



[REDACTED TEXT] Improvement Environmental Statement

CONSULTING

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1 INTRODUCTION

This report provides an assessment of the likely impacts of proposed agricultural improvement on an area of rough grazing at [REDACTED TEXT], on behalf of [REDACTED TEXT]. This is a requirement of The Environmental Impact Assessment (Agriculture) (Scotland) Regulations 2006.

The site survey was carried out on the 4 June 2026 by [REDACTED TEXT] ACIEEM, Agricultural Ecologist at [REDACTED TEXT]. [REDACTED TEXT] has over 5 years of experience conducting habitat surveys and habitat management plans on farms and crofts in Scotland.

2 SITE DESCRIPTION

The area proposed for agricultural improvement is located on the [REDACTED TEXT], Dumfries and Galloway, and is assigned the Land Parcel Identification Number NX/4044/66187 within the Scottish Government's Rural Payments and Services Land Parcel Identification System. This land parcel extends 11.25 Ha in area, and is currently used for livestock grazing. Within the parcels there are two distinct knolls, comprising drier free flowing soil with grassland vegetation, with areas of bog where drainage is lesser, and large areas of scrub on steeper slopes where no historic improvements have taken place.

The purpose of this of this EIA is focused on the proposed improvement of the two grass knolls within the field. During previous tenancies these fields have been classified as Region 2 for the purpose of direct payments from Rural Payments and Services. Under the Land Capability for Agriculture classification developed by the Macaulay Land Use Research Institute (now the James Hutton Institute), the free draining knolls are broadly categorised as 3.2, meaning that it is capable of supporting a range of agricultural uses including arable cropping and improved grassland, where sward establishment presents no particular difficulties, but soil related limitations can require additional management and inputs to maintain productivity. In the lower area if the field parcel where peat is present, these are categorised as Class 5.3.3, meaning only capable for rough grazing and forestry, where severe physical limitations combined with climatic constraints impose significant restrictions on any form of improved agricultural use and management options are substantially limited.

The two grass drumlins within the field are proposed for herbicide treatment, cultivation, reseeding, and the application of fertiliser and lime. This Environmental Impact Assessment (EIA) has been requested following a stop notice issued by NatureScot and the Rural Payments and Inspections Division (RPID). Within the past year, the grass drumlins were sprayed off and reseeded prior to obtaining consent from RPID; the operator was consequently required to halt works and to

commission this EIA to assess the ecological impact of the proposed improvements, both on the areas directly proposed for improvement and on the habitats of ecological value adjacent to them.

This EIA seeks to establish the ecological value of the site prior to the improvements undertaken in the preceding year, and to assess the significance of the effects arising from the proposed agricultural improvements on these features. Mitigation and enhancement measures are identified which could be employed to ensure that no significant effect is caused to habitats of importance.

3 ASSESSMENT METHODOLOGY

The significance of potential impacts on important ecological receptors (e.g. protected areas, habitats, species) was assessed using a matrix plotting the sensitivity of the receptor against the magnitude of the impact. The classification used for receptor sensitivity and magnitude impact and the resulting significance matrix are shown in the tables below:

Table 1: Receptor Sensitivity

Sensitivity	Protected Area	Habitat/Species
Very High	Internationally designated site (e.g. SAC, SPA Ramsar site)	• Qualifying feature of internationally designated site. • Globally threatened species or habitat. • Rare species or habitat present in internationally important numbers or area.
High	Nationally important site (e.g. SSSI)	• Qualifying feature of a nationally designated site. • Species or habitats that contribute to an internationally designated site, but not the qualifying interest. • Rare species or habitat present in nationally important numbers or area. • Annex I bird species (Birds Directive – outwith site for which it is a qualifying feature). • Annex I habitat or Annex II species (Habitats Directive – outwith site for which it is a qualifying feature). • European Protected Species.
Medium	Local Nature Conservation Site	• Species or habitats that contribute to a nationally designated site, but not the qualifying interest. • Species or habitats present in regionally important numbers or area. • Schedule 1 bird species. • Scottish Biodiversity List habitats and species with conservation action needed. • Red-listed Birds of Conservation Concern.
Low		• Habitats and species that do not meet the above criteria but nonetheless have some biodiversity value. • Scottish Biodiversity List habitats and species – Avoid negative impacts. • Amber-listed Birds of Conservation Concern.
Very Low		□ Widespread habitats and species of no conservation concern

Table 2: Impact magnitude

Magnitude	Description
Very High	□ Major change at a regional level over the long-term (>5 years) or at a national level over the medium-term (1–5 years).
High	• Major change at a local level over the long-term, at a regional level over the medium-term or at a national level over the short-term (<1 year). • Moderate change at a regional level over the long-term or at a national level over the medium-term. • Minor change at a national level over the long-term.
Medium	• Major change at a site level over the long-term, at a local level over the medium-term or at a regional level over the short-term. • Moderate change at a local level over the long-term, at a regional level in the medium-term or at a national level over the short-term. • Minor change at a regional level over the long-term or at a national level over the medium-term.
Low	• Major change at a site level over the medium-term or at a local level over the short-term. • Moderate change at a site level over the long-term, at a local level over the medium-term or at a regional level over the short-term. • Minor change at a local level over the long-term, at the regional level over the medium-term and at a national level in the short-term.
Very Low	• Major change at a site level over the short-term • Moderate change at a site level over the medium-term or at a local level over the short-term • Minor change at a site level over the long-term, at a local level over the medium-term or at a regional level over the short-term. • Negligible or no change at any level or time-scale.

Table 3: Significance matrix

		Very Low	Low	Medium	High	Very High
	Very Low	Negligible	Negligible	Very Low	Low	Low
	Low	Negligible	Very Low	Low	Medium	Medium
	Medium	Very Low	Low	Medium	High	High
	High	Low	Medium	High	High	Very High
	Very High	Low	Medium	High	Very High	Very High

4 SITE DESIGNATIONS

Designations for Nature Conservation

There are no Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas or Ramsar Sites on or immediately adjacent to the site itself. However, the site is located in close proximity to two designated nature conservation sites. The River Bladnock Special Area of Conservation (SAC) lies approximately 150m to the south, designated for its freshwater pearl mussel and otter populations. The Ring Moss Site of Special Scientific Interest (SSSI) is located approximately 850m to the south west, designated for its peatland and associated wetland communities. Given the proximity of these designations, particularly the River Bladnock SAC, there is potential for hydrological connectivity with the site, and any land management activities should be assessed to ensure they do not adversely affect the qualifying features of these protected sites, particularly in relation to water quality, sediment inputs, and drainage patterns.

Archaeological Interest

The following is a statement provided from Historic Environment Scotland:

- *We have not identified any likely significant effects on our historic environment interests. We are content for our interests to be scoped out of any further assessment.*

The following is a statement provided from Dumfries and Galloway Council Archaeologists:

- *Field A is the one that contains a medieval/post-medieval boundary bank, see attached map. I have highlighted the area of the feature that could potentially be impacted on the attached aerial view. I would be content if the area were checked on the ground, and if any visible traces of the bank could be seen then a couple of photographs should suffice as a record.*

The majority of the feature lies under the existing dyke round the wooded/brush area and will not be affected.

5 HABITATS

G1 – Improved Grassland

The grass drumlin in G1 is the area proposed to be reseeded, approximately 1.22 Ha. This has previously been sprayed off and sowed into kale, and is now dominated by annual regeneration following this. This area is now dominated by crested dogs tail, common fescue, sweet vernal grass, creeping buttercup, ribwort plantain, and sorrel (Figure 1 and 2). As these areas have already had some improvements, it is difficult to assess their previous botanical diversity. However, there are small pockets in the corner of the fields where soil types are consistent with on the top of the drumlin, but were not subject to the spraying and reseeding which occurred, such as in the south west corner of the field (G1.1) of 0.04 . Within this area the vegetation included crested dogs' tail, Yorkshire fog grass, ribwort plantain and white clover (Figure 3).



Figure 1: G1 vegetation



Figure 2: G1 vegetation



Figure 3: G1.1 Vegetation

G1.2 – Semi-improved Grassland

On the steeper banks of the grass drumlin lies a continuous strip of unimproved grassland extending the full length of the landform, covering approximately 0.21 ha. This area lies beyond the plough line and, having escaped cultivation, supports a higher abundance of bracken (*Pteridium aquilinum*) and a species assemblage indicative of undisturbed ground. Alongside the bracken, the sward comprises crested dog's-tail (*Cynosurus cristatus*), Yorkshire fog (*Holcus lanatus*), common fescue [*Festuca* sp.] rough meadow-grass (*Poa trivialis*), yarrow (*Achillea millefolium*), white clover (*Trifolium repens*), tormentil (*Potentilla erecta*) and ribwort plantain (*Plantago lanceolata*) (Figures 4 and 5). The community is broadly consistent with semi-improved/unimproved neutral grassland grading into bracken-dominated vegetation on the steeper gradients, with the presence of tormentil and the undisturbed structure reflecting the long-standing absence of agricultural improvement along this strip.

This strip of unimproved grassland is of low to moderate botanical value and is assessed as being of Local importance. While not a statutorily designated habitat, unimproved and semi-improved neutral grassland is a diminishing resource, and where it meets the relevant criteria may qualify as a habitat of principal importance (lowland meadow) and a Scottish Biodiversity List habitat; it is a material consideration under NPF4 (Policy 3 – Biodiversity). Its value is enhanced by its undisturbed character, its contribution to the structural and floristic diversity of an otherwise agriculturally improved drumlin, and its function as foraging and nesting habitat for the site's breeding bird assemblage. The bracken component, while indicative of undisturbed ground, is the principal factor constraining the botanical diversity of the strip. As this area lies beyond the plough line and is to be retained, no direct habitat loss is anticipated; the residual consideration is the risk of indirect effects (nutrient enrichment and herbicide drift) from the adjacent improved ground, which is assessed against the significance matrix at the Local scale and addressed through the mitigation measures set out in Section 8.



Figure 4: G1.2 Vegetation



Figure 5: G1.2 Vegetation

G1.3 – Unimproved Grassland

At the southern end of the G1 drumlin lies a small patch, approximately 0.08 ha, of more species-rich unimproved grassland. The sward comprises crested dog's-tail (*Cynosurus cristatus*), sweet vernal-grass (*Anthoxanthum odoratum*), common fescue [*Festuca* sp) and common meadow-grass (*Poa pratensis*), with a diverse associated forb component including tormentil (*Potentilla erecta*), ribwort plantain (*Plantago lanceolata*), yarrow (*Achillea millefolium*), speedwell (*Veronica* spp.), eyebright (*Euphrasia* spp.), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*) and red clover (*Trifolium pratense*). The higher forb diversity, and the presence of eyebright in particular, distinguishes this patch from the surrounding grassland and is indicative of a longer-established, unimproved sward. The community is broadly consistent with semi-improved to unimproved neutral grassland, potentially approaching the NVC community MG5 (*Cynosurus cristatus*–*Centaurea nigra* grassland).

Despite its small extent, this patch is the most botanically diverse grassland recorded within the drumlin system and is assessed as being of Local (potentially higher) importance. The forb-rich sward, including eyebright — a hemi-parasite characteristic of unimproved grassland of good condition — indicates a longer-established habitat of greater conservation interest than the surrounding parcels. Where such grassland meets the relevant floristic criteria it may qualify as lowland meadow, a habitat of principal importance and a Scottish Biodiversity List habitat, and it is a material consideration under NPF4 (Policy 3 — Biodiversity). As this patch lies beyond the plough line and is to be retained, no direct habitat loss is anticipated; the residual consideration is the risk of indirect effects (nutrient enrichment and herbicide drift) from the adjacent improved ground, assessed against the significance matrix at the Local scale and addressed through the mitigation measures set out in Section 8.



Figure 6: G1.3 Vegetation



Figure 7: G1.3 Vegetation

B1 – Blanket bog.

Lower to the east of G1 lies an area of bog extending to approximately 1.35 ha. The vegetation comprises hare's-tail cottongrass (*Eriophorum vaginatum*), purple moor-grass (*Molinia caerulea*), deergrass (*Trichophorum germanicum*), cross-leaved heath (*Erica tetralix*), ling heather (*Calluna vulgaris*), slender sedge (*Carex lasiocarpa*) and carnation sedge (*Carex panicea*). This assemblage — in particular the presence of hare's-tail cottongrass, deergrass, cross-leaved heath and ling — is characteristic of active, peat-forming blanket bog, and is broadly consistent with the NVC community M17/M19.

Blanket bog is an Annex I habitat under the Habitats Directive, a habitat of principal importance, a Scottish Biodiversity List habitat and a UK BAP Priority Habitat, and is also a nationally significant carbon store. It is therefore assessed as a habitat of high sensitivity and National importance, engaging both NPF4 Policy 3 (Biodiversity) and Policy 5 (Soils), the latter affording specific protection to peatland and carbon-rich soils.

This area of bog lies beyond the extent of the proposed improvements and no direct habitat loss is anticipated. The residual consideration is the potential for indirect effects — nutrient enrichment, herbicide drift and hydrological disturbance — arising from operations on the adjacent improved ground, to which blanket bog is particularly sensitive given its dependence on a high water table and low nutrient status. This risk is assessed against the significance matrix and addressed through the mitigation measures set out in Section 8, including hydrological protection and buffering.



Figure 8: B1 vegetation over view



Figure 9: B1 Vegetation

S1 – Scattered Scrub

In the north-eastern corner of the parcel is an elevated section where scattered hawthorn (*Crataegus monogyna*) scrub has colonised an area of unimproved grassland. Bracken (*Pteridium aquilinum*) is frequent throughout, alongside a grassland sward comprising sweet vernal-grass (*Anthoxanthum odoratum*), Yorkshire fog (*Holcus lanatus*), white clover (*Trifolium repens*) and creeping buttercup (*Ranunculus repens*). The area forms a scrub–grassland mosaic.

This scrub–grassland mosaic is of low to moderate ecological value and is assessed as being of Local importance. While neither the scrub nor the underlying grassland holds statutory designation, such mosaics are of value for their structural diversity and provide nesting and foraging habitat for the site's breeding bird assemblage, as well as cover for invertebrates and small mammals; the habitat is a material consideration under NPF4 (Policy 3 – Biodiversity).

This area is to be retained and is not proposed for improvement, so no direct habitat loss is anticipated. The principal considerations are the risk of indirect effects (nutrient enrichment and herbicide drift) from adjacent operations, and the potential for disturbance to breeding birds. These are assessed against the significance matrix at the Local scale and addressed through the mitigation measures set out in Section 8



Figure 10: S1 Vegetation

G2 (2.73Ha)

As with G1, this grassland knoll is proposed for agricultural improvement to support production. G2 was sprayed and reseeded with kale in the preceding year, and the current sward is a direct product of this intervention. The vegetation is therefore not representative of the pre-improvement community, though the residual flora provides an indication of the botanical character of the area.

The sward is broadly consistent with the NVC community MG6 (*Lolium perenne*–*Cynosurus cristatus* grassland), comprising crested dog's-tail (*Cynosurus cristatus*), annual meadow-grass (*Poa annua*), sweet vernal-grass (*Anthoxanthum odoratum*), daisy (*Bellis perennis*), creeping buttercup (*Ranunculus repens*), ribwort plantain (*Plantago lanceolata*), white clover (*Trifolium repens*) and sorrel (*Rumex acetosa*). This assemblage is typical of improved and semi-improved agricultural grassland and is of low botanical diversity and conservation value.

Improved grassland of this type is not a habitat of principal importance, is not listed on the Scottish Biodiversity List, and holds no statutory designation. It is of negligible intrinsic botanical value.



Figure 11: G2 vegetation



Figure 12: G2 vegetation

2.1 (1.00 Ha)

G2.1 comprises a discrete patch of purple moor-grass and rush pasture within the wider improved grassland field. The sward is dominated by soft rush (*Juncus effusus*), purple moor-grass (*Molinia caerulea*), Yorkshire fog (*Holcus lanatus*) and sedges (*Carex* spp.), consistent with the NVC community M23 (*Juncus effusus/acutiflorus*–*Galium palustre* rush-pasture).

Historic agricultural improvement of this patch — including topping, herbicide application and reseeded — has been unsuccessful, with the impeded drainage and base-poor, waterlogged substrate driving reversion to the semi-natural rush-pasture community. The persistence of the pre-existing vegetation following these interventions indicates that the habitat is controlled by edaphic and hydrological conditions rather than management history, and that further improvement is unlikely to succeed without significant alteration of the site hydrology.

Purple moor-grass and rush pasture is a habitat of principal importance, listed on the Scottish Biodiversity List and as a UK BAP Priority Habitat. While not statutorily protected in its own right, it is a material consideration under NPF4 (Policy 3 — Biodiversity) and the Habitats and Birds Directives where it supports qualifying species. The habitat is also of value for breeding waders (e.g. snipe, curlew, lapwing) and, where devil's-bit scabious (*Succisa pratensis*) is present, potentially for marsh fritillary (*Euphydryas aurinia*) — a European Protected Species.



Figure 13: G2.1

G2.2 (0.12 Ha)

On the western bank of G1, beyond the plough line, the grassland exhibits greater botanical diversity than the improved sward. The community comprises crested dog's-tail (*Cynosurus cristatus*), common meadow-grass (*Poa pratensis*) and sweet vernal-grass (*Anthoxanthum odoratum*), interspersed with a forb component including yarrow (*Achillea millefolium*), bird's-foot trefoil (*Lotus corniculatus*), hawkweed (*Hieracium* spp.), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*) and ribwort plantain (*Plantago lanceolata*), with bracken (*Pteridium aquilinum*) scattered throughout. This assemblage is broadly consistent with semi-improved neutral grassland, transitional towards the NVC community MG5 (*Cynosurus cristatus*–*Centaurea nigra* grassland).

Crucially, this area has not been sprayed or reseeded and is not proposed for agricultural improvement. It therefore retains a more natural floristic composition and is of moderate botanical value relative to the surrounding improved parcels — the presence of bird's-foot trefoil and a diverse forb component being of particular note.

While not a statutorily designated habitat, species-rich semi-improved neutral grassland is a diminishing resource and, where it meets the relevant criteria, may qualify as lowland meadow — a habitat of principal importance, a Scottish Biodiversity List habitat and a UK BAP Priority Habitat. It is a material consideration under NPF4 (Policy 3 — Biodiversity).



Figure 14:G2.2 vegetation

G2.3 (0.08) and G2.4 (0.3 Ha)

G2.3 lies to the south of G2 and G2.4 to the east. Both comprise steep, uncultivated slopes on which bracken (*Pteridium aquilinum*) is dominant, over an understorey of unimproved grassland. The grass component includes Yorkshire fog (*Holcus lanatus*), sweet vernal-grass (*Anthoxanthum odoratum*) and crested dog's-tail (*Cynosurus cristatus*), with an associated forb element of yarrow (*Achillea millefolium*), creeping buttercup (*Ranunculus repens*) and sorrel (*Rumex acetosa*). The vegetation is broadly consistent with the NVC community U20 (*Pteridium aquilinum*–*Galium saxatile* community) over a semi-improved acid/neutral grassland base.

The steepness of these slopes has precluded cultivation, and the parcels have not been subject to spraying or reseeded. They are not proposed for agricultural improvement. The retained grassland understorey is of low to moderate botanical value; the dense bracken canopy suppresses floristic diversity and represents the principal limiting factor on the conservation interest of these areas.

Bracken-dominated grassland of this type is not a statutorily designated habitat and is not, in its current condition, a habitat of principal importance. Its ecological value lies primarily in its retention as unimproved, undisturbed ground and its potential

function as supporting habitat — dense bracken can provide cover for breeding birds, reptiles and small mammals, and the parcels may contribute to habitat connectivity.



Figure 15: G2.4 Vegetation

B2 (1.63 Ha)

B2 is an area of blanket bog dominated by purple moor-grass (*Molinia caerulea*), which forms the characteristic dense tussock structure with associated leaf litter over a moist, base-poor substrate. Associated species include carnation sedge (*Carex panicea*), hare's-tail cottongrass (*Eriophorum vaginatum*), tormentil (*Potentilla erecta*), soft rush (*Juncus effusus*) and water rush — likely *Juncus acutiflorus* or *Juncus articulatus*. The community is consistent with the NVC type M25 (*Molinia caerulea*–*Potentilla erecta* mire), with the presence of hare's-tail cottongrass and tormentil indicative of peat-forming bog conditions. The parcel has not been cultivated, sprayed or reseeded, and the *Molinia*-dominated sward reflects long-standing wet, unimproved conditions.

Blanket bog is an Annex I habitat under the Habitats Directive, a habitat of principal importance, a Scottish Biodiversity List habitat and a UK BAP Priority Habitat. It is also a nationally significant carbon store and a material consideration under NPF4 — engaging both Policy 3 (Biodiversity) and Policy 5 (Soils), the latter affording specific protection to peatland and carbon-rich soils. Where the *Molinia* mire intergrades with wet heath or degraded bog, these too may constitute priority/Annex I habitat. The

conservation value of this parcel is therefore high, and elevated further where active peat formation is occurring.

Blanket bog is a strongly protected and irreplaceable habitat; drainage, ploughing, peat extraction, reseeding, afforestation or any works altering the hydrology or disturbing the peat must be avoided. Development on blanket bog is contrary to NPF4 Policy 5 other than in exceptional circumstances. Where impacts cannot be avoided, peat depth survey, a peat management plan and full assessment under the mitigation hierarchy will be required, with restoration of degraded bog generally expected. Retention, protection from indirect hydrological effects, and appropriate low-intensity management to maintain bog condition are recommended.



Figure 16: B2 Vegetation

S2 (2.00 Ha)

S2 is a large area of scattered scrub occupying the steeper bank to the north of G2. The scrub component comprises hawthorn (*Crataegus monogyna*) over an unimproved grassland sward, with crested dog's-tail (*Cynosurus cristatus*), Yorkshire fog (*Holcus lanatus*), common meadow-grass (*Poa pratensis*), tormentil (*Potentilla erecta*), yarrow (*Achillea millefolium*), speedwell (*Veronica* spp.), ribwort plantain (*Plantago lanceolata*), creeping buttercup (*Ranunculus repens*) and bluebell (*Hyacinthoides non-scripta*) all present. The grassland is broadly

consistent with semi-improved/unimproved neutral grassland, forming a scrub–grassland mosaic. The parcel has not been cultivated, sprayed or reseeded and is not proposed for agricultural improvement.

Scattered scrub and the underlying unimproved grassland hold no statutory designation in their own right, but the mosaic is of moderate ecological value. Scrub–grassland mosaics are productive habitats for breeding birds, invertebrates and small mammals, and the structural diversity is a positive feature. The presence of native bluebell is of note — *Hyacinthoides non-scripta* is protected against commercial collection under Schedule 8 of the Wildlife and Countryside Act 1981 and, while not engaged by retention, its occurrence is indicative of undisturbed ground and possibly ancient woodland affinity. The habitat is a material consideration under NPF4 (Policy 3 — Biodiversity).

This parcel is to be retained and excluded from improvement works. It should be protected from indirect effects of adjacent operations on G2, including spray and fertiliser drift and soil disturbance, via a demarcated buffer along the boundary. Hawthorn and the underlying sward provide potential nesting habitat, so any incidental scrub management must avoid the bird breeding season (typically March–August inclusive) or follow a prior nesting bird check. Continued light

grazing or periodic scrub management is advised to maintain the mosaic structure and prevent scrub from closing over and shading out the grassland flora.



Figure 17: S2 vegetation



Figure 18: S2 Vegetation

6 SPECIES

Breeding bird interest was recorded during the survey. The following species were observed within or adjacent to the site:

- Common whitethroat (*Curruca communis*) — UK BoCC5 Amber-listed; moved from the Green to the Amber list owing to declines in its breeding population. British Birds
- Sedge warbler (*Acrocephalus schoenobaenus*) — UK BoCC5 Amber-listed, having similarly moved from Green to Amber in the most recent review. British Birds
- Chiffchaff (*Phylloscopus collybita*) — UK BoCC5 Green-listed; a widespread and increasing breeder, particularly in Scotland.
- Chaffinch (*Fringilla coelebs*) — UK BoCC5 Green-listed, though now assessed as Endangered under the IUCN Regional Red List for Great Britain owing to recent declines linked to trichomonosis. British Trust for Ornithology

No other protected or notable faunal species, nor field signs thereof (e.g. badger, otter, water vole, reptiles), were recorded during the survey.

The following relevant biological records from NBN Atlas were recorded within 2km of the site:

Latin name	Common name	Legal protection / status
<i>Acanthis flammea cabaret</i>	Lesser redpoll	WCA 1981 (all wild birds); BoCC5 Red; SBL
<i>Accipiter nisus</i>	Sparrowhawk	WCA 1981 (all wild birds); BoCC5 Amber
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	WCA 1981 (all wild birds); BoCC5 Amber
<i>Alauda arvensis</i>	Skylark	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
<i>Anthus pratensis</i>	Meadow pipit	WCA 1981 (all wild birds); BoCC5 Red (verify); SBL

Apus apus	Swift	WCA 1981 (all wild birds); BoCC5 Red
Ardea cinerea	Grey heron	WCA 1981 (all wild birds); BoCC5 Green (verify)
Chloris chloris	Greenfinch	WCA 1981 (all wild birds); BoCC5 Red
Chroicocephalus ridibundus	Black-headed gull	WCA 1981 (all wild birds); BoCC5 Amber
Corvus frugilegus	Rook	WCA 1981 (all wild birds); BoCC5 Amber
Cuculus canorus	Cuckoo	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
Curruca communis	Common whitethroat	WCA 1981 (all wild birds); BoCC5 Amber
Emberiza citrinella	Yellowhammer	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
Emberiza schoeniclus	Reed bunting	WCA 1981 (all wild birds); BoCC5 Amber (verify - moved to Green); SBL
Fringilla coelebs	Chaffinch	WCA 1981 (all wild birds); BoCC5 Green; IUCN GB Endangered
Gallinago gallinago	Snipe	WCA 1981 (all wild birds); BoCC5 Amber
Hirundo rustica	Swallow	WCA 1981 (all wild birds); BoCC5 Amber (Red in Scotland - verify)
Lagopus scotica	Red grouse	WCA 1981 (all wild birds); BoCC5 Amber

		(verify - moved to Green)
<i>Larus argentatus</i>	Herring gull	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
<i>Linaria cannabina</i>	Linnet	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
<i>Locustella naevia</i>	Grasshopper warbler	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
<i>Loxia curvirostra</i>	Common crossbill	WCA 1981 (all wild birds); BoCC5 Green (verify Scottish crossbill considerations)
<i>Motacilla alba yarrellii</i>	Pied wagtail	WCA 1981 (all wild birds); BoCC5 Green (verify)
<i>Numenius arquata</i>	Curlew	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
<i>Oenanthe oenanthe</i>	Wheatear	WCA 1981 (all wild birds); BoCC5 Amber
<i>Passer domesticus</i>	House sparrow	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
<i>Prunella modularis</i>	Dunnock	WCA 1981 (all wild birds); BoCC5 Amber (verify - moved to Green); SBL

<i>Pyrrhula pyrrhula</i>	Bullfinch	WCA 1981 (all wild birds); BoCC5 Amber; SBL
<i>Riparia riparia</i>	Sand martin	WCA 1981 (all wild birds); BoCC5 Amber
<i>Streptopelia decaocto</i>	Collared dove	WCA 1981 (all wild birds); BoCC5 Green (verify)
<i>Sturnus vulgaris</i>	Starling	WCA 1981 (all wild birds); BoCC5 Red; SBL/UK BAP
<i>Turdus philomelos</i>	Song thrush	WCA 1981 (all wild birds); BoCC5 Amber; SBL/UK BAP
<i>Tyto alba</i>	Barn owl	WCA 1981 Schedule 1 (enhanced protection against disturbance at nest)
<i>Erinaceus europaeus</i>	Hedgehog	WCA 1981 Schedule 6 (limited); SBL/UK BAP Priority
<i>Sciurus vulgaris</i>	Red squirrel	WCA 1981 Schedule 5 (fully protected); SBL/UK BAP Priority
<i>Sciurus carolinensis</i>	Grey squirrel	Non-native; WCA 1981 Schedule 9 (offence to release/allow escape)
<i>Anguilla anguilla</i>	European eel	Eels (Scotland) Regs 2008; SBL/UK BAP Priority; IUCN CR
<i>Salmo salar</i>	Atlantic salmon	Habitats Directive Annex II & V; SBL/UK BAP Priority;

		freshwater fisheries legislation
<i>Salmo trutta</i>	Brown/sea trout	SBL (sea trout); freshwater fisheries legislation
<i>Hydroporus rufifrons</i>	A diving beetle	Nationally Scarce/Notable (verify current status)
<i>Lampyrus noctiluca</i>	Glow-worm	No statutory protection; locally notable
<i>Andromeda polifolia</i>	Bog rosemary	WCA 1981 s.13 (all wild plants - uprooting); bog indicator, locally notable
<i>Drosera rotundifolia</i>	Round-leaved sundew	WCA 1981 s.13; bog indicator, notable
<i>Menyanthes trifoliata</i>	Bogbean	WCA 1981 s.13; mire indicator
<i>Pinguicula lusitanica</i>	Pale butterwort	WCA 1981 s.13; notable
<i>Rhynchospora alba</i>	White beak-sedge	WCA 1981 s.13; active bog indicator
<i>Utricularia intermedia</i>	Intermediate bladderwort	WCA 1981 s.13; notable
<i>Utricularia stygia</i>	Nordic bladderwort	WCA 1981 s.13; notable/scarce
<i>Vaccinium oxycoccos</i>	Cranberry	WCA 1981 s.13; bog indicator
<i>Gymnadenia borealis</i>	Heath fragrant orchid	WCA 1981 s.13 (all wild plants); orchid - notable

Gymnadenia conopsea	Chalk fragrant orchid	WCA 1981 s.13; orchid – notable
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All wild birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended), under which it is an offence to intentionally or recklessly kill, injure or take any wild bird, or to damage, destroy or take an active nest or its contents. The species recorded are not Schedule 1 species (which would attract enhanced protection against disturbance), but the Amber-listed status of common whitethroat and sedge warbler, and their use of the scrub and rush/wet grassland habitats for breeding, are material considerations under NPF4 (Policy 3 – Biodiversity).

7 Impact Assessment

7.1 Introduction

The following section assess the likely significant effects of the proposed agricultural improvement (herbicide treatment and reseeded with fertiliser application) on the ecological features identified in the above sections. Impacts are assessed in the absence of mitigation to establish inherent significance of each effect, in accordance with CIEEM guidance (2018). Mitigation is addressed in Section 8, and residual effects in Section 7. Impacts are characterised by their extent, magnitude, duration, reversibility and timing, and their significance is expressed at relevant geographical scale.

7.2 Assessment of Impact

7.2.1 Protected areas

As no protected areas exist within the proposed areas for agricultural improvement, no direct impacts are predicted on designated sites or other protected areas.

The River Bladnock is located 150 meters north of the northern drumlin that is proposed for improvement. These areas will be subject to existing Good Agricultural and Environmental Conditions, including limiting erosion, protection of ground water against pollution, and minimum soil cover. As such, the proposed interventions are considered unlikely to provide any significant negative impact to the SSSI and its qualifying features.

7.2.2 Habitats

G1 & G2– Improved Grassland Drumlin

The two drumlins that are proposed for improvement are currently improved grassland as described above. These areas have however been subject to herbicide and re-seeding with forage crop, and as such has altered their botanical diversity from prior to this. To try and understand the previous vegetation within this area, other areas on the drumlin that were not subject to this improvement (such as G1.1) were inspected. These were found to contain low botanical diversity, typical of improved grassland under low intensive management. This is in line with the assessment undertaken by NatureScot ecologist, who assessed areas not sprayed and confirmed “*the previous grass sward had been improved grassland*”.

On the balance of this evidence — the low botanical diversity of the unimproved comparator areas on the same drumlins (e.g. G1.1), the character of the

surrounding improved grassland, and the independent assessment by the NatureScot ecologist confirming the pre-existing sward to have been improved grassland — the pre-improvement vegetation of the two drumlins is considered to have comprised species-poor improved grassland of low botanical value and Negligible to Local importance at most. The habitat loss arising from the proposed improvement is therefore not considered to represent the loss of any habitat of ecological significance.

Accordingly, the direct effect of the proposed herbicide treatment and reseeded of the two drumlins is assessed as **not significant at any geographic scale**. No priority habitat, protected species habitat, or botanically diverse sward is lost as a result of these works. The absence of primary pre-improvement survey data is acknowledged as a limitation; however, the convergence of the residual flora, the on-drumlin comparators and the independent NatureScot assessment provides a robust and consistent evidence base, such that this limitation does not materially affect the confidence of the assessment.

G1.2, G1.3, G2.2, G2.3, G2.4 – Semi-improved & Unimproved Neutral grassland (Local Importance)

Surrounding the improved drumlins is a series of parcels of semi-improved and unimproved grassland that have not been subject to herbicide treatment or reseeded. These retain more diverse botanical compositions typical of natural grasslands.

Historically, when the recent herbicide spraying has occurred, some herbicide drift has landed within these areas, resulting in a reduction in floristic diversity. As these habitats offer low to moderate botanical value, they are deemed of **Local Importance**. While these habitats are not proposed for reseeded, there is risk that future herbicide application onto these areas further decreases their botanical value. In the absence of mitigation, these effects could be **significant at the Local Scale**.

G2.1 – Marshy Grassland (Regional / Local Importance)

In the north-east corner of the southern drumlin is a large patch of marshy grassland, made up of purple moorgrass rush pasture. This habitat similarly was subject to herbicide spraying and forage crop reseeded last year, which in turn will have reduced its floristic diversity. This habitat has the potential to be of **Regional/Local Importance**.

In the absence of mitigation, the continued herbicide application and reseeded of forage crops has potential to remove all ecological value currently provided by this section of marshy grassland. As such, in the absence of mitigation the

agricultural improvements have the potential to have a **Significant effect at a Regional/Local Scale.**

S2 Scrub / Species Rich Grassland Mosaic (**Regional Importance**)

Adjacent both drumlins is are large areas of hawthorn scrub growing on unimproved grasslands. These grasslands contain a diverse botanical assemblage, providing ecological value assessed to be of **Regional Importance.**

The proposed improvements are not to occur directly within these areas of scrub. G1 is located a sufficient distance from S1 for indirect impacts to be considered unlikely, and G2 and S2 are currently separated by an intact stone wall dyke, again providing a barrier between the habitats making indirect impacts unlikely. As such the agricultural improvements are considered to have **No Significant Effect.**

B1 and B2 – Blanket bog (**National Importance**)

Blanket bog is present adjacent both drumlins, in lower areas where drainage is poorer and peat formation has given rise to botanical communities typical of these soils. The bogs are unmodified, and subject to cattle grazing through the year.

The current proposed improvements are not to occur on or directly adjacent to the blanket bogs, and as such offer no direct impacts. However, indirect impacts through herbicide drift offer a pathway to adverse effects on habitat condition. As such in the absence of mitigation the effect is assessed as **Significant at up to the National Scale.**

7.3 – Mitigation and Revised Impact Assessment

The following mitigation has been discussed and agreed with the land owner and farm manager as methods of reducing the impact significance to the semi-natural habitats that are found within the land parcel.

G1.2, G1.3, G2.2, G2.3, G2.4 – Semi-improved & Unimproved Neutral grassland (**Local Importance**)

To prevent the indirect impacts of herbicide application to these areas of semi-improved and unimproved grassland, these areas will be marked out using wooden canes or a suitable alternative prior to any herbicide application on G1 and G2. This method will ensure that any contractor knows the extent of the area to be treated, and no accidental application is completed on these areas with botanical value. With this mitigation in place, the significance of these impacts is reduced from **High to Low.**

G2.1 – Marshy Grassland (Regional / Local Importance)

To prevent the direct impacts of herbicide application and reseedling to the areas of marshy grassland, it has been agreed with the farmer that these areas will remain un-reseeded and no herbicide application will occur on them. To ensure that this does not occur, similar bamboo cane or suitable alternatives will be used to mark out the area highlighted on the map, and contractors will similarly be alerted that these habitats are not to have any agricultural improvement. With this mitigation in place the significance of the impact goes from **Very High** to **Low**.

B1 and B2 – Blanket bog (National Importance)

To prevent the indirect impact of herbicide application on the areas of blanket bog, the marked-out areas used for the semi-improved and unimproved grasslands will provide a suitable buffer between areas of grassland and the bog to ensure that no drift occurs onto the bogs. Contractors will be alerted of the bogs importance, and efforts to ensure no accidental drift onto these habitats occurs (e.g. not spraying on a windy day). With this mitigation in place, the significance of the impact goes from **Moderate** to **Low**.

8 SUMMARY OF ASSESSMENT

Agricultural improvement within the land parcel has the potential to impact three main habitats in the absence of mitigation. This impact includes herbicide drift onto surrounding habitats, and the reseedling of one habitat. The mitigation proposed and agreed with the farmer, including marking these areas out to ensure that accidental herbicide application does not occur, no longer reseeding the area of marshy grassland, and alerting contractors to these habitats importance reduces the significance of all of these impacts to low.

The continuation of cattle grazing within this parcel will greatly benefit the habitats including unimproved grassland, scrub and bog. Further enhancements to the habitats within the parcels could include ensuring that any fallen scrub trees stays in situ, and supplementary planting with cactus guards where any trees do fall.

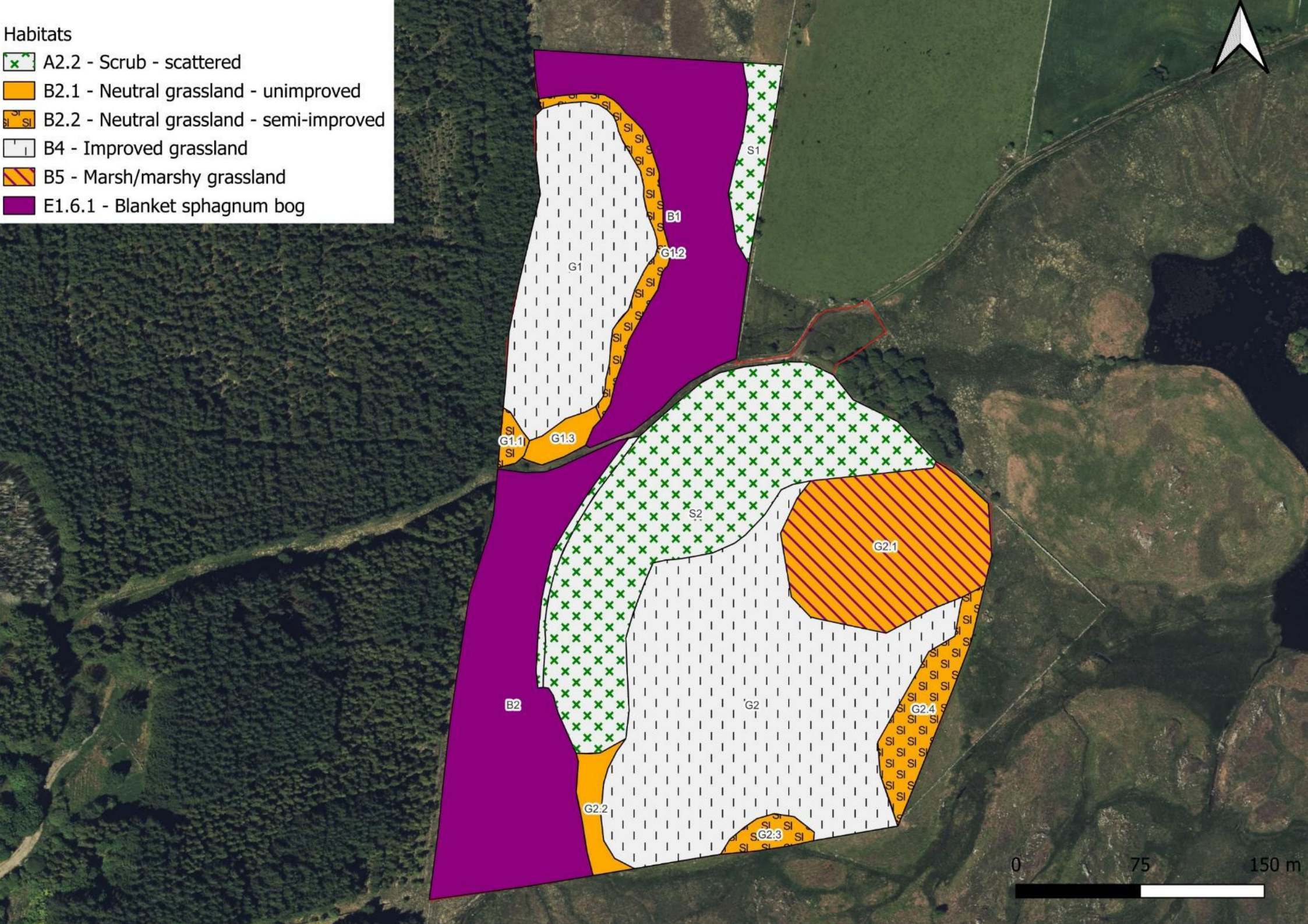
Table 4: Summary of significance of impacts on key receptors without and with mitigation

Receptor	Significance of impact without mitigation	Significance of impact with mitigation
Semi-improved and unimproved neutral grassland	Medium	Low

Marshy Grassland	Very High	Low
Blanket Bog	Medium	Low
Breeding birds	Low	-
Bats	Low	-

Habitats

- A2.2 - Scrub - scattered
- B2.1 - Neutral grassland - unimproved
- B2.2 - Neutral grassland - semi-improved
- B4 - Improved grassland
- B5 - Marsh/marshy grassland
- E1.6.1 - Blanket sphagnum bog



— Linear Mitigation. Create line barrier obvious to contractors as to highlight areas not to spray / reseed or fertilise.

Habitats

- A2.2 - Scrub - scattered
- B2.1 - Neutral grassland - unimproved
- B2.2 - Neutral grassland - semi-improved
- B4 - Improved grassland
- B5 - Marsh/marshy grassland
- E1.6.1 - Blanket sphagnum bog

