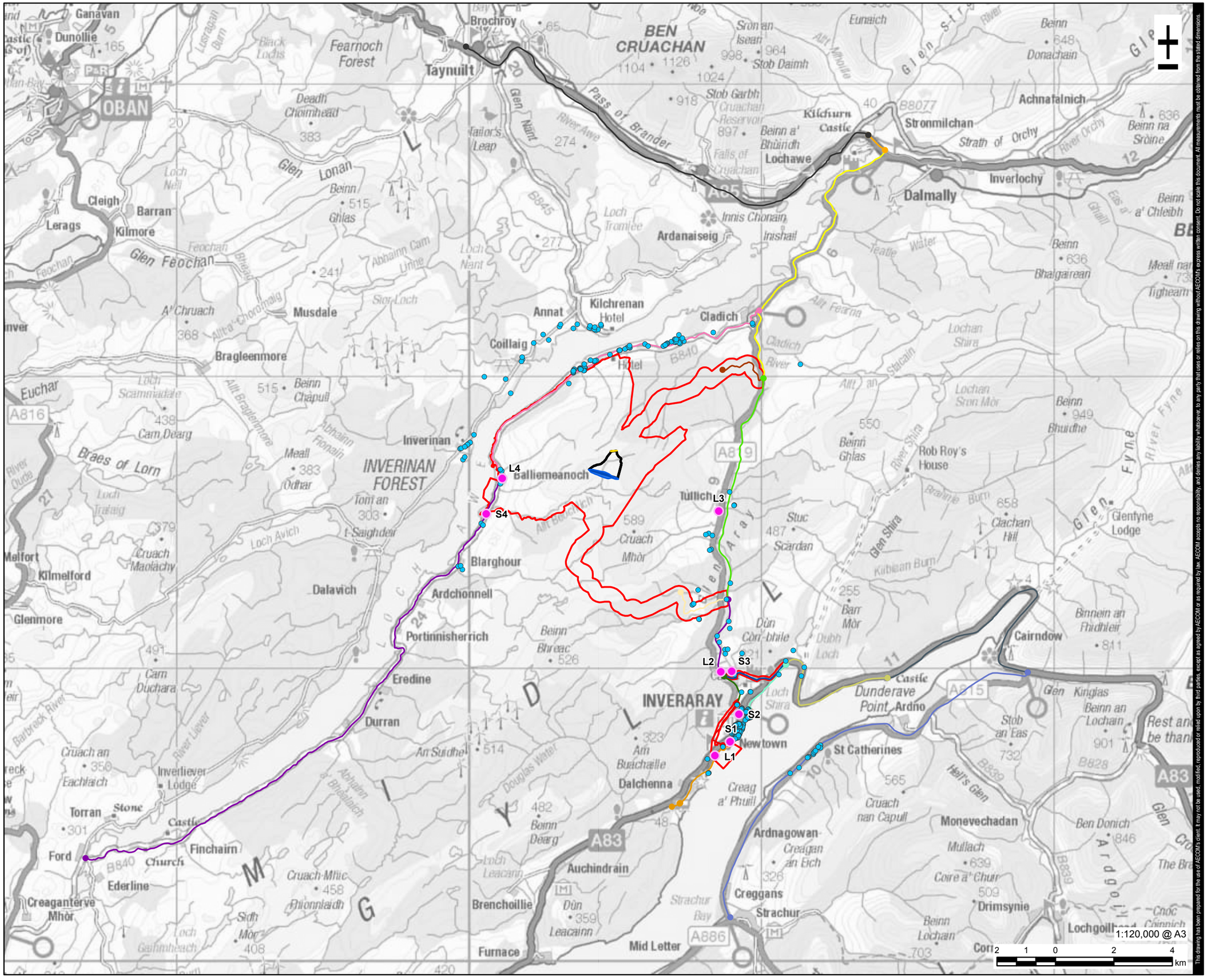
Long and Short Term Noise Monitoring Locations

FIGURE NUMBER

Figure 15.2

Revision: 0 Drawn: KH Checked: BM Approved: AS Date: 2025-05-12

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LEGEND

- Development Boundary
- Headpond Waterbody
- Headpond Embankment 1
- Headpond Embankment 2
- Residential Properties

Indicative Road Links

- Link 1
- Link 2
- Link 3
- Link 4
- Link 5
- Link 6 & 7
- Link 8
- Link 9
- Link 10
- Link 11
- Link 12
- Link 13
- Link 14
- Link 15
- Link 16
- Link 17
- Link 18
- Link 19
- Link 20

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ISSUE PURPOSE

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PROJECT NUMBER

60570241

FIGURE TITLE

Noise Sensitive Receptors - Road Links

FIGURE NUMBER

Figure 15.3 (Sheet 1 of 5)

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Link 1
A85 Taynuilt

Link 2
A85 West

Link 3
A85 East

Link 4
B840

Link 5
A819 Dalmally

L4 Balliemeanoch

S4

L3

1:75,000 @ A3

2 1 0 2 4 km

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LEGEND

- Development Boundary
- Headpond Waterbody
- Headpond Embankment 1
- Headpond Embankment 2
- Residential Properties

Indicative Road Links

- Link 1
- Link 2
- Link 3
- Link 4
- Link 5
- Link 6 & 7
- Link 9
- Link 19

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ISSUE PURPOSE

Final

PROJECT NUMBER

60570241

FIGURE TITLE

Noise Sensitive Receptors - Road Links

FIGURE NUMBER

Figure 15.3 (Sheet 2 of 5)

Revision: 0 Drawn: KH Checked: BM Approved: AS Date: 2025-05-12

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Link 6 & 7
Site Access North (Two Way and Entry Only)

Link 9
A819 Site Access

Link 8
Site Access South (Exit Only)

L4 Balliemeanoch
S4
L3
L2
S3
S2
S1

1:55,000 @ A3

2 1 0 2 4 km

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LEGEND

- Development Boundary
- Headpond Waterbody
- Headpond Embankment 1
- Headpond Embankment 2
- Residential Properties

Indicative Road Links

- Link 4
- Link 5
- Link 6 & 7
- Link 8
- Link 9
- Link 10
- Link 11
- Link 12
- Link 13
- Link 14
- Link 15
- Link 16
- Link 17
- Link 18
- Link 19
- Link 20

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ISSUE PURPOSE

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PROJECT NUMBER

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FIGURE TITLE

Noise Sensitive Receptors - Road Links

FIGURE NUMBER

Figure 15.3 (Sheet 3 of 5)

Revision: 0 Drawn: KH Checked: BM Approved: AS Date: 2025-05-12

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Link 10
A819 Inveraray (N)

Link 11
A819 Inveraray (S)

Link 20
Pier Route

Link 18
A83 Pier

Link 17
A83 Inveraray

Link 12
Inveraray Bypass

Link 13
A83 Aray Bridge

Link 14
A83 Garron Bridge

Link 15
A83 Rest and Be Thankful

Link 16
A815 Strachur

L1 L2 S1 S2 S3

INVERARAY Newtown St Catherines Castle Dunderave Point Ardno Cairndow Glen Kinglas Beinn an Lochain Stob an Eas Binnein an Fhidhleir Dalchenna Auchindrain Mid Letter Creggans Strachur Ardnagowan Creagan an Eich Monevechadan Mullach Coire a' Chuir Drimsynie Lochgoilhead Corrow Beinn Lochain Glen Sluain Sandhole Newton Invernoaden Beinn Bheula Cruach Mhòr Beinn Dearg Cruach nan Capull Creag a' Phuill Hell's Glen Glen Shira Glen Aray Loch Shira Loch Dùn Douglas Water Strachur Bay Forest A83 A886 A815 B839 B828 Ardgoil

1:65,000 @ A3

2 1 0 2 4 km

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LEGEND
- Development Boundary
- Headpond Waterbody
- Headpond Embankment 1
- Headpond Embankment 2
- Residential Properties

Indicative Road Links
- Link 8
- Link 9
- Link 10
- Link 11
- Link 12
- Link 13
- Link 14
- Link 15
- Link 16
- Link 17
- Link 18
- Link 20

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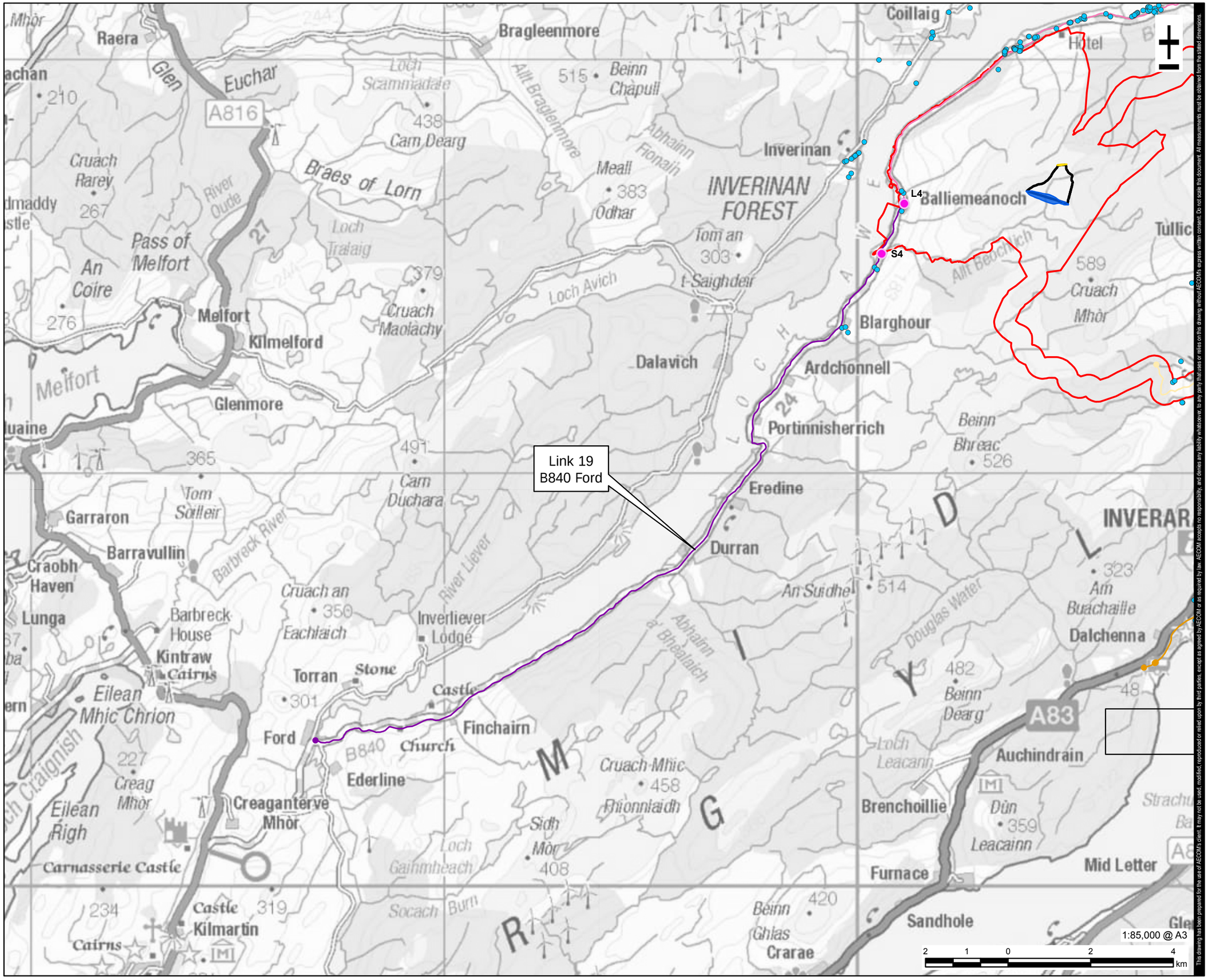
PROJECT NUMBER
60570241

FIGURE TITLE
Noise Sensitive Receptors - Road Links

FIGURE NUMBER
Figure 15.3 (Sheet 4 of 5)

Revision: 0 Drawn: KH Checked: BM Approved: AS Date: 2025-05-12

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LEGEND

- Development Boundary
- Headpond Waterbody
- Headpond Embankment 1
- Headpond Embankment 2
- Residential Properties

Indicative Road Links

- Link 4
- Link 8
- Link 18
- Link 19

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PROJECT NUMBER

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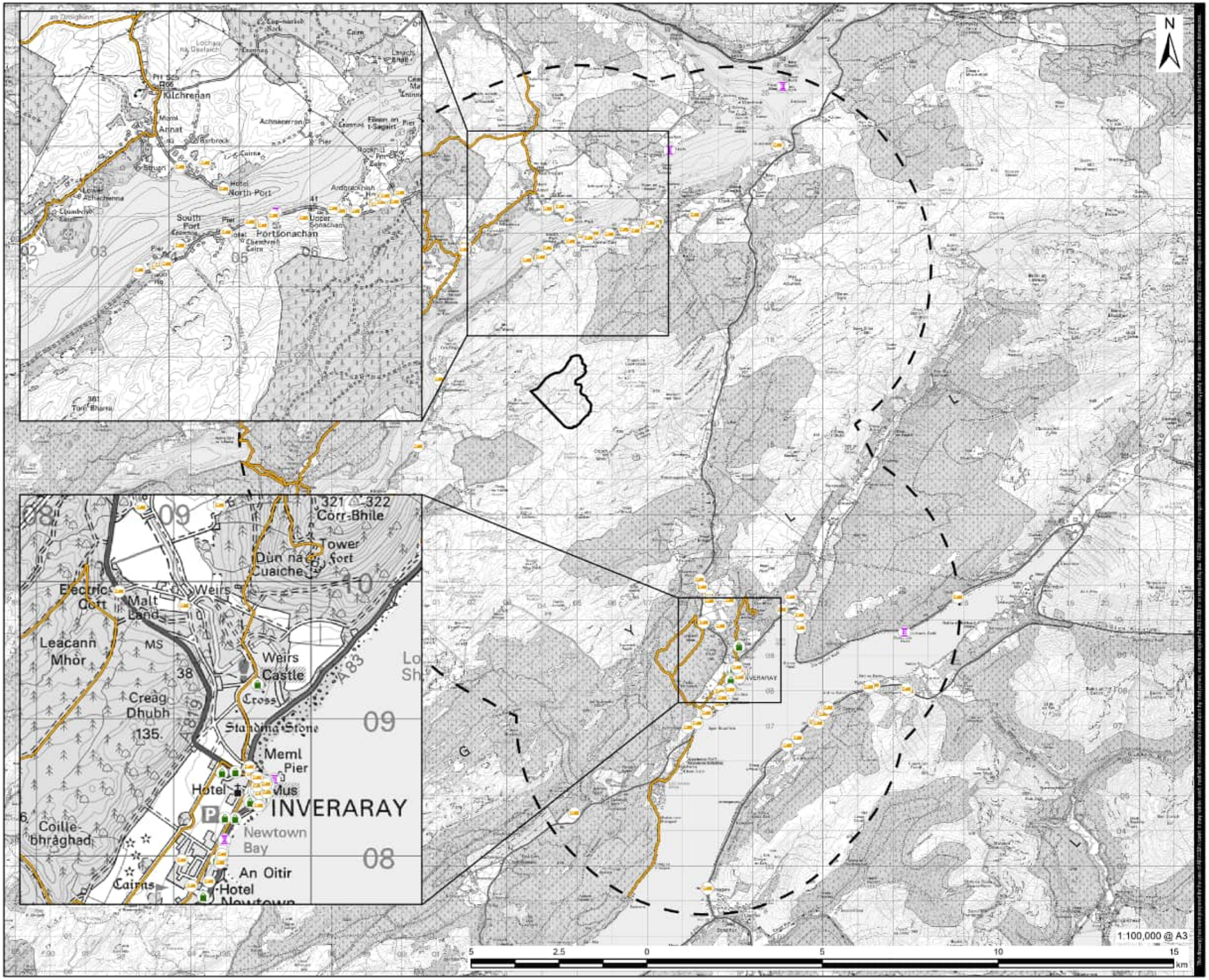
FIGURE TITLE

Noise Sensitive Receptors - Road Links

FIGURE NUMBER

Figure 15.3 (Sheet 5 of 5)

Revision: 0 Drawn: FM Checked: BM Approved: HB Date: 2025-05-14



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LEGEND

- Development Boundary
- 5km Buffer
- Headpond Waterbody
- Tourist Accomodation
- Local Shops/ Restaurants etc.
- Visitor Attraction
- Trails and Cycle Routes
- Sweetie Seat Walk
- Woodland Walk

NOTES

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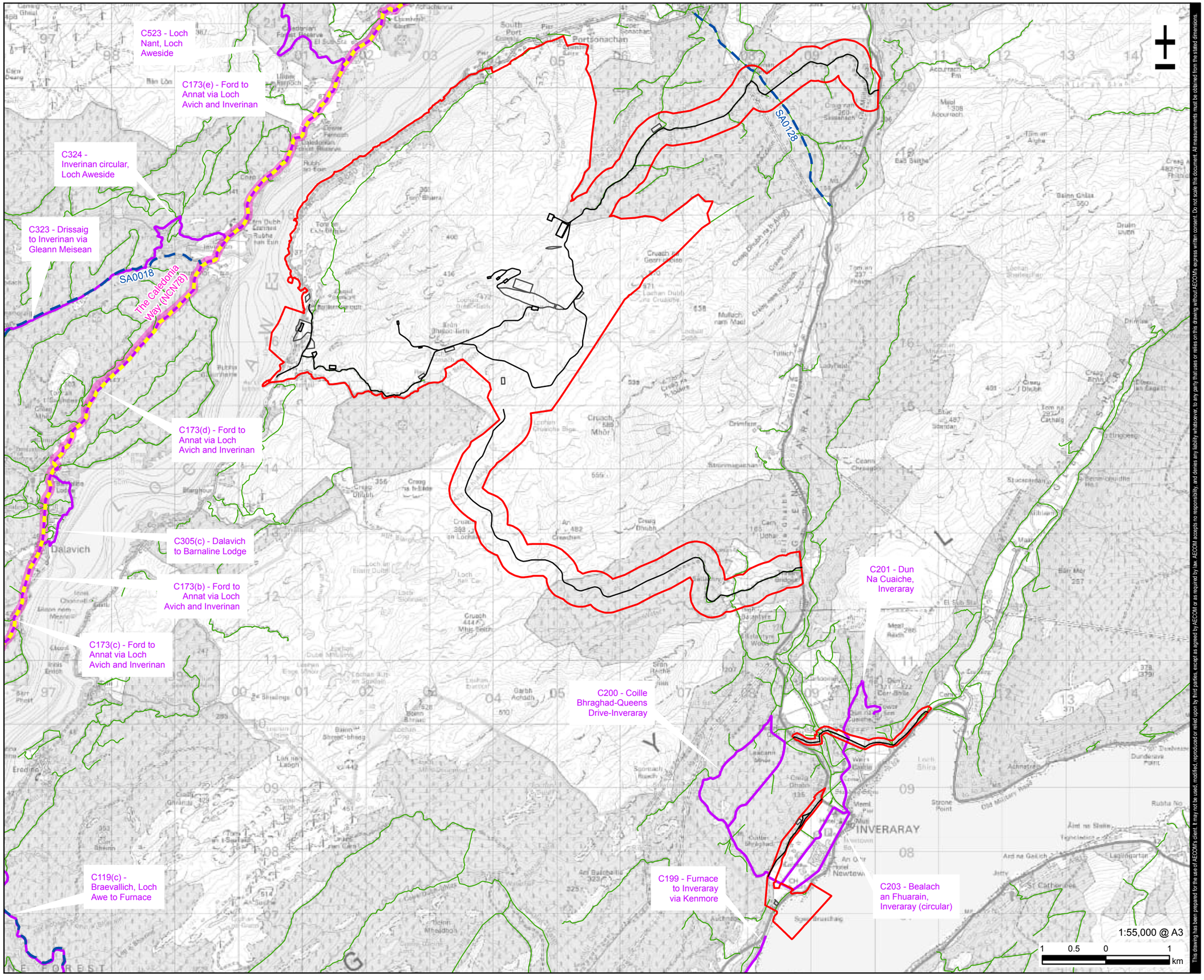
FIGURE TITLE

Socio-Economic, Recreation and Tourism Receptors

FIGURE NUMBER

Figure 16.1a

Filename: \\aecomnet.com\EMEA\ED\Jobs\PR-291670_IU_Portfolio_EIA\400_Technical\437_GIS\Ballimeanoch\02_Maps\05_EIA_Figures_Jan2024\Fig_16.1_SocioEconomics_pythonscript



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LEGEND

- Development Boundary
- Permanent Infrastructure
- Core Paths
- Recreational Routes
- Caledonia Way (NCN78)
- Local Walking Paths
- Public Right of Way (Heritage Paths)

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FIGURE TITLE

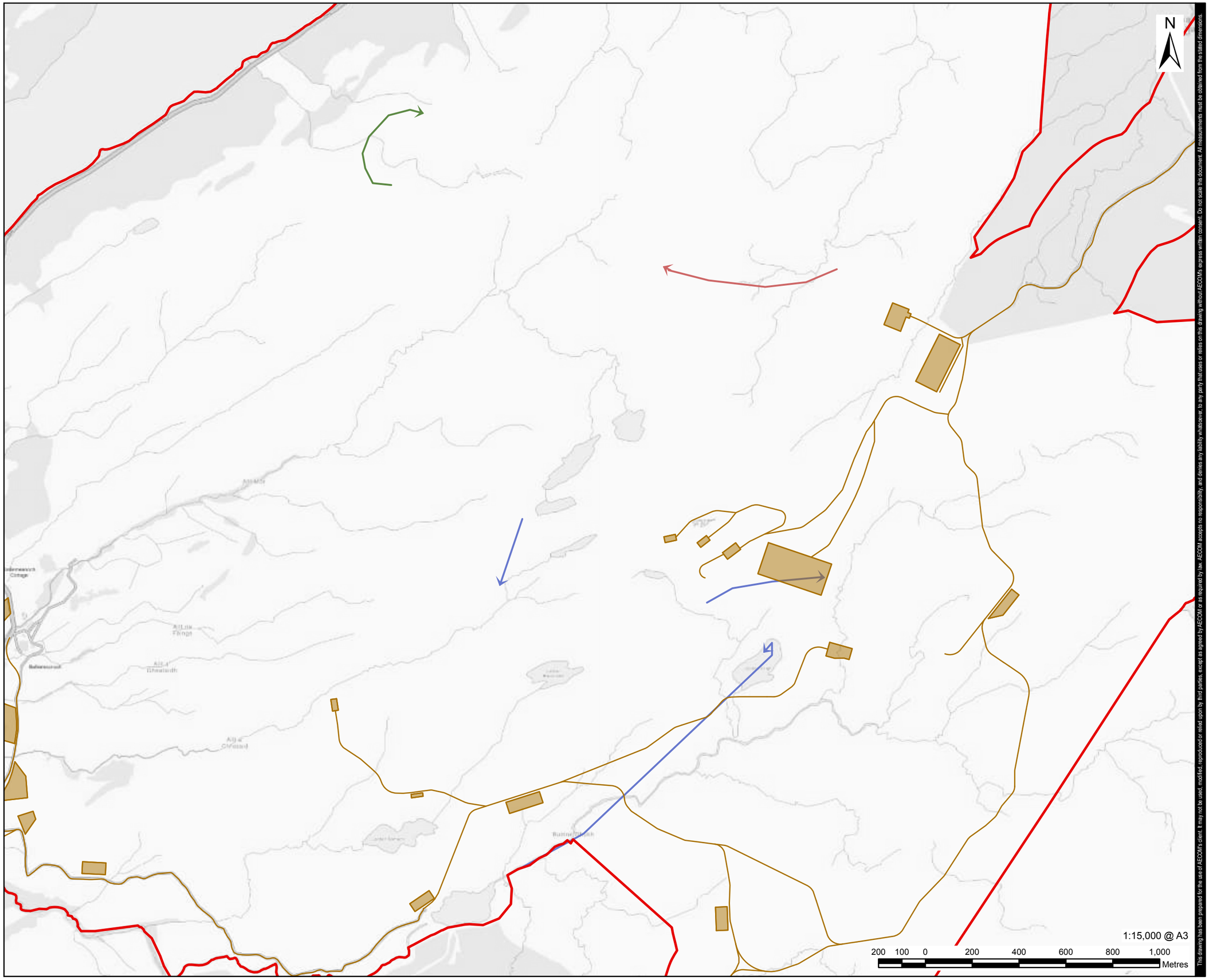
Outline Access Management Plan

FIGURE NUMBER

Figure 16.2

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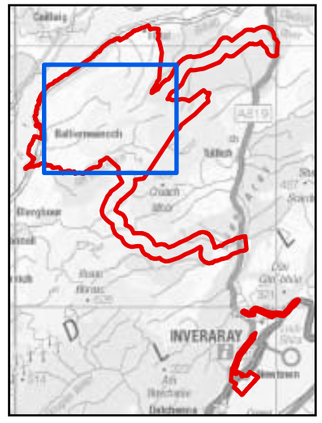
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LEGEND

- Development Boundary
- Above Ground Infrastructure

Recorded Flightlines

- Black grouse
- Goosander
- Peregrine



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FIGURE TITLE

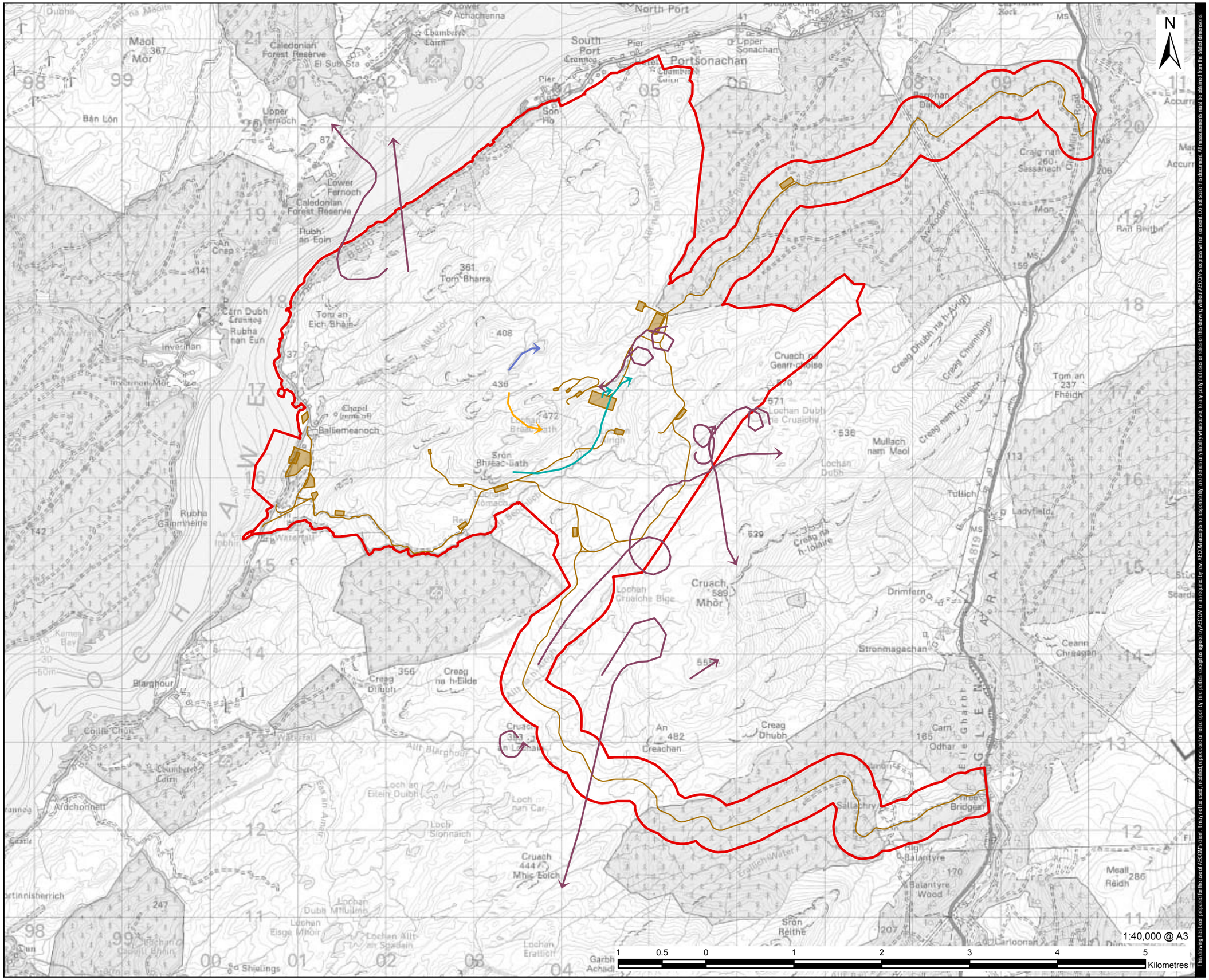
Flightlines Recorded by Vantage Point Surveys During Non-breeding Season

FIGURE NUMBER

Figure 9.1.2

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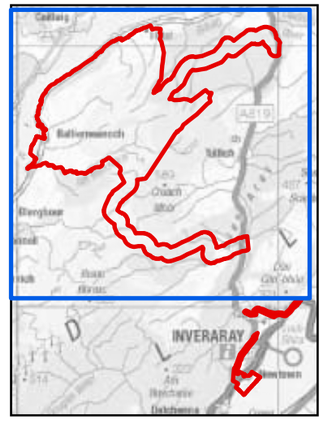
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LEGEND

- Development Boundary
- Above Ground Infrastructure

Recorded Flightlines

- Goosander
- Golden plover
- Hen harrier
- White-tailed eagle



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FIGURE TITLE

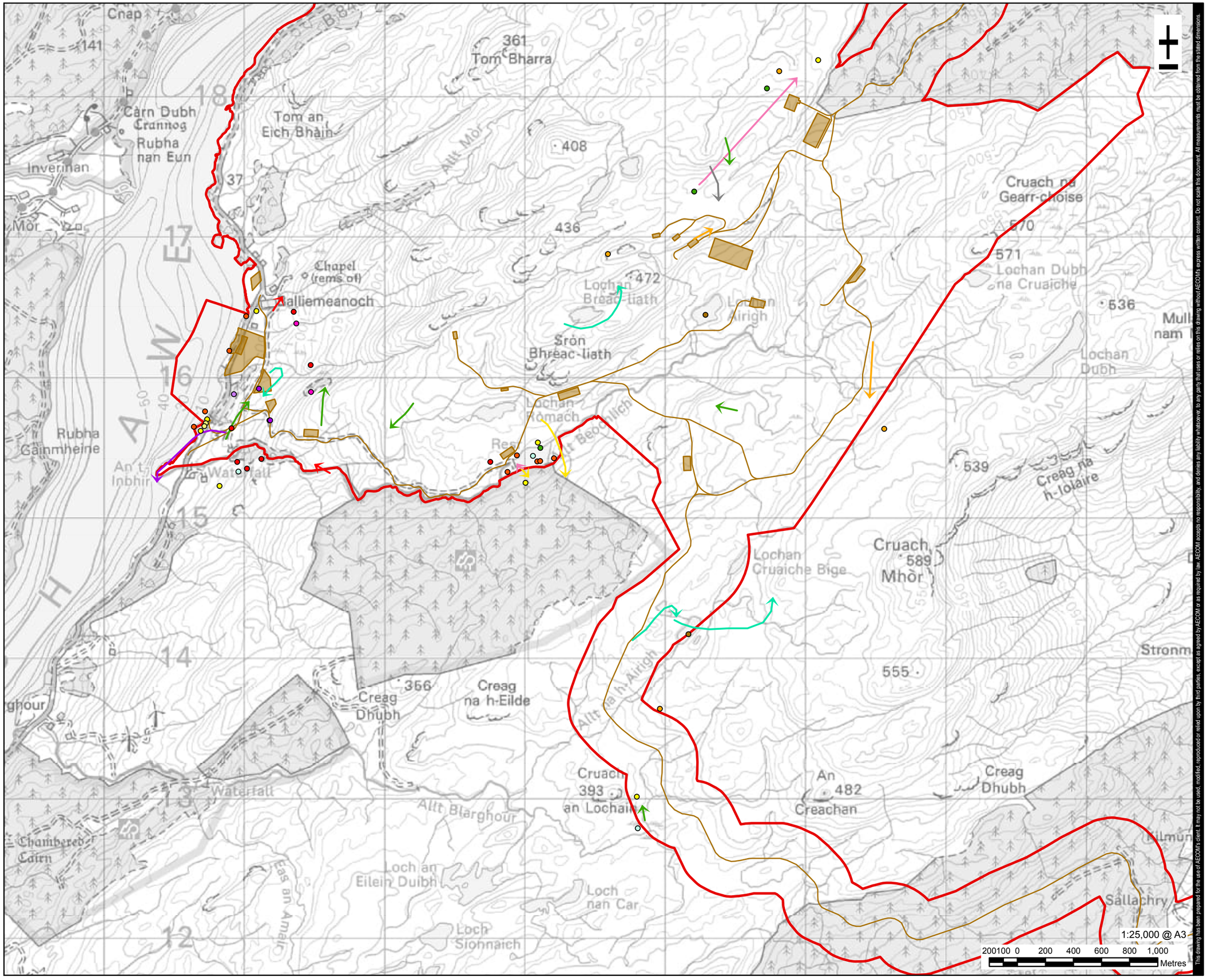
Flightlines Recorded by Vantage Point Surveys During Breeding Season

FIGURE NUMBER

Figure 9.1.3

Revision: 1 Drawn: MH Checked: BM Approved: TM Date: 2025-05-14

Filename: \\eu.aecomnet.com\UKUKED14\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Ballimeanoch\02_Maps\00_EIA_Figures_Jan2024\Appendix_9.1_6.2_240220.aprx



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BALLIEMEANOCH PUMPED STORAGE HYDRO

CLIENT

ILI (Borders PSH) Ltd.

CONSULTANT

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

LEGEND

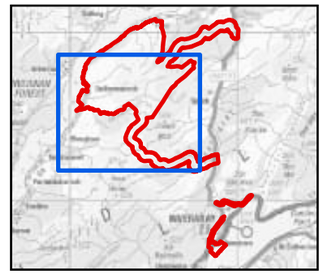
- Development Boundary
- Above Ground Infrastructure

Species

- Common Sandpiper
- Cuckoo
- Curlew
- Fieldfare
- Goldeneye
- Golden Plover
- Hooded Crow
- House Martin
- Lesser Redpoll
- Mistle Thrush
- Oyster Catcher

Recorded Flightlines

- Common Crossbill
- Curlew
- Golden Plover
- Hooded Crow
- Herring Gull
- Lesser Redpoll
- Mistle Thrush
- Oyster Catcher



NOTES

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FIGURE TITLE

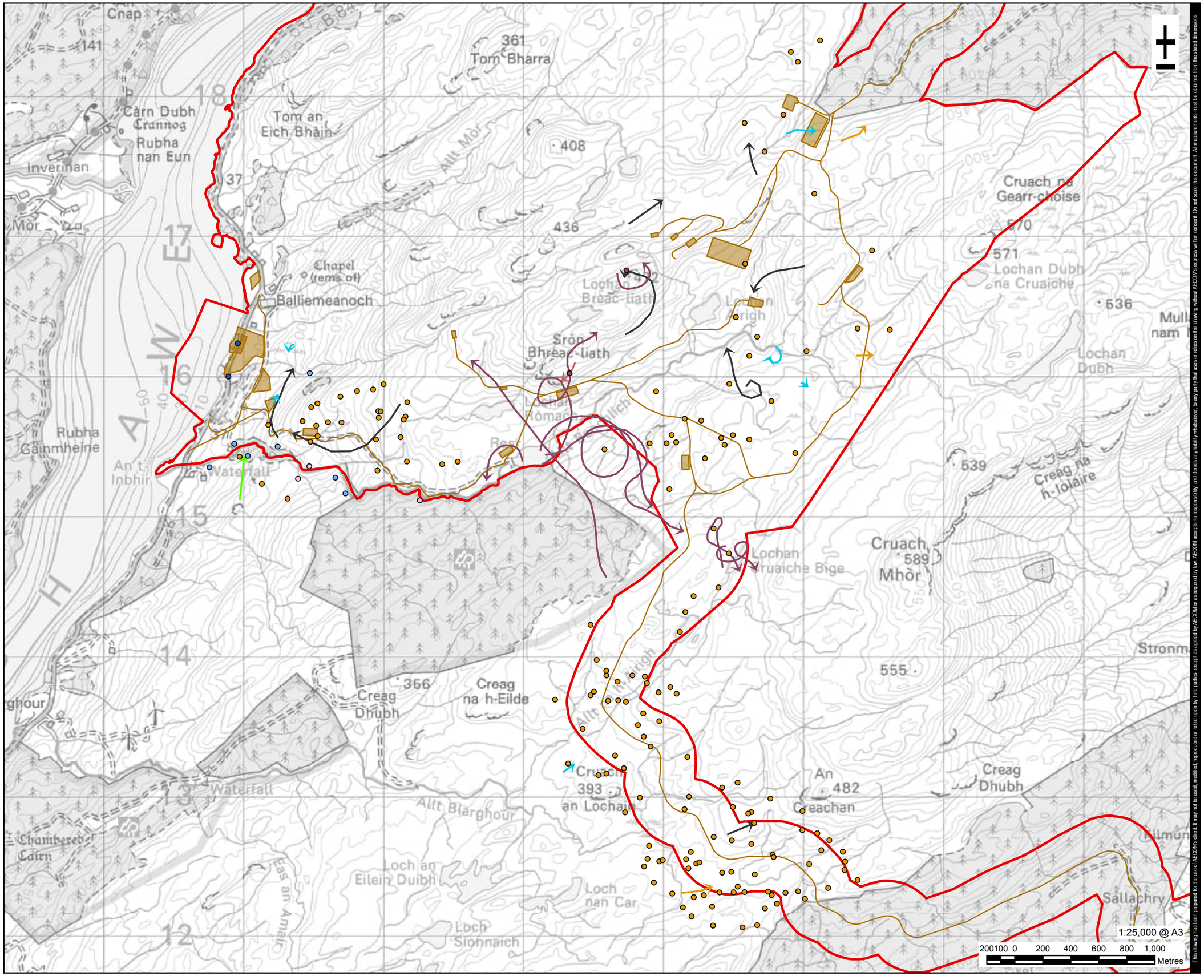
Results of Moorland Breeding Bird Surveys

FIGURE NUMBER

Figure 9.1.4 (Sheet 1 of 2)

Revision: 1 Drawn: MH Checked: BM Approved: TM Date: 2025-05-12

Filename: \\eu.aecomnet.com\UK\UKED\4\Jobs\PR-291676_ILI_Portfolio_EIA\400_Technical\437_GIS\Balliemeanoch\02_Maps\00_EIA_Figures_Jan2024\Appendix_9.1_6.2_240220.aprx



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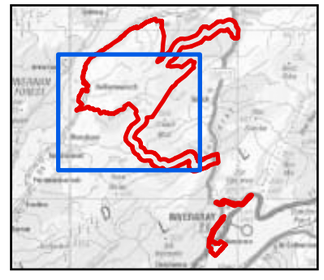
- Development Boundary
- Above Ground Infrastructure

Species

- Skylark
- Song Thrush
- Tree Pipit
- Whinchat
- White-tailed Eagle

Recorded Flightlines

- Peregrine
- Raven
- Skylark
- Siskin
- Snipe
- White-tailed Eagle



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FIGURE TITLE

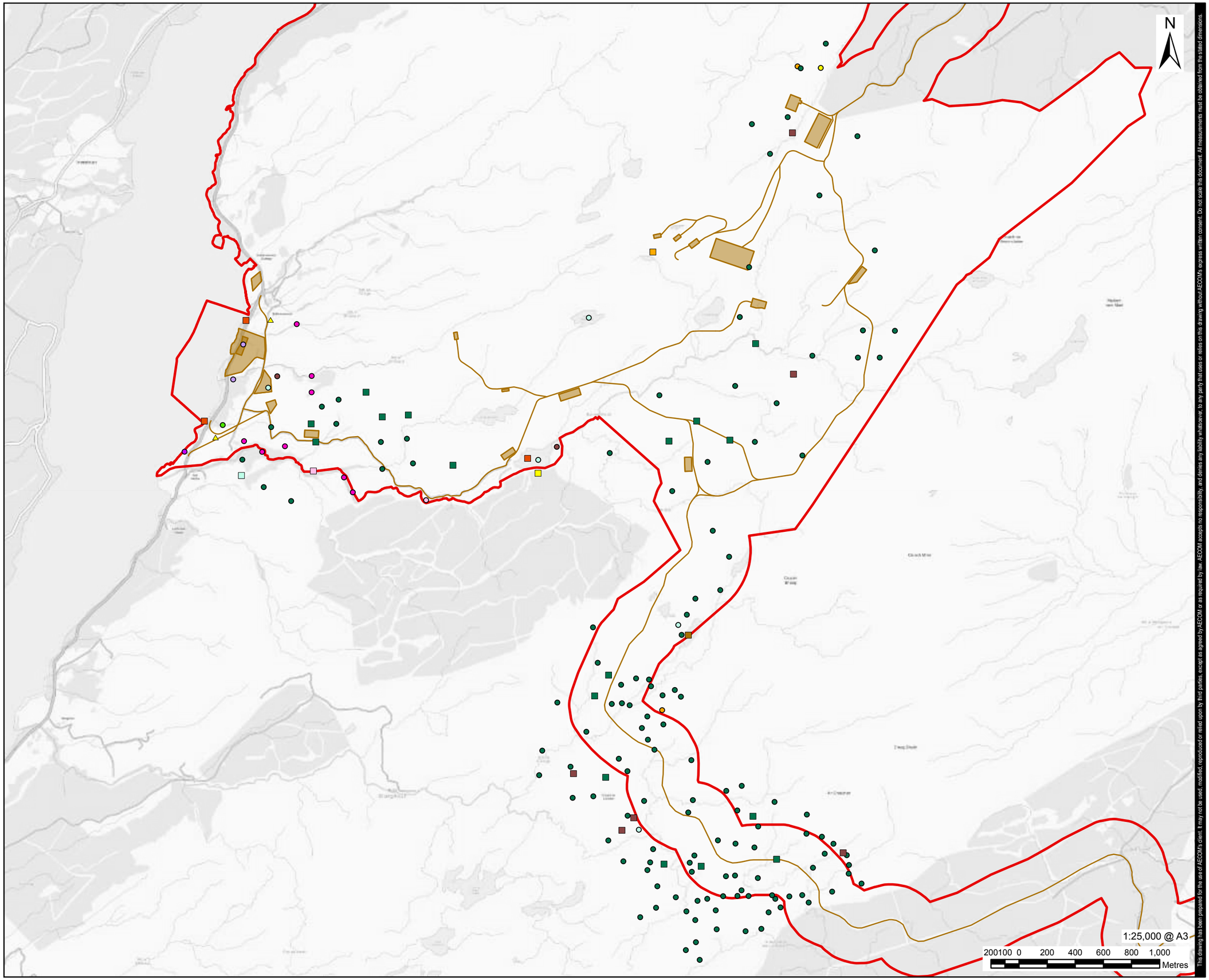
Results of Moorland Breeding Bird Surveys

FIGURE NUMBER

Figure 9.1.4 (Sheet 2 of 2)

Revision: 0 Drawn: MH Checked: BM Approved: TM Date: 2025-05-12

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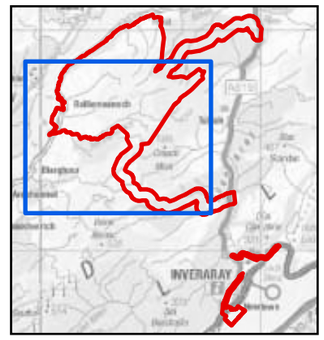
- Development Boundary
- Above Ground Infrastructure

Species

- Common Sandpiper
- Cuckoo
- Curlew
- Goldeneye
- Golden Plover
- Mistle Thrush
- Oystercatcher
- Skylark
- Spotted Flycatcher
- Snipe
- Song Thrush
- Tree Pipit
- Whinchat

Breeding Evidence

- Confirmed
- Possible
- Probable



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FIGURE TITLE

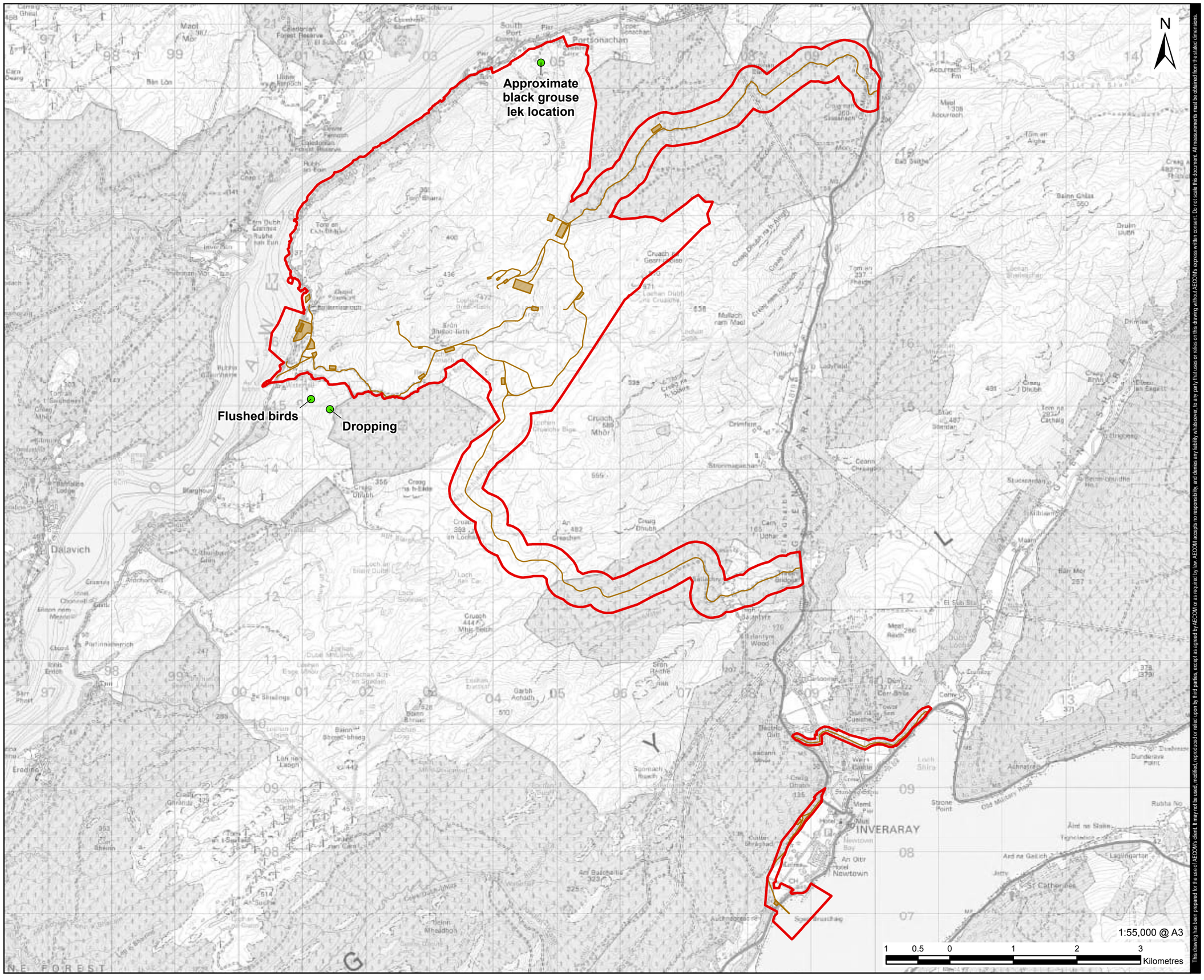
Results of Territory Analysis for Important Moorland Breeding Birds

FIGURE NUMBER

Figure 9.1.5

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LEGEND

- Development Boundary
- Above Ground Infrastructure
- Black Grouse Observations

NOTES

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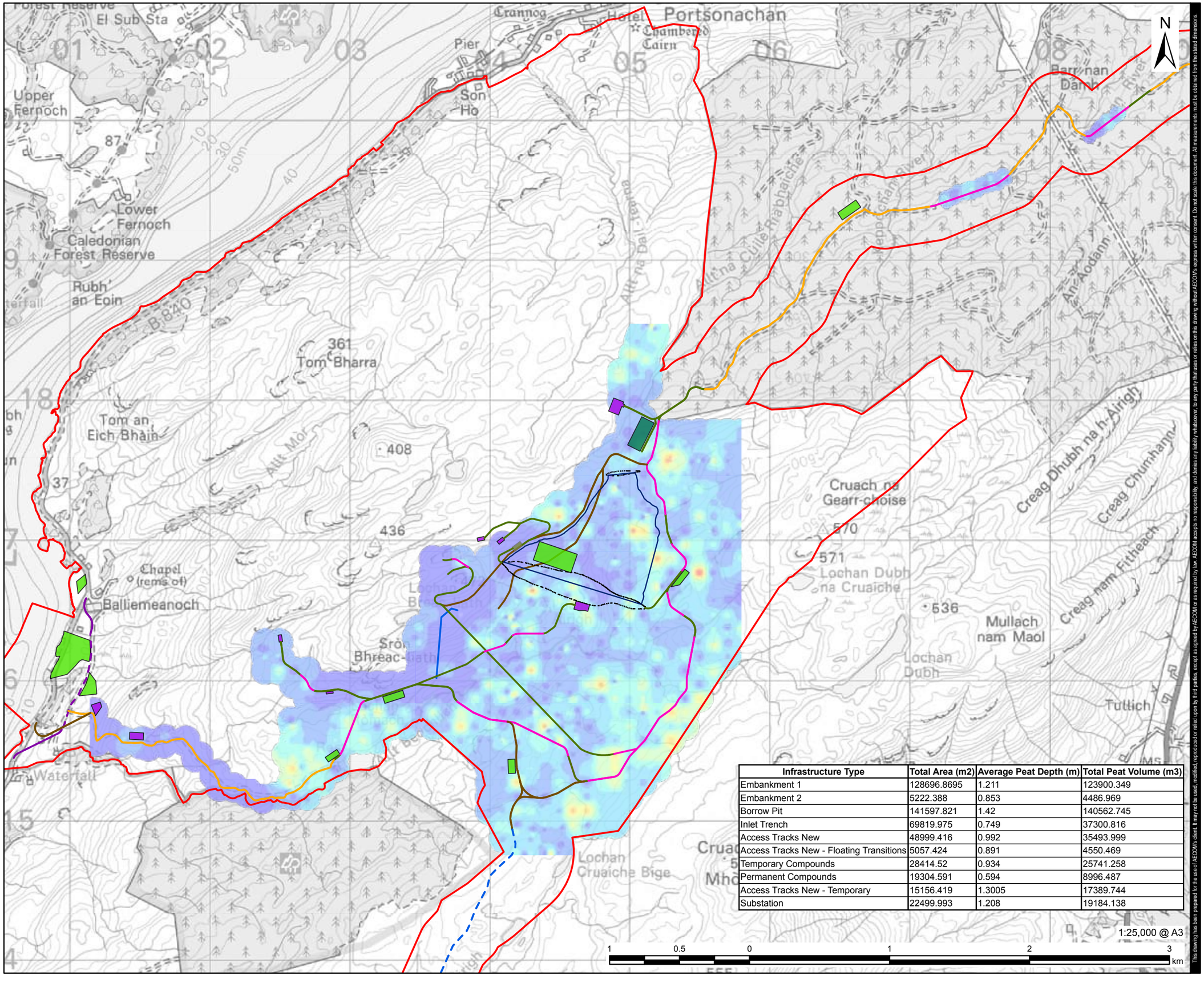
60570241

FIGURE TITLE

Black Grouse Survey Results

FIGURE NUMBER

Figure 9.1.7



Infrastructure Type	Total Area (m2)	Average Peat Depth (m)	Total Peat Volume (m3)
Embankment 1	128696.8695	1.211	123900.349
Embankment 2	5222.388	0.853	4486.969
Borrow Pit	141597.821	1.42	140562.745
Inlet Trench	69819.975	0.749	37300.816
Access Tracks New	48999.416	0.992	35493.999
Access Tracks New - Floating Transitions	5057.424	0.891	4550.469
Temporary Compounds	28414.52	0.934	25741.258
Permanent Compounds	19304.591	0.594	8996.487
Access Tracks New - Temporary	15156.419	1.3005	17389.744
Substation	22499.993	1.208	19184.138

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LEGEND

- Development Boundary
- Headpond
- Headpond Embankments

Peat Probes

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.0 - 3.00
- 3.0 - 4.00
- 4.01 - 5.00
- 5.01 - 6.00
- 6.01+

Above Ground Infrastructure

- B840 Diversion - Permanent, Upgrade, Excavated
- New B840 Diversion, Permanent, Excavated
- Access Track - Permanent, New, Excavated
- Access Track - Permanent, New, Floating
- Access Track - Permanent, Upgrade, Excavated
- Access Track - Temporary, New, Excavated
- Proposed Blarghour wind farm access track
- Lower Gate House
- Marine Facility
- Permanent Construction Compound
- Lower Gate House
- Temporary Construction Compound
- Upper Gate House

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FIGURE TITLE

Peat Excavation

FIGURE NUMBER

Figure 10.2.1

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