Ecological Assessment of a Potential Woodland Creation Site at Dod Farm, Scottish Borders

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1 Introduction

Max and Siân Carstairs Ecological Consultants were commissioned by Scottish Woodlands Ltd to undertake ecological assessments in relation to a potential Woodland Creation proposal at Dod Farm in the Scottish Borders. The aim of the assessments was to establish the current ecological value of the site as a guide to how this may be affected by the proposals.

2 Field Surveys

The following field surveys were undertaken by Max Carstairs (MCIEEM, CEnv) in April to July 2024.

A Phase 1 Habitat Survey (JNCC, 2010) with additional detail provided to National Vegetation Survey (NVC) Level (Rodwell *et. al*., 1991 & 1992). The NVC is the most comprehensive description of British floral communities and identified 681 communities and sub-communities of vegetation across the British Isles. However, as the original classification involved identifying frequently occurring associations of species it therefore didn't capture the immense variation that occurs in nature. Consequently, there is often a small number of stands of vegetation at a site that cannot be assigned to an NVC community though all vegetation types can typically be ascribed to a broader Phase 1 Habitat category.

NVC communities of significant conservation importance were mapped individually where possible. Boundaries on the vegetation map are indicative only as plant communities rarely have distinct borders and often merge untidily into each other and frequently form mosaics. Where plant communities occurred patchily or in an intertwined nature these were mapped as mosaics and the percentage cover of each presented (Appendix 1, Figure 1).

A breeding bird survey was undertaken, comprising three separate visits and following the methods of Brown and Shepherd (1993) for upland areas and O'Brien and Smith (1992) for lowlands. The original methodologies, developed for waders, were extended to include all British Trust for Ornithology (BTO) Red and Amber list bird species encountered together with notable green list species such as colonial species and species listed on the Wildlife and Countryside Act 1981. In addition, two raptor watches and a black grouse survey were undertaken (Appendix 2). All raptors and wading birds and were recorded. A buffer zone of 500m was also surveyed for wading birds and black grouse with other notable species recorded within 100m of the site (Appendix 1, Figure 3). Estimates of skylark and meadow pipit territories which were mainly distributed along the mid and upper slopes are given in the text (section 4) while other species of conservation concern are mapped in Figure 3.

Searches on terrestrial ground for signs of protected species, e.g. pine marten & badger, were carried out, as were riparian spot checks for otter and water vole. Signs observed for included droppings, feeding remains, hairs and footprints.

2.1 Limitations

Large stands of bracken precluded detailed surveying in places, in accordance with industry standard practice regarding potential contraction of Lyme disease from ticks.

Although many bryophytes and some lichens and invertebrates were recorded, an intensive survey of these groups was not undertaken.

2.2 Characterising Conservation Value

The conservation value of species and habitats was assessed using Table 1 as a guide.

Table 1. Indicative Criteria for Assessing Conservation Value

Level of Value	Examples
International	Internationally designated sites (e.g. SAC, SPA, RAMSAR) or undesignated site of equivalent quality. IUCN CR & E species*
National	A nationally designated site (e.g. SSSI) or undesignated site of equivalent quality. Wildlife & Countryside Act Schedule 8 Species. IUCN VU & NT species
Regional	Wildlife reserves (e.g. SWT, RSPB & NTS) or sites of equivalent quality. Species and habitat assemblages which significantly enrich regional biodiversity. IUCN LC species.
Local	Local Nature Conservation Sites or sites with equivalent value which enrich the quality of local biodiversity.
Negligible	A site containing only common species and habitats which are generally present over a wide geographic area

*The International Union for Conservation of Nature (IUCN) Red List of Threatened Species is a checklist of taxa that have undergone an extinction risk assessment. Categories include: Critically Endangered (CR), Endangered (E), Vulnerable (VU), Near Threatened (NT) and Least Concern (LC).

UK Biodiversity Action Plan Species and Scottish Biodiversity List categories are also taken into account during the assessment but are not included in Table 1 as many of these can be broad and could potentially fit into 2 or 3 Levels of Value.

The UK Biodiversity Action Plan (UK BAP) was published in 1994 and was the UK Government's response to the Convention on Biological Diversity (CBD) which the UK signed up to in 1992 in Rio de Janeiro. The CBD called for the development and enforcement of national strategies and associated action plans to identify, conserve, and protect existing biological diversity, and to enhance it wherever possible.

The Scottish Biodiversity List is a list of animals, plants, and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. Categories include: Conservation action needed (CAN), Avoid negative impacts (ANI), Watching brief only (WBO).

All relevant conservation designations were taken into account together with site factors including population size, distribution of species and size and distribution of habitats. Habitat sensitivity is presented in Table 3 and Appendix 1, Figure 2.

3 Field Survey Results - Botany

3.1 Phase 1 Habitats and NVC Communities

The relationship between Phase 1 Habitats and NVC communities on site is presented in Table 2. A map of Phase 1 Habitats and NVC communities is presented Appendix 1, Figure 1.

Table 2. Summary of Phase 1 and NVC Habitats on Site

Phase 1 Code	Phase 1 Name	NVC and Equivalents
A1	Woodland	
B1	Acid grassland	U4
B2	Neutral grassland	MG5
B3	Calcareous grassland	CG10
B5	Marshy grassland	M23, M25 (on shallow soils)
C1	Bracken	U20
E1	Bog	M17, M20 & M25 on deep peat
E2	Flush and spring	M10, M37

3.2 Woodland

A number of broadleaved woodlands occurred on site with various mixtures of *Alnus glutinosa*, *Fraxinus excelsior*, *Fagus sylvatica*, and *Crataegus monogyna.* Understories were typically either *Pteridium aquilinum*, extensions of nearby improved grasslands or woodland flora dominated by *Poa nemoralis*. Pyat Sike Plantation is listed on the Ancient Woodland Inventory.

3.3 Bracken

Stands of bracken in the form of ***U20 Pteridium aquilinum – Galium saxatile community*** were variously present within the site. Bracken occurred occasionally within other habitats.

3.4 Acid grassland

Acid grassland mainly occurred in the form of ***U4a Festuca ovina – Agrostis capillaris – Galium saxatile grassland, typical sub community*** and ***U4b Festuca ovina – Agrostis capillaris – Galium saxatile grassland, Holcus lanatus-Trifolium repens sub community***. This habitat was generally dominated by *Agrostis capillaris* and *Festuca ovina* with associates including *Agrostis vinealis*, *Nardus stricta*, *Potentilla erecta*, *Galium saxatile*, *Trifolium repens* and *Achillea millefolium*.

3.5 Neutral grassland

Large areas of improved grassland ***MG6 Lolium perenne - Cynosurus cristatus grassland*** dominated by *Holcus lanatus* and occasional to frequent *Lolium perenne* occurred. In many places neutral grassland did not fit an NVC community where *Lolium perenne* became scarce or absent while *Holcus lanatus* remained prominent. In wetter areas *Carex leporina* became prominent with occasional clumps of *Juncus conglomeratus* in the sward.

Sparse patches of mildly base-mineral-enriched grassland occurred on thin soils on the bank of the Dod Burn. Species present included *Leontodon hispidus*, *Galium verum*, *Hypochaeris radicata*, *Euphrasia officinalis agg*, *Lotus corniculatus*, *Festuca ovina*, *Prunella vulgaris, Linum catharticum*, *Briza media*, *Trifolium pratense*. *Thymus polytrichus* was generally absent or sparse. This vegetation type is best described a species-rich therophytic grassland with strong elements of ***MG5c Cynosurus cristatus-Centaurea nigra grassland – Danthonia decumbens sub-community*** and affinities to both CG10 and U4c (Figure 1, Target Note 5).

3.6 Calcareous grassland

Patches of the calcareous grassland ***CG10 Festuca ovina - Agrostis capillaris - Thymus polytrichus grassland*** occurred on sloping thin soils (Figure 1, Target Notes 6 & 7). This grassland typically contains a high diversity of plants though was present only as small patches.

3.7 Base-enriched flushes

A ***M37 Palustriella commutata – Festuca rubra spring*** was present at NGR NT 47750 04775 where the bryophyte community was dominated by *Palustriella commutata* and a diverse range of associates.

A network of diverse base-enriched flushes occurred in the north and east of the site. Communities present included ***M10 Carex dioica – Pinguicula vulgaris mire*** where vascular plants in particular became more prominent.

Species recorded included *Linum catharticum*, *Triglochin palustris, Briza media*, *Parnassia palustris*, *Pinguicula vulgaris.* The sides of these flushes, where vegetation was short, occasionally contained flushed 'M10 grassland' dominated by *Carex flacca,* with associates including *Linum catharticum*, *Briza media*, *Carex pulicaris, Lysimachia nemorum, Carex pilulifera, Parnassia palustris*, *Eriophorum latifolium*, *Pinguicula vulgaris, Galium uliginosum, Euphrasia sp*. and *Succisa pratensis*.

A similar suite of species including prominent *Carex disticha, Carex lepidocarpa, Galium uliginosum, Eriophorum latifolium* and *Crepis paludosa* occurred in longer vegetation dominated by *Juncus acutiflorus* (M10-enriched M23a) and *Molinia caerulea* (M10-enriched M25).

These calcareous areas were also associated with relatively high numbers of orchids with occasional patches of more than 100 *Dactylorhiza fuchsii* and *Dactylorhiza maculata*. A fragrant orchid population (*Gymnadenia conopsea s.l.)* was also recorded.

The transition between these diverse vegetation types and normal marshy grassland was marked by the presence of significantly fewer circumneutral to calcicolous species (i.e. often limited to occasional to frequent *Briza media* or *Avenella pubescens* marking the periphery of base influence.

3.8 Marshy grassland

Areas of ***M23 Juncus effusus/acutiflorus – Galium palustre rush pasture, M23a Juncus acutiflorus sub-community*** with dominant *Juncus acutiflorus* occurred in regular form accompanied by species including *Filipendula ulmaria*, *Lathyrus pratensis*, *Juncus conglomeratus*, *Equisetum palustre*, *Lotus pedunculatus*, *Succisa pratensis* and *Galium palustre.*

M25 Molinia caerulea – Potentilla erecta mire occurred extensively in the west of the site with frequent *Galium saxatile*, *Anthoxanthum odoratum* and *Festuca ovina*. The more diverse, herb rich ***M25c Angelica sylvestris sub- community*** occurred within base-rich areas with species including *Angelica sylvestris*, *Filipendula angelica*, *Lathyrus pratensis*, *Carex pulicaris, Silene flos-cuculi, Briza media* and *Carex flacca* (Figure 1, Target Note 8).

M25 is classified as bog within the Phase 1 Habitat methodology where it occurs on peat 50cm deep or more necessitating that any peat under this habitat is depth-probed to assess its conservation value.

3.9 Bog

Small areas of vegetation related to ***M17 Trichophorum germanicum – Eriophorum vaginatum blanket mire*** occurred in mires on the western slopes.

A mire with M17 vegetation also occurred in the east of the site. It appeared to contain aspects of a small, raised mire with an apparently slightly raised centre though LiDAR data is not available for this site to check. The mire also appeared to have a lagg fen to the south and east while the western edge was open with bog water held in place via the ground topography. A characteristic species of raised bogs *Sphagnum medium* was not observed and was therefore either very sparse or absent. The bog may be intermediate in form between raised and blanket bog i.e. an ombro-soligenous mire.

Species present included *Eriophorum vaginatum*, *Trichophorum cespitosum ssp germanicum, Aulacomnium palustre, Vaccinium myrtillus, Calluna vulgaris, Drosera rotundifolia, Avenella flexuosa, Vaccinium oxycoccos, Erica tetralix* and a carpet of sphagnum including *Sphagnum papillosum* and *Sphagnum rubellum*.

This bog is of a high conservation value, representing near-natural bog and should therefore not be planted. It would also be important not to plant surrounding mires including M25,

and M23 which will be integral to maintaining a high water table within the bog by way of reducing the rate of drainage from the entire hydrological unit.

There were large stands of ***M20 Eriophorum vaginatum blanket and raised mire*** along the watershed and downhill slopes of Muckle Knowe and Grey Goat. *Eriophorum vaginatum* was abundant though *Sphagnum* species. were generally sparse. In places *Eriophorum vaginatum* occurred where *Molinia* was dominant representing transitional vegetation between M20 and M25.

4 Field Survey Results - Birds

One red listed species, skylark, bred on site with approximately 15 pairs and a further 5 pairs in the buffer zone. A curlew (Red List) territory occurred in the buffer zone (Appendix 1, Figure 3).

Meadow pipit (Amber List) held approximately 38 territories with a further 8 in the buffer zone while oystercatcher held one territory in the north of the site.

Buzzard and raven occasionally patrolled over the site for feeding opportunities. Black grouse were not recorded.

5 Field Survey Results – Mammals

Occasional signs of badger foraging (disturbed soils and vegetation) were observed in the lower fields. No other protected species signs were observed.

6 Existing Conservation Value

6.1 Habitats

M10 Carex dioica – Pinguicula vulgaris mire and ***M37 Palustriella commutata – Festuca rubra spring*** are Priority BAP Habitats and highly dependent Groundwater Dependent Terrestrial Ecosystems (GWDTE). They are species-rich habitats of the western uplands which occur somewhat sporadically within the landscape. The stands on site together with M10-enriched M23a are of regional importance (Table 3).

M23a Juncus effusus/acutiflorus – Galium palustre rush pasture is a Priority BAP Habitat and highly dependent GWDTE where calcicoles are present. Species-rich examples of this habitat on site are of regional conservation importance.

Where the community ***M25 Molinia caerulea – Potentilla erecta mire*** lies on deep peat (>50cm deep) it is classified as bog and as such is a Priority BAP Habitat, appearing on the Scottish Biodiversity List for its importance in supporting species. It is also listed on Annex 1 of the EU Habitats Directive 1994 and, depending on local hydrology, may be a moderately dependent GWDTE.

Peat probing has not been undertaken but any ***M25 Molinia caerulea – Potentilla erecta mire, Anthoxanthum odoratum*** present on deep peat would constitute a wet modified bog likely to be of regional importance. The standard community situated on shallower soils would not be of the same conservation importance (Table 3), though may also be a moderately dependent GWDTE. Species-rich communities are of regional importance regardless of peat depth.

Calcareous grassland ***CG10 Festuca ovina - Agrostis capillaris - Thymus praecox grassland*** has a high conservation value because of the high diversity of plant and associated insect species which typically occur. The stands on site are small and not as diverse as larger stands in the region. CG10 is a UK Priority Biodiversity Action Plan (BAP) habitat. These communities are likely to be of local importance due to their small size.

Table 3. Conservation Designations and GWDTE Status of NVC Communities on Site

Habitat	Annex 1 Habitat	BAP Habitat Status	Likely GWDTE[1] Status
U4[2]	×	Broad	×
U20	×	Broad	×
MG5	✓	Priority	×
CG10	×	Priority	Highly Dependent
M10	×	Priority	Highly Dependent
M17	✓	Priority	×
M20[5]	✓	Priority	×
M23a[3]	×	Priority	Highly - Moderately Dependent
M25[3,4]	✓	Priority	Highly - Moderately Dependent
M25c	✓	Priority	Moderately Dependent
M37	×	Priority	Highly Dependent
Rivers and watercourses	×	Priority	Unknown

[1] GWDTEs are specifically protected under the EU Water Framework Directive
[2] Qualifies as Priority Habitat in a lowland enclosed setting, further defined as below 300m altitude for acid grassland
[3] Stands with a suite of calcicolous species can be classified as highly groundwater dependent
[4] Qualifies as Annex 1 on deep peat (defined, in this instance, as >50cm)
[5] Qualifies as Annex 1 where peatland deemed recoverable within 30 years.

The area of M17 blanket bog on site is small and likely to be of local conservation value however the presence of bog species such as *Vaccinium oxycoccos* should preclude planting here even over shallow peats. M20 is likely to be of local conservation value.

Acid grasslands (U4) on site occur above the 300m contour line and are therefore not Priority Habitats. Stands of bracken (U20) are not normally considered to be of significant conservation importance though may support populations of passerine birds of conservation concern such as whinchat.

6.2 Birds

The current breeding bird assemblage within the study area is considered to be of local importance in terms of conservation value. The assemblage of breeding wading birds was low, while numbers of meadow pipit and skylark were fairly typical of the size of the site and habitats present. Black grouse were not recorded within the survey area.

Four BTO Birds of Conservation Concern were present within the survey area and surrounding land. Two Red List species may be affected by the proposals: skylark (15 pairs) via direct loss of habitat and curlew potentially by the loss of one territory (outside of the site footprint) due to proximity of new woodland. Wading birds prefer to nest in open landscapes which reduces the risk of predatory ambush strikes. Enhanced predator numbers such as corvids, fox and badger may occur along the new woodland edge.

The Amber List species that would be most affected by the proposals would be meadow pipit with 38 pairs within the proposed planting area. Similarly, one oystercatcher territory was present.

The site provides foraging opportunities for species such as raven, red kite, and buzzard with the latter breeding in a plantation to the south of the site. The loss of grasslands would result in a loss of foraging habitat for these species though would provide opportunities for woodland raptors such as sparrowhawk and goshawk.

Black grouse may benefit from woodland creation in the short to medium term. Commercial woodland provides suitable habitat for black grouse for around 10 -15 years until the canopy closes.

Overall, planting large areas of the site will result in a change in the bird assemblage from species of open habitats to a woodland community.

7 Conclusions and Recommendations

Areas of high biodiversity value include small areas of peat bog and extensive base-enriched flush and pasture complexes. The high botanical diversity of base enriched flushes and pastures is maintained to some extent by grazing. In the absence of livestock, taller vegetation may prosper, shading and eventually outcompeting the current botanical assemblage. Base-enriched flushes and grasslands should be excluded from planting and, if possible, retained within a livestock grazing regime.

The most diverse stands of these vegetation types are located at NGR NT 47618 05376 and NT 47950 04847 containing *Eriophorum latifolium* and *Gymnadenia conopsea s.l.* as well as other orchid species. It is recommended that these stands, in particular, are kept within a grazing regime as the diverse flora including orchid populations are unlikely to thrive in competition with coarse vegetation.

A dedicated badger survey will need to be undertaken immediately prior to planting in order to establish status on site at that particular time given that the species is mobile and can

open a new sett at any time. All setts are legally protected and will need to be buffered as per industry guidance at the time of planting and under licence where appropriate. Trees will not be felled during the project, minimising the risk of damaging bat roosts which are also legally protected.

8 References

Brown, A.F. and Shepherd, K.B. (1993) A method for censusing upland breeding waders. *Bird Study*, 40: 189-195.

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O'Brien, M and Smith, K. W. (1992) Changes in the status of waders breeding on wet lowland grasslands in England and Wales between 1982 and 1989. *Bird Study*, 39:3, 165-176

Rodwell, J.S. (ed., 1991) *British Plant Communities. Volume 2. Mires and heaths.* Cambridge University Press.

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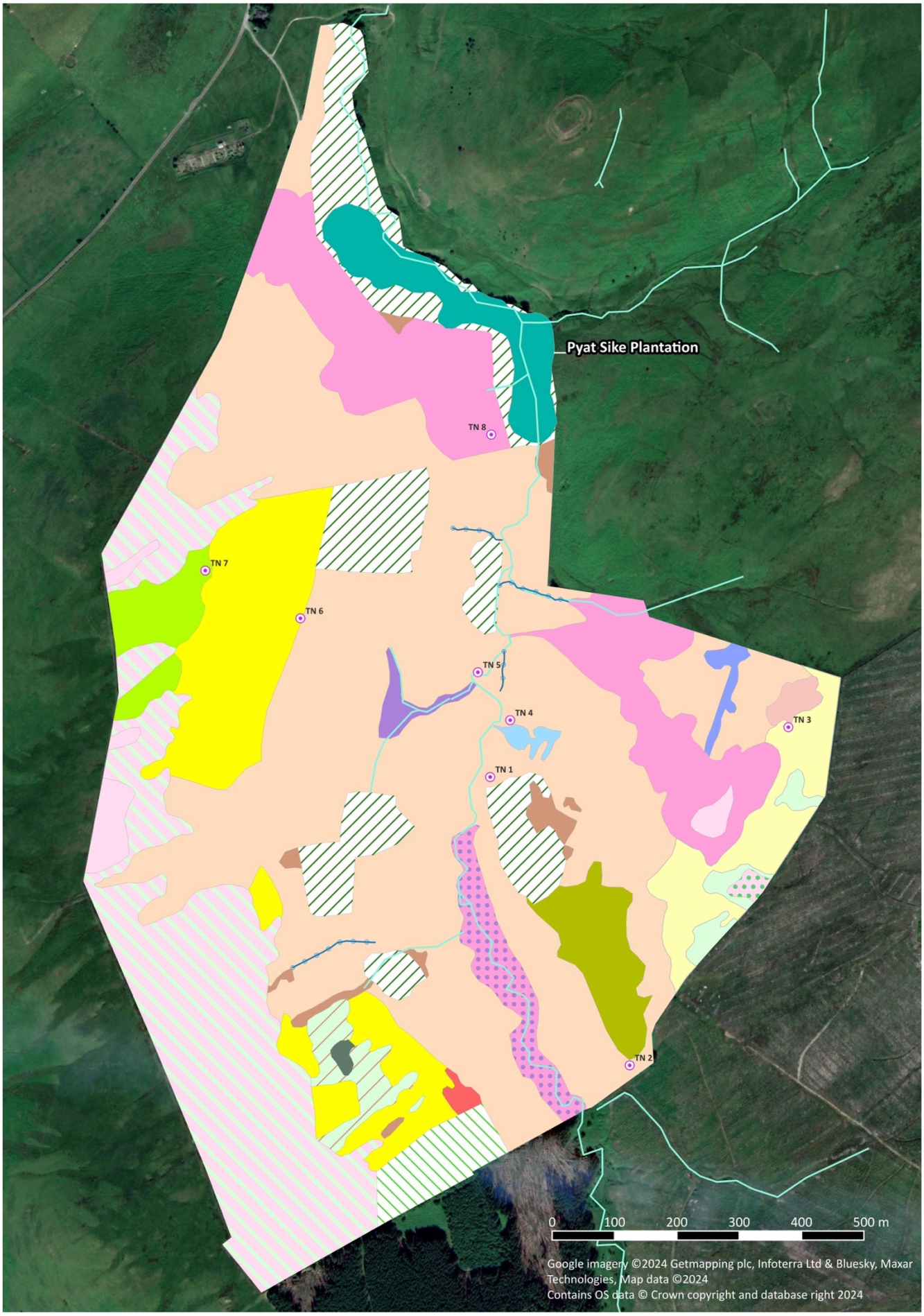
Appendix 1. Figures

Figure 1: NVC Map



Key to Figure 1

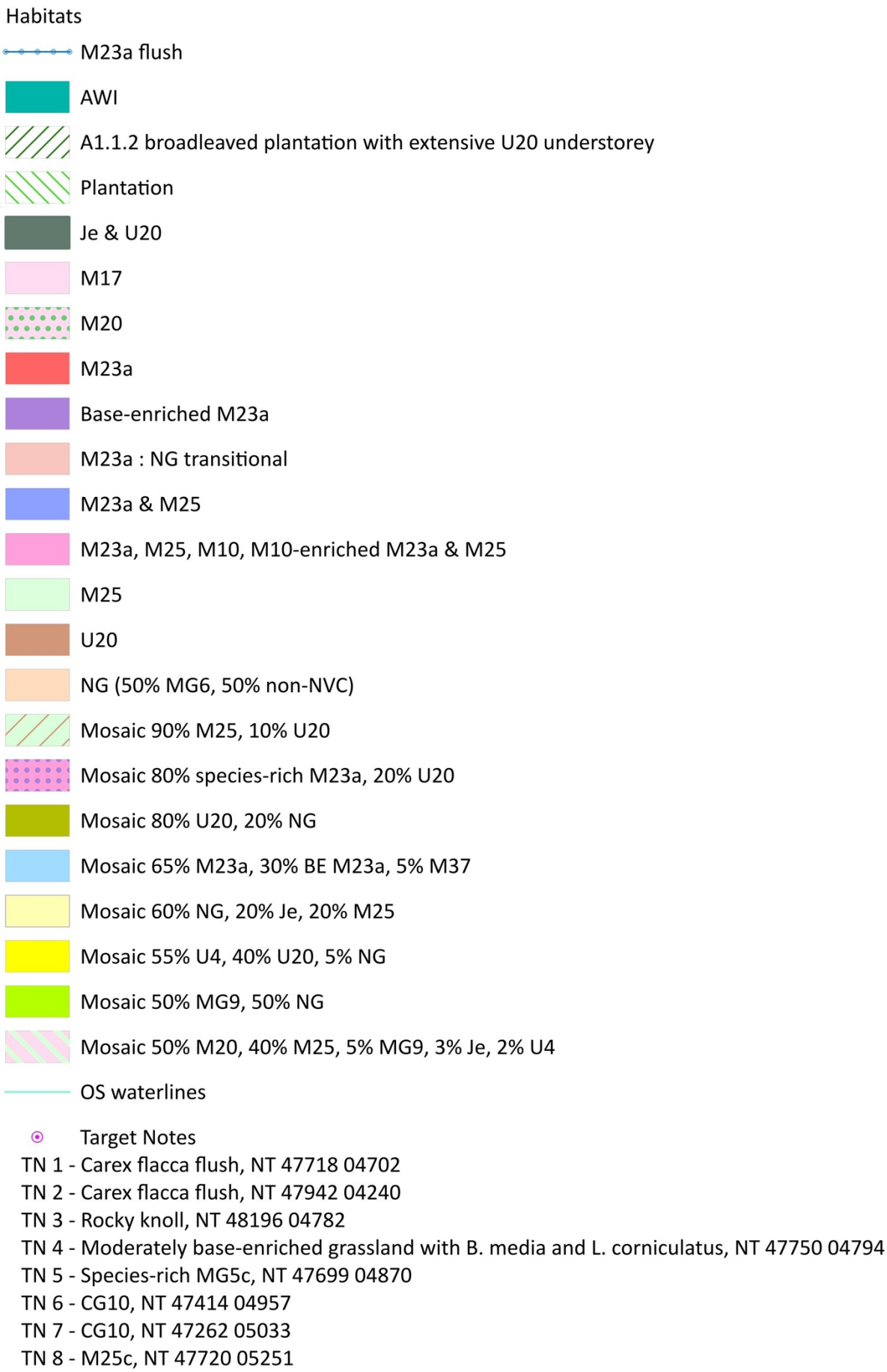


Figure 2: Sensitivities Map

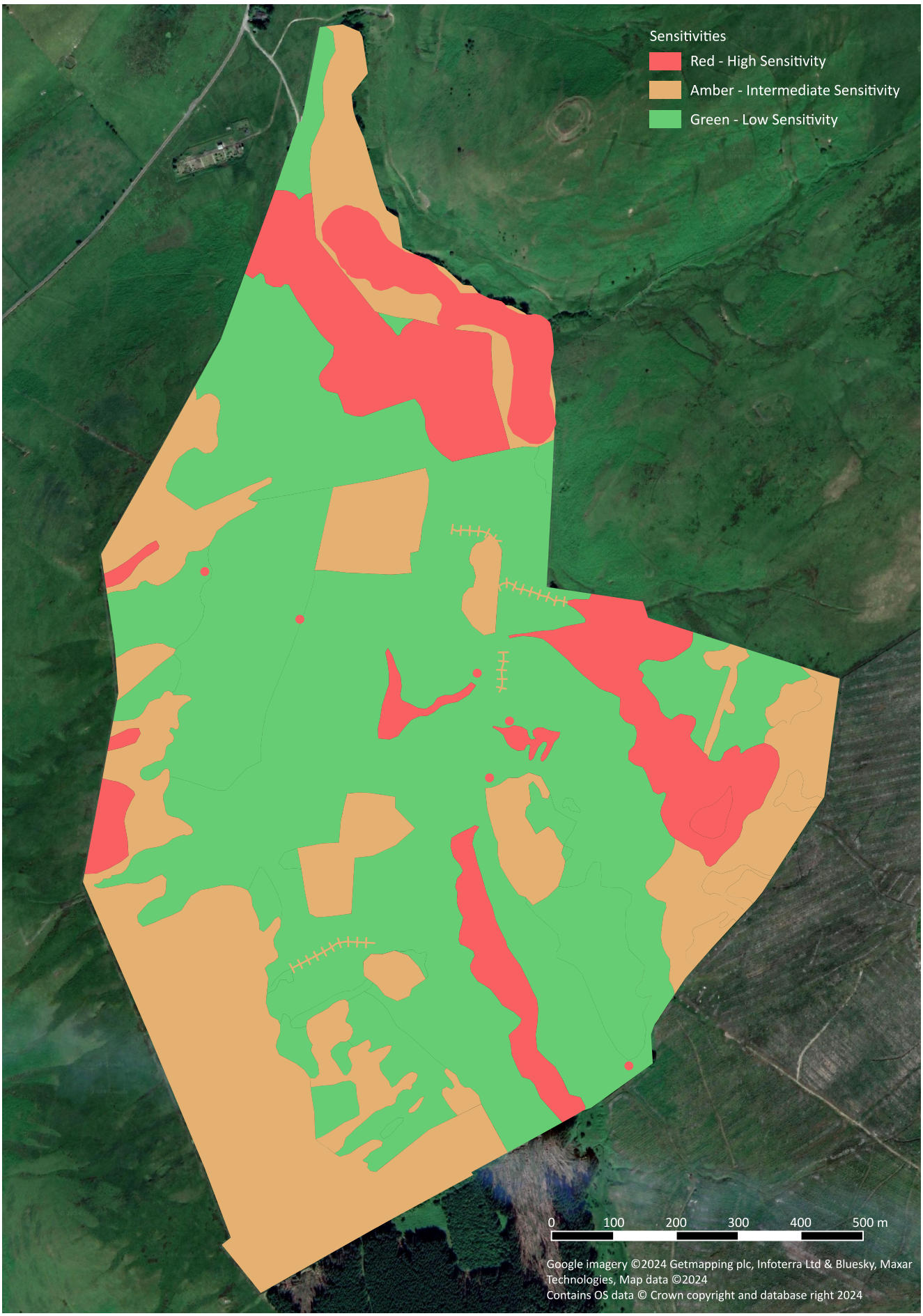


Figure 3: Birds Map

Appendix 2. Bird Survey Weather Conditions

	Time			Conditions					
Date	Brown - Shepherd/ O'Brien-Smith	Raptor watch	Black grouse	Rain	Frost or Snow	Wind (BF)	Cloud cover	Visibility	Temp (°C)
14/05/24	17:30 - 20:30		20:30 - 21:55	No	No	3-4	80	>5km	15-14
06/06/24	15:00 - 21:40	16:00 - 17:00		No	No	2	60	>5km	12
25/06/24	11:00 - 19:40	15:00 - 16:00		No	No	2	80	>5km	21