



Outline Biodiversity and Habitat Management Plan

Document Information		
Document title:	<i>Balgray Wind Farm - Outline Biodiversity and Habitat Management Plan</i>	
Date of issue:	<i>20/06/2025</i>	
Status:	Approved	
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Approved by:	Jack Bell, Head of Ecology and Environment	03/03/2025

Version	Date	Purpose of amendment
01	<i>24/09/2024</i>	Original / DRAFT document
02	<i>21/02/2025</i>	<i>Update to management areas</i>
03	<i>20/06/2025</i>	<i>Update to report following review, updated peatland restoration areas, and figures.</i>

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1. Introduction

This outline Biodiversity and Habitat Management Plan (oBHMP) has been produced as part of the proposed Balgray Wind Farm scheme. This document will outline targeted habitat management techniques for the enhancement of biodiversity on the site for identified ecological receptors.

The oBHMP has been produced to ensure that the proposed development achieves the requirement to provide significant biodiversity enhancements at per National Policy Framework 4 (NPF4), with specific regard to Policy 3: Biodiversity. The intent of Policy 3 is: To protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks. To achieve this, major and national developments are required to meet set criteria including the provision of significant biodiversity enhancements (outwith of required mitigation)¹.

At this time, this document remains a draft, and management options outlined within are proposed only.

This document has been produced following Chartered Institute of Ecology and Environmental Management (CIEEM)² and NatureScot guidance³.

1.1. Project description

The proposed development is a six-turbine wind farm with an embedded Battery Energy Storage System (BESS) and ancillary infrastructure (the Site) situated 4.5km north of Lockerbie in Dumfries and Galloway.

The proposed Site location and red line boundary is shown in Appendix A.

¹ Scottish Government (2023) *National Planning Framework 4*. Available at: <https://www.gov.scot/publications/national-planning-framework-4/pages/3/>

² CIEEM (2017) *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management, Winchester.

³ Scottish Natural Heritage (2016) *Planning for Development: What to consider and include in Habitat Management Plans: Guidance*. Available online: <https://www.nature.scot/sites/default/files/2023-12/160324%20-%20HMP%20guidance.pdf>

2. Aims and Objectives

Following a review of the key habitats and species recorded on-site, and in conjunction with the proposed development plans, the following aims have been identified for this Biodiversity and Habitat Management Plan. Areas for proposed habitat creation and enhancement can be found in Appendix A:

1. Increase range of suitable marsh fritillary (*Euphydryas aurinia*) habitat and reduce fragmentation of current suitable habitat.
2. Increase opportunities for otter (*Lutra lutra*) resting up and breeding within the Site.
3. To improve and restore approximately 2.8 ha of degraded bog habitat within the Site.

The following objectives are proposed to achieve these aims:

1. Marsh fritillary:

- 1.1 Adopt a suitable grazing scheme which will maintain current extent of suitable marsh fritillary habitat and enhance adjacent habitat.
- 1.2 Increase abundance of marsh fritillary food plant, devil's-bit scabious (*Succisa pratensis*), within identified areas.
- 1.3 Stock fencing of marsh fritillary habitat areas.

2. Otter:

- 2.1 Provide opportunities for breeding otter.

3. Bog habitat:

- 3.1 Design a program of peatland restoration for degraded blanket bog area; may include rewetting (drain blocking) & adoption of grazing regime grazing.

Red kite (*Milvus milvus*) was the only ornithological receptor that was assessed to have a potential for low magnitude (not significant) impact (see Chapter 7: Ornithology for full assessment). No targeted habitat management has been proposed in relation to this species, as it is not recommended to increase the value of the Site for red kite. The size of the proposed development area is not sufficient to enhance the Site's suitability for red kite without also potentially increasing collision risk with turbines.

2.1. Management measures

The following management measures are proposed to meet the objectives of the BHMP.

Table 1: Proposed management measures.

Objective	Management Measure
1.1 Adopt a suitable grazing scheme which will maintain current extent of suitable marsh fritillary habitat and enhance adjacent habitat.	Management: An operational grazing scheme to be produced. The scheme will predominantly focus on grassland management through cattle. Extensive cattle grazing to maintain and enhance butterfly areas. Sheep grazing is to be avoided / restricted within management areas. To improve adjacent areas, more active management measures such as cutting of dense rushes / tussock grasses to open the sward or other ground preparation techniques may be required in the first instance.
1.2 Increase abundance of marsh fritillary food plants, devil's-bit scabious within identified areas.	Expansion: Plug and seed planting of devil's-bit scabious within identified areas.
1.3 Stock fencing of marsh fritillary habitat areas.	Protection: Installation of stock fencing around the marsh fritillary habitat areas to prevent unintended grazing and facilitate the adopted grazing regime.
2.1 Provide opportunities for breeding otter.	Provision of an artificial otter holt along the southern shore of Hallhills Loch.
3.1 Design a program of peatland restoration for degraded blanket bog area.	Restore approximately 2.8 ha of degraded bog. This may include traditional peatland restoration techniques including; implementation of grazing regimes and measures to increase the water table within the area.

3. Discussion

3.1. Marsh fritillary

Detailed surveys were undertaken in 2024; these surveys sought to map suitable marsh fritillary habitat within the Site. The habitat suitability surveys were focused on recording the distribution of devil's-bit scabious (*Succisa pratensis*), the larval food plant of marsh fritillary, within the Site. Devil's-bit scabious was recorded widely across the north and east of the Site, with fragmented patches to the south. Overall, density was variable, with the foodplant usually identified as part of a mixed sward or in small patches. The highest density of devil's-bit scabious was recorded along the eastern boundary of the site in the basin mire habitat at White Hill. Marshy grassland north and northwest of Hallhills Loch supports lower, more scattered densities of the foodplant, likely a consequence of increased competition from rank grasses creating a more closed sward structure. Overall, A total of 57.89 ha of potentially suitable habitat for marsh fritillaries was identified.

The proposed wind development will result in the loss of 1.068 ha of existing suitable marsh fritillary habitat, this comprises 1.8% of the overall suitable habitat within the Site. To meet Aim 1 of the BHMP, three management objectives targeted towards marsh fritillary have been identified, with the core principles focused on the retention, enhancement and expansion of suitable fritillary habitat within the Site. Approximately 25.495 ha of habitat has been identified for potential enhancement; areas identified are of comparable habitat communities to current suitable habitat within the Site, predominantly marshy grassland, (Phase 1 methodology) and National Vegetation Classification (NVC) communities M23, and M25. Furthermore, areas identified for potential enhancement have been designed to link existing suitable areas, increasing connectivity within the Site which in turn will increase resilience of the marsh fritillary population.

Overall, the proposed management of the Site for marsh fritillaries will seek to increase the extent of suitable habitat by 22.246 ha. If successful, this would result in an increase from 57.89 ha of suitable habitat to 79.968 ha within the Site; a 38% increase in suitable habitat from baseline conditions. Additionally, management of retained 56.822-ha of suitable habitat (particularly along the northeast and northwest of Hallhills Loch) should result in an improvement in overall habitat condition the population.

Additional detail for each objective can be found below:

Objective 1.1: Management

As detailed in Table 1, a suitable grazing regime for the areas of existing suitable habitat and proposed enhancement areas will be adopted throughout the operational phase of the proposed development. Management practices will aim to improve current conditions for breeding and facilitate the spread of devil's-bit scabious within the identified areas.

Female marsh fritillaries have a preference for laying eggs on foodplants growing within a vegetation range of between 5 and 25 cm on damp grassland. The implemented grazing regime should aim to produce a sward with a reasonable proportion in this range, within an uneven mosaic of short and long vegetation. This is likely to be achieved through extensive light grazing of the identified areas by cattle. Stocking rates of cattle should be carefully considered however, for low productive sites, stocking rates should not exceed 0.2-0.3 livestock units/ha/year⁴.

Due to selective grazing, sheep grazing of the areas will be unsuitable to achieve the Aim 1 of the BHMP and will be avoided. Similarly, mechanical management is not a suitable alternative and will be avoided.

Objective 1.2: Expansion

Successful enhancement of identified areas will be dependent on the presence / absence of the marsh fritillary larval foodplant. Areas of existing suitable habitat already support devil's-bit scabious, and it is likely that the

⁴ Bibby, H. No date. *Information Note: Land Management for Marsh Fritillary Butterfly*. Farm Advisory Service

adoption of a suitable grazing regime will facilitate the spread of devil's-bit scabious due to its likely presence within the soils seed bank.

However, in adjacent areas where the seed source may not be present, supplementary seeding or plug planting of devil's-bit scabious may be required. Both techniques have shown to successfully increase the extent of the foodplant at sites in Scotland and England⁵⁶.

It is recommended that updated vegetation surveys, which incorporates adapted Common Standard Monitoring (CSM) techniques⁷ to accurately map the distribution / density of devil's-bit scabious within the identified areas is undertaken post-construction. This data should be used to inform potential planting / seeding locations.

Objective 1.3: Protection

The identified marsh fritillary areas will be fenced off post-construction. This will define the marsh fritillary habitat, and will facilitate the adoption of the grazing regime, preventing unintentional intensive grazing or inadvertent grazing by non-desirable species (sheep).

3.2. Otter

Evidence of otter was recorded during the baseline protected species surveys for the Site. Evidence of use was limited to Hewke burn, three spraints and a potential hover was identified. The baseline surveys indicate the Site is likely used in a foraging / commuting capacity with no evidence of breeding. Additionally, no potential breeding habitat was identified within the Site.

Therefore, to improve the ecological functionality of the Site for otter and achieve Aim 2 of the BHMP, an artificial otter holt will be installed. An updated survey along Hallhills Loch and Hewke burn should be undertaken to identify a suitable location for holt installation.

3.3. Peatland restoration

Opportunities for peatland restoration within the Site will be explored. Currently a combined area of 3.989-ha across two adjacent areas which were classed as E1.7 Wet Modified Bog under Phase 1 methodology, NVC communities recorded include M15b, M20b, and M17a. Generally, the areas were considered to be comprised of shallow peat, supporting degraded M17 *Scirpus cespitosus* – *Eriophorum vaginatum* blanket mire, intergrading with M15 *Scirpus cespitosus* – *Erica tetralix* wet heath mosaics. Despite the shallow peat, vegetation composition was close to M17, with abundant hair-tail cottongrass (*Eriophorum vaginatum*) and carpets of *Sphagnum capillifolium* and *Sphagnum papillosum*.

Peat depths within the areas were recorded to range between 10cm - c1m. Results from the habitat surveys suggest that several factors are contributing to the degraded condition of the blanket bog, including drying and poaching from grazing pressures. However, it was identified that there are potential restoration opportunities.

Potential restoration techniques may include:

- Raising of the water table through installation of surface bunds, peat dams, and plastic piling.
- Vegetation control

⁵ Kirkland, P. (2014) *Experimental marsh fritillary habitat restoration project Avongovrie, Islay*. Scottish Natural Heritage Commissioned Report No. 544

⁶ Plackett, J., Bourn, N.A. & Bulman, C.R. (2012) *Restoring Marsh Fritillary metapopulations on Dartmoor*. Pages 6-9 in: S. Ellis, N.A. Bourn & C.R. Bulman (eds.) *Landscape-scale conservation for butterflies and moths: lessons from the UK*. Butterfly Conservation.

⁷ Joint Nature Conservation Committee (2008) *Common Standards Monitoring Guidance for Terrestrial and freshwater invertebrates*. ISSN 1743-8160. Available online: <https://data.jncc.gov.uk/data/80873e1e-63eb-44a0-925c-b5edec5fa3fd/CSM-TerrestrialFreshwaterInvertebrates-2008.pdf>

- Re-introduction of native bog species

It is recommended that detailed peatland restoration scheme should be produced, this should include the results of an updated survey which will highlight the required peatland restoration activities.

4. Monitoring

Once the details of management measures have been finalised, a programme of monitoring and reporting will be drawn up and agreed by stakeholders. It is recommended that best practice guidance is implemented when producing a detailed monitoring scheme, for example undertaking monitoring as per NatureScot's Restoration Monitoring Network (RMN)⁸ for peatland restoration, which involves post restoration monitoring in years 1, 5 and 10.

The monitoring scheme will cover the pre-construction, construction and operational phases and will include a timetable of monitoring for:

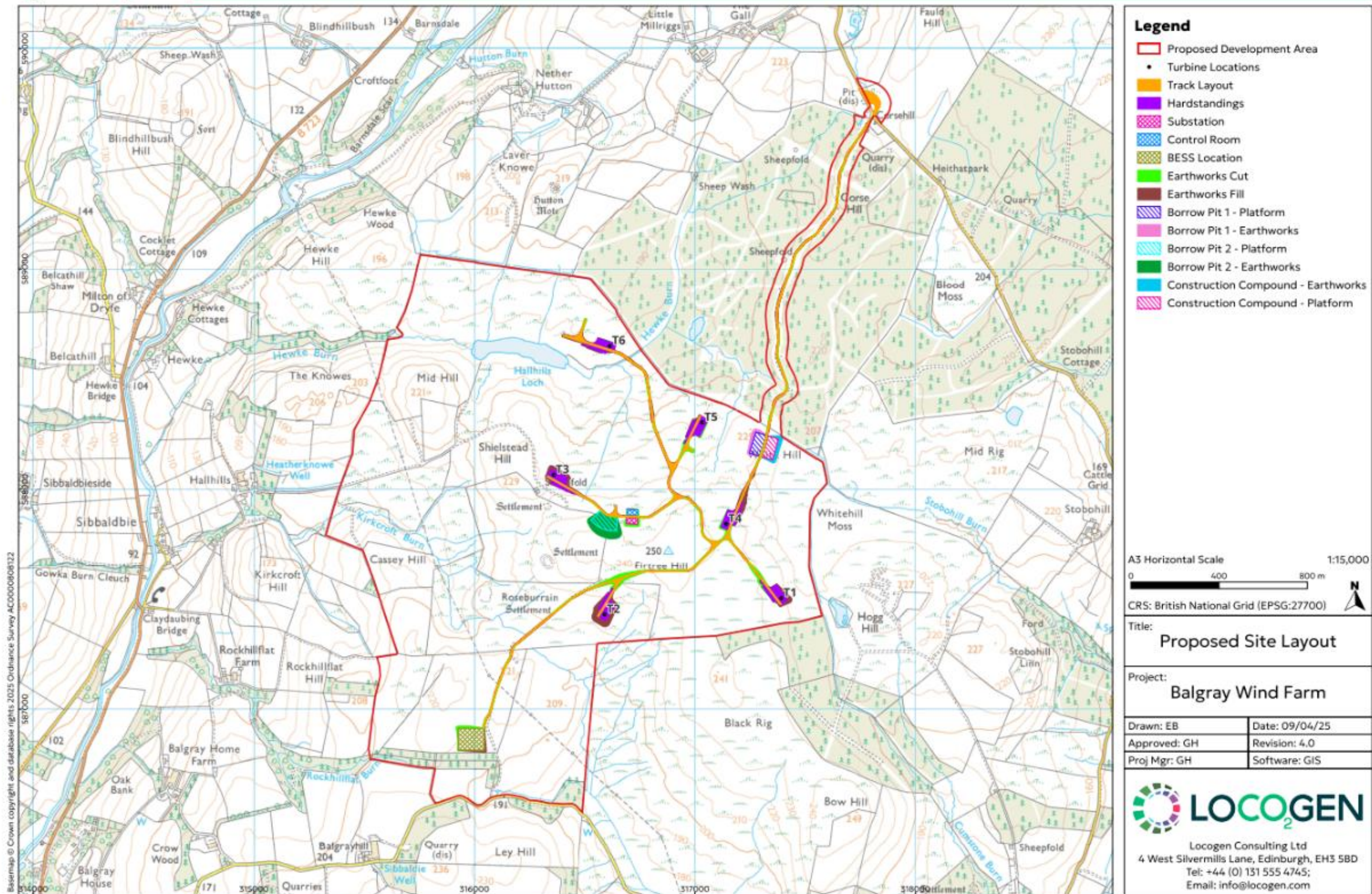
- Marsh fritillary monitoring (habitat surveys, butterfly transect and larval web searches)
- Monitoring of installed holt (checks, and remote camera trapping)
- Peatland restoration
- Monitoring of management measures within the Site

It is proposed that monitoring would be undertaken at pre-determined intervals throughout the lifespan of the proposed development. The specific details of the monitoring required will be dependent on the works carried out, and so it is proposed that these are agreed with stakeholders post-consent as a condition of the deemed planning consent, to enable producing an effective, tailored monitoring plan to assess the effects of management measures implemented at the proposed development

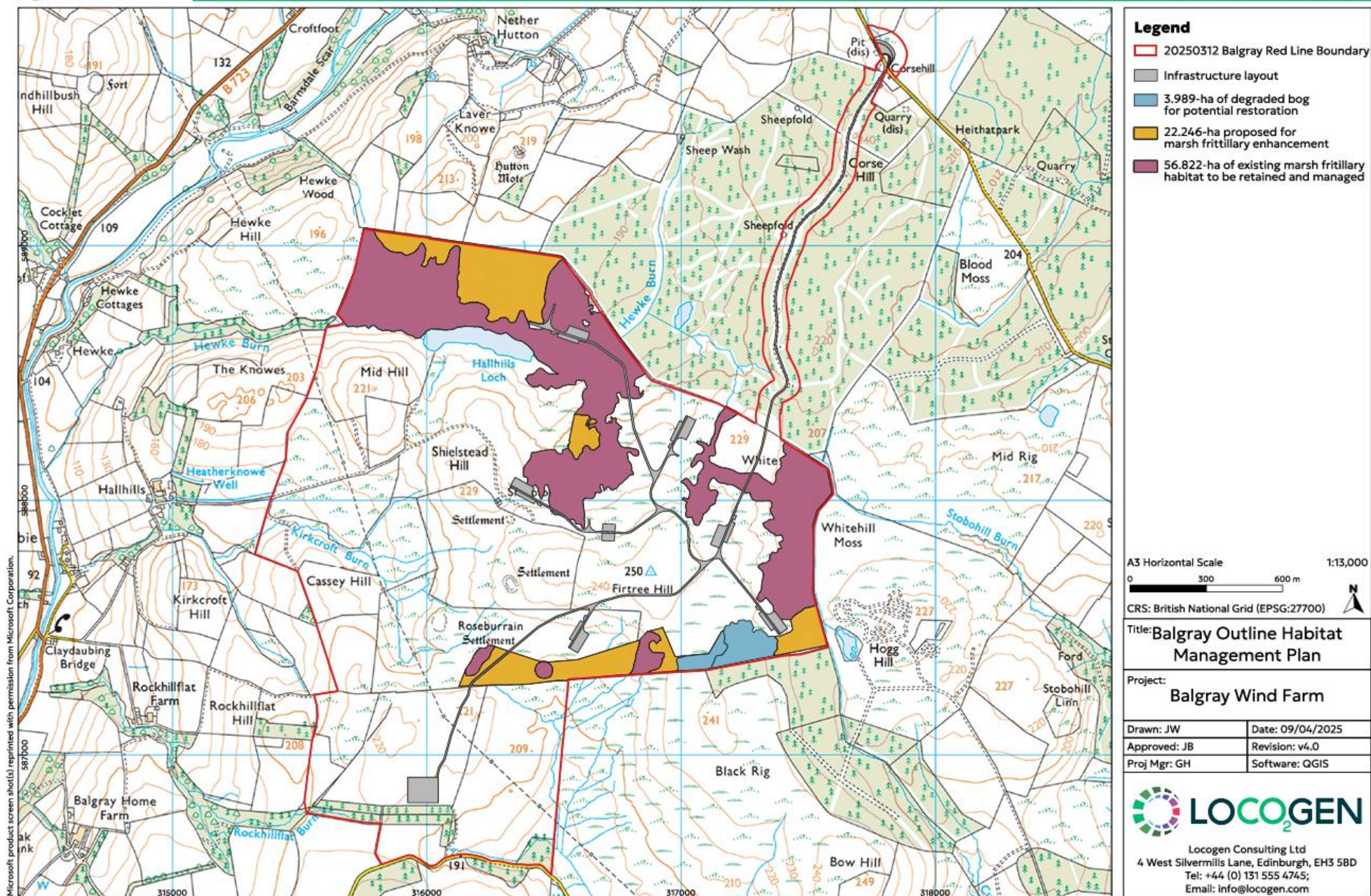
⁸ NatureScot (2025) Peatland ACTION - *Monitoring strategy*. Available online: [https://www.nature.scot/climate-change/nature-based-solutions/peatland-action/peatland-action-data-research-and-monitoring/peatland-action-restoration-data#:~:text=Restoration%20Monitoring%20Network%20\(RMN\)&text=It%20is%20an%20approach%20to,sample%20of%20Peatland%20ACTION%20sites](https://www.nature.scot/climate-change/nature-based-solutions/peatland-action/peatland-action-data-research-and-monitoring/peatland-action-restoration-data#:~:text=Restoration%20Monitoring%20Network%20(RMN)&text=It%20is%20an%20approach%20to,sample%20of%20Peatland%20ACTION%20sites).

Appendix A.

Figure 1.2



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