



Over Cassock Rifle Range, Eskdalemuir

Preliminary Ecological Appraisal



Our Ref: FCSA_Overcassock_R1
Client: EAP Glendinning

Malcolm Ginns MCIEEM, Director and
Principal Ecologist
Solway Ecology (Consulting) Ltd
27/08/2021

ISSUE RECORD

Client name	EAP Glendinning
Project name	Over Cassock Rifle Range, Eskdalemuir
Project Reference	FCSA_Over Cassock Rifle Range_PEA
Report title	Preliminary Ecological Appraisal
Issue number	01
Date	27/08/2021
Written by	Malcolm Ginns BSc (Hons) MSc MCIEEM Director and Principal Ecologist
Checked and Approved by	Carolann Ginns BSc (Hons) MSc PGCE Company Secretary

The information and advice contained in this report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Executive Summary

Overview

This report has been prepared by Solway Ecology (Consulting) Ltd on behalf of the EAP Glendinning. It provides details of a Preliminary Ecological Appraisal (Extended Phase 1 Habitat Survey and UK Habitat Classification Survey) undertaken at Over Cassock, Eskdalemuir, Dumfries & Galloway (central grid reference: NT221 067) in relation to redevelopment of an existing shooting range.

An Extended Phase 1 Habitat Survey and UK Habitat Classification Survey (UK HAB) were undertaken on 7th and 11th July 2021. The broad habitat types were identified, mapped and assessed for their ecological importance and the potential of the site to host protected species. This information was used to assess the impacts of the proposal on ecological receptors and to identify any species licensing or additional survey work that may be required

Habitats

The habitats that will be directly impacted consist of open upland habitats (grassland, dry dwarf shrub heath-acid grassland mosaic) with a small area of young broadleaved plantation woodland. No other habitats are considered likely to be impacted.

Protected and Notable Species

Species considered potentially at risk of being impacted are breeding birds. No protected species (badger, red squirrel, etc) were recorded during the survey. The site is within an area known to host a number of upland bird species including hen harrier, goshawk and merlin.

Implications and Recommendations

Habitats: The development of the range will have minimal impact on the habitats at the site.

Birds: The site is operated as a target range and the proposal is to replace existing targets and portacabins. As there are no plans to dramatically increase the usage of the range, and there is no change in the calibre of weapons to be used, the impact on birds (in terms of disturbance/noise) is unlikely to change and considered to be background disturbance. The impact on birds will be none to negligible.

Bats: The site provides good foraging habitat for bats however there are limited to no roosting opportunities on site. The portacabins are sealed and do not provide suitable roosting spaces for bats. Therefore, bats will not be impacted.

Badgers: No badger setts or other signs of badgers were found at the site or immediately adjacent to the site. Therefore, the development will not impact on badgers.

Red Squirrels and Pine Martens: No evidence of red squirrels or pine marten were recorded during the survey. Whilst the surrounding habitat was suitable for both species, the site currently lacks suitable habitat for red squirrel. There were no features on site that provide suitable den sites for pine marten.



Riparian Mammals: No evidence of riparian mammals was recorded at the site. There are no waterbodies or watercourses present on site that are capable of sustaining either species.

Contents

Executive Summary	2
1 INTRODUCTION	6
1.1 Background.....	6
1.2 Survey Constraints.....	7
1.3 Surveyors	7
2 MATERIALS AND METHODOLOGY	8
2.1 Desk Study	8
2.2 Field Survey.....	8
2.2.1 Terrestrial Habitats and Species	8
2.3 Data Analysis.....	8
3 RESULTS.....	9
3.1 Desk Study	9
3.1.1 Statutory and Non-Statutory Designated Sites	9
3.1.2 Biological Records	10
3.2 Survey Dates and Weather Conditions	10
3.3 Phase 1 Habitat and UK HAB Survey	11
3.3.1 A1.1.2: Broadleaved Plantation Woodland [w1g7 36 47 - other broadleaved woodland].....	11
3.3.2 A1.2.2: Conifer Plantation [w2c other coniferous woodland] and A4.2: Felled Conifer Plantation [w2c 53 - felled conifer plantation].....	12
3.3.3 B1.1: Unimproved Acid Grassland [g1b 13 58 60 80 - upland acid grassland].....	12
3.3.4 B2.1: Unimproved Neutral Grassland [g3c8 160 <i>Holcus – Juncus</i> neutral grassland] 13	
3.3.5 C1.1: Continuous Bracken [g1c bracken].....	13
3.3.6 D5: Dry Heath – Acid Grassland Mosaic [h1b5 13 dry heaths upland, scattered dwarf shrubs] 13	
3.3.7 E1.6.1: Blanket Bog [f1a6 24 degraded blanket bog, depressions on peat substrates] 14	
3.3.8 E2.1: Acid Flush [f2c 129 upland flushes, fens and swamps, flush].....	15
3.3.9 G1: Standing Water [r1 362 standing open water, artificial pond].....	15
3.4 Summary of Habitats with Biodiversity Value	16
3.5 Protected and Priority Species Survey	19
3.5.1 Birds	19
3.5.2 Badgers	19

3.5.3	Red Squirrels and Pine Marten	19
3.5.4	Otter and Water Vole	19
3.5.5	Bats	19
3.5.6	Amphibians and Reptiles	20
3.6	Summary of Protected and Priority Species	20
4	DISCUSSION AND RECOMMENDATIONS	22
4.1	Overview.....	22
4.2	Ecological Value of Habitats Present	22
4.3	Protected and Notable Species.....	23
4.3.1	Birds	23
4.3.2	Badgers	23
4.3.3	Red Squirrel and Pine Marten.....	23
4.3.4	Otters and Water Voles.....	23
4.3.5	Bats	23
4.3.6	Amphibians and Reptiles	23
4.4	Ecological Impact.....	23
5	CONCLUSIONS	25
6	REFERENCES	27
7	APPENDICES	28
7.1	Target Note Table.....	29
7.2	Species Lists (not exhaustive)	31
7.2.1	Botanical Species List.....	31
7.3	Records Centre Data	33

1 INTRODUCTION

1.1 Background

This report has been prepared by Solway Ecology (Consulting) Ltd (here on referred to as 'Solway Ecology') on behalf of EAP Glendinning. It provides details of an Ecological Appraisal undertaken on land at Over Cassock, Eskdalemuir, Dumfries & Galloway (central grid reference: NT221 067) (**Figure 1**). The site lies the approximately 6.7km north of the village of Eskdalemuir and 22km to the east of the town of Moffat. A site plan has been included in **Appendix A**.

It is understood that owners are planning to modernise the shooting range. The key elements of this programme are to:

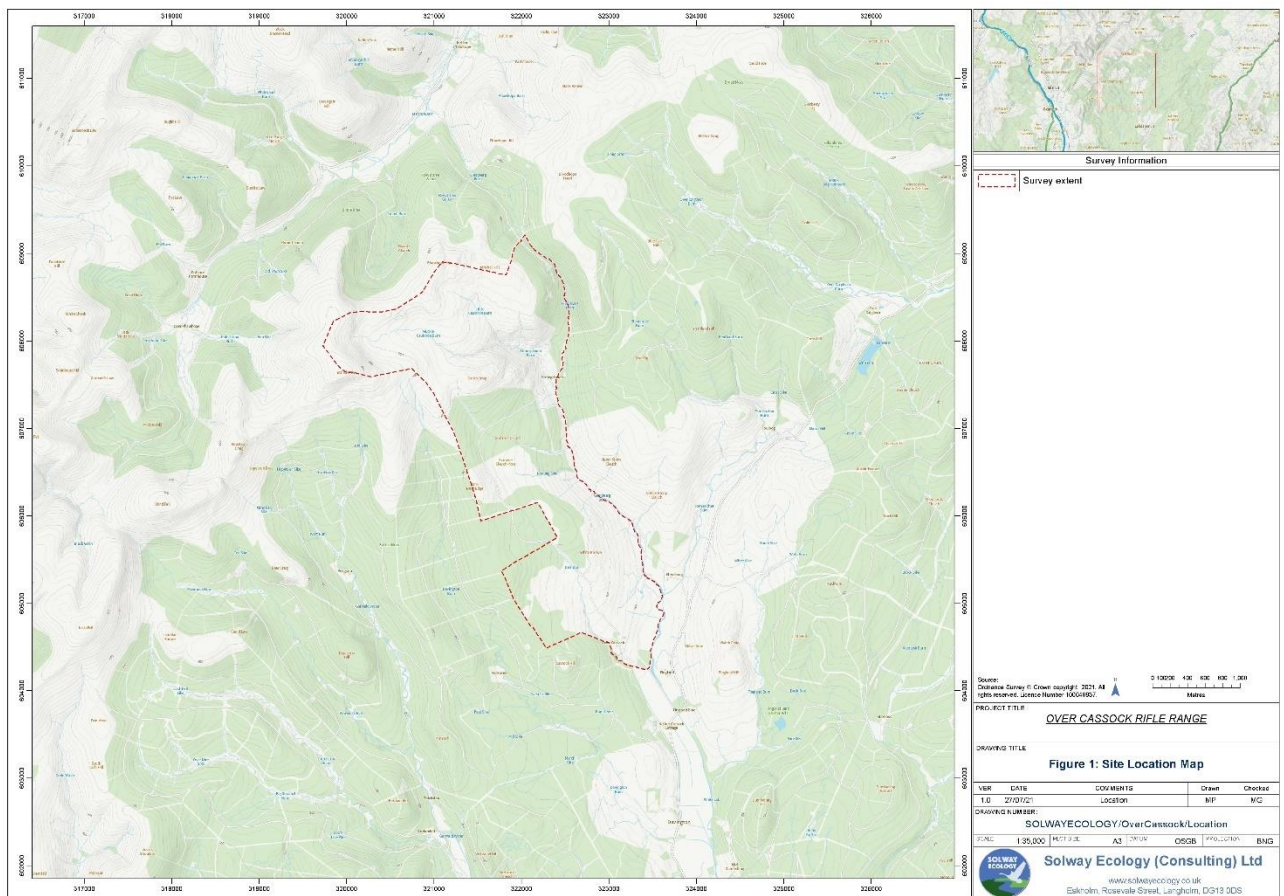
- Replace the existing portacabin structures at the firing point with a permanent wooden building;
- Renew targets on existing shooting range used for target shooting with small arms in a variety of calibres. Some additional targets are to be added within the footprint of the current range.

The applicant proposes to upgrade the existing firing point with a permanent structure, and at the same time formalise the partial use of this agricultural land as a rifle range. The vast majority of the site will continue to be used primarily for agricultural use. The rifle range is primarily a diversification of uses on the farm and will operate alongside it at intermittent times.

The objectives of this PEA were to:

- Identify, classify and map all site boundaries and habitats present;
- Identify statutory or non-statutory designated sites within or near to the site;
- Identify and map any invasive plant species which might be present on site;
- Assess the potential for protected and/or priority species (species of principal importance) to be present within the site and consider the implication of their presence;
- Provide recommendations for further survey and assessment if/as required.

Figure 1: Site Location



1.2 Survey Constraints

The survey was undertaken in July. July is during the peak season for undertaking Phase 1 habitat survey. No constraints were identified during the survey.

The applicant proposes to upgrade the existing firing point with a permanent structure, and at the same time formalise the partial use of this agricultural land as a rifle range. The vast majority of the site will continue to be used primarily for agricultural use. The rifle range is primarily a diversification of uses on the farm and will operate alongside it at intermittent times.

1.3 Surveyors

Surveys were undertaken by Malcolm Ginns, BSc (Hons) MSc MCIEEM and Gillian Dinsmore HNC. Malcolm is an experienced ecologist with over thirteen years practice in carrying out Phase 1 habitat and protected species surveys.

2 MATERIALS AND METHODOLOGY

2.1 Desk Study

A desk study was undertaken using publicly available records on the SNH SiteLink and SNHi websites. Data were obtained from the South West Scotland Biodiversity Resource Centre (SWERC). The results of the desk study are incorporated into the appropriate habitats or species sub sections within the results section of this report.

2.2 Field Survey

2.2.1 Terrestrial Habitats and Species

The site was surveyed on the 7th and 11th July 2020 using standard Phase 1 Habitat assessment methodology (JNCC, 2010) and the UK Habitat Classification (UK HAB) (UK HAB 2020), extended to highlight the potential presence of protected or priority species. This involved a walkover of the survey to identify, classify and map the survey area boundaries and the habitat types present, marking all habitats onto a base map. In addition, target notes (TN's) were used to record any features or habitats of interest. The Phase 1 habitat map is shown in Figure 1. The accompanying photographs and target notes are available in **Appendix B** and the lists of plant species recorded during the survey are presented in **Appendix C**. Plant names follow Stace (Stace, 2010). A list of animal species recorded during the survey is presented in **Appendix D**.

During the survey, observations or field signs of any notable species (including European and UK protected species, species of conservation concern, or invasive species) were noted. Particular attention was given to species relevant to the survey area, including badger *Meles meles*, red squirrel *Sciurus vulgaris*, otter *Lutra lutra* and water vole *Arvicola amphibius*, bats, nesting birds, amphibians and reptiles.

2.3 Data Analysis

Post survey habitat data was plotted onto an Ordnance Survey base map using ArcGIS. Standard Phase 1 Habitat Survey hatches were used to present the habitat data except in the instance of improved pasture where a light green hatch was used instead of the standard code of capital letter 'I' for presentation purposes. The total area covered by each habitat was measured in ArcGIS and are presented in Table 2.

3 RESULTS

3.1 Desk Study

3.1.1 Statutory and Non-Statutory Designated Sites

There is one statutory designated site (e.g., SSSI, SAC, SPA or RAMSAR) sites within 2km of the site. There are no local wildlife sites or other non-statutory sites within 2km of the site. A further four statutory designated sites are located with 20km of the site (Table 1).

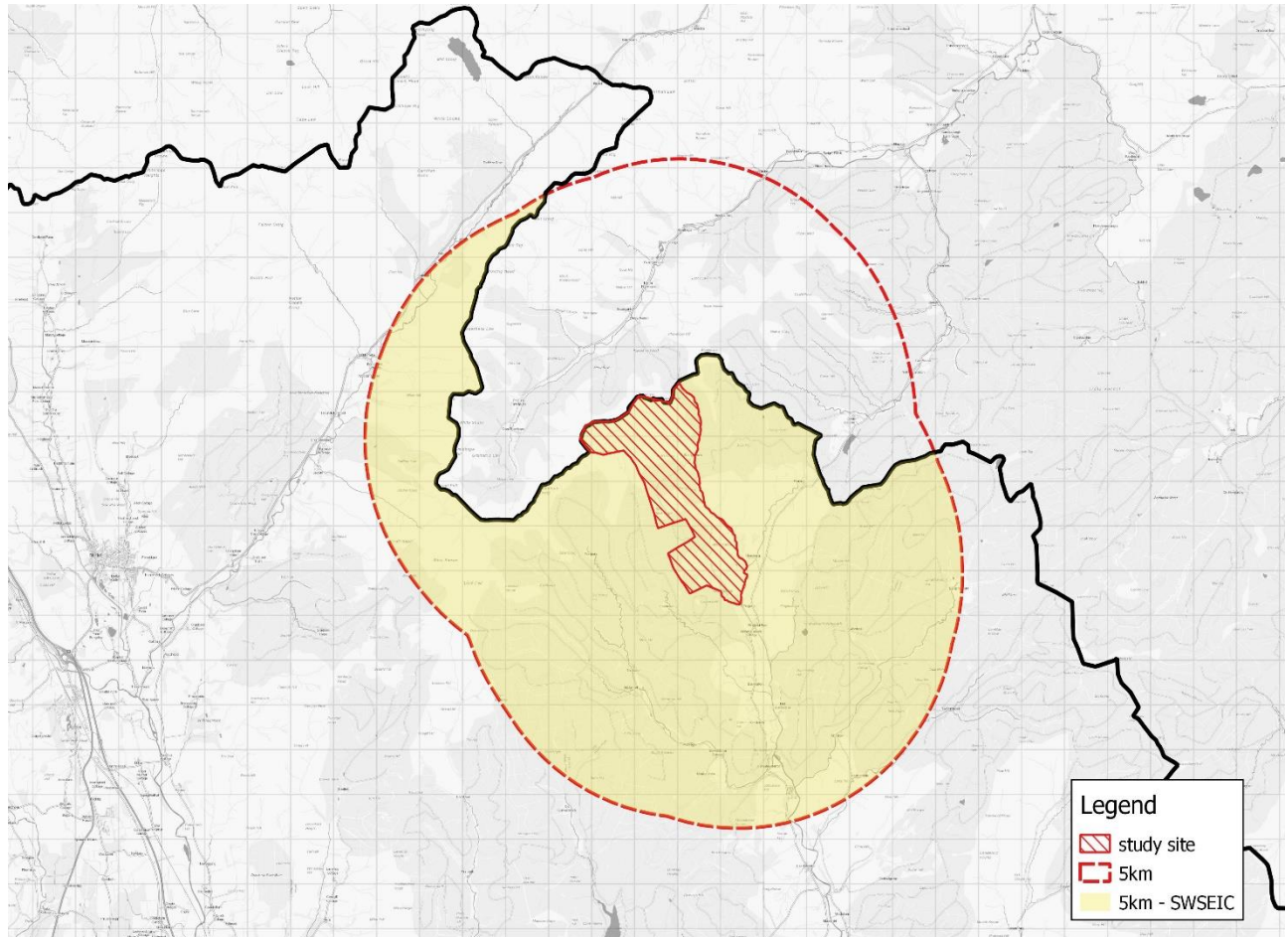
Table 1: Designated sites

Site Name	Designation	Designated for	Location	Direction from site	Distance from site
River Tweed	SSSI / SAC	Watercourse, Salmon, Otter and Lamprey species	Ettrick Pen	South	0.23 Km
Moffat Hills	SSSI / SAC	Botany/Habitat	Carrifan	West	5.29 Km
Tweedsmuir Hill	SSSI	Habitats / Botany / Birds	Meggethead	North	8.17 Km
Craigdilly	SSSI	Habitats / Scrub	Megget Reservoir	North	7.21 Km
Langholm – Newcastleton Hills	SPA	Birds	Langholm	Northwest	18.7 Km

3.1.2 Biological Records

The data search area is presented in **Map 1**.

Figure 1: Biological Records Search Area



3.2 Survey Dates and Weather Conditions

The Phase 1 Habitat and Protected species surveys were undertaken on 7th and 11th July 2021. Weather conditions during the survey on the 7th July 2021 were overcast with a light breeze and a temperature of 12°C. Weather conditions during the survey on the 11th July 2021 were clear and still with a temperature of 20°C.

It should be noted that the absence of certain protected or rare species does not preclude their presence on a site. There is always a risk of species being over-looked, either owing to the timing of the survey or the scarcity of the species at the site.

The survey undertaken was a UK Hab and Extended Phase 1 Habitat Survey therefore plant species lists compiled were not exhaustive; although sufficient information was gathered to determine the character of the habitat types present and common species were recorded for each of the habitat types present.

3.3 Phase 1 Habitat and UK HAB Survey

The survey area comprised of nine distinct habitats – **A1.1.2**: Broadleaved Plantation (w1g7); **A1.2.2**: Conifer Plantation (w2c); **A4.2**: Felled Conifer Plantation (w2c 53); **B1.1**: Unimproved Acid Grassland (g1b); **C1.1**: Continuous Bracken (g1c); **D5**: Dry Heath – Acid Grassland Mosaic (h1b5); **E1.6.1**: Blanket Bog (f1a6); **E2.1**: Acid Flush (f2c); and **G1**: Standing Water (r1). The most abundant habitats were Acid Grassland (B1) and Dry Heath – Acid Grassland Mosaic (D5).

In the headings for each habitat the Phase 1 habitat survey category is given first with the UK Habitat Classification category given in boxes.

Photographs of the survey area are provided in **Appendix B**. The phase 1 habitat map is shown on **Figure 2** below.

Plate 1: General habitat at the site



3.3.1 A1.1.2: Broadleaved Plantation Woodland w1g7 36 47 - other broadleaved woodland

Broadleaved plantation woodland consisted of a small area on the eastern side of the site. The plantation was very young, with trees still in protection tubes. At the time of the survey the broadleaved plantation resembled scattered scrub in form. Species planted include birch *Betula* sp., oak *Quercus* sp. and rowan *Sorbus aucuparia*. There was a dense field layer which lacked botanical diversity, the primary species present being bracken *Pteridium aquilinum*, wavy hair-grass *Deschampsia flexuosa*, foxglove *Digitalis purpurea*, heath bedstraw *Galium saxatile* and purple moor-grass *Molinia caerulea*. The total area covered by A1.1.2 was 6.57 ha accounting for 0.93% of the survey area.

3.3.2 A1.2.2: Conifer Plantation **w2c other coniferous woodland** and A4.2: Felled Conifer Plantation **w2c 53 - felled conifer plantation**

Within the survey boundary there were three areas of conifer plantation and one of clear-felled conifer plantation. There were located in the northeast corner (young conifers), the centre of the site, just north of the sites central point (felled) and just to the south of the felled area (young plantation). These conifer crops consisted of Sitka spruce *Picea sitchensis*. There was a large area of felled Sitka spruce in the centre of the site.

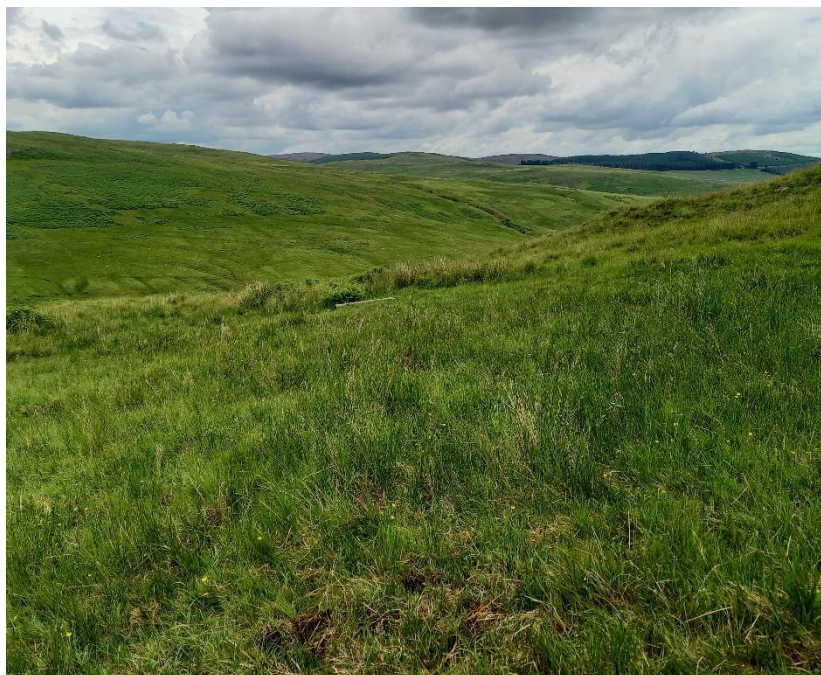
Plate 2: Felled conifers at the site



3.3.3 B1.1: Unimproved Acid Grassland **g1b 13 58 60 80 - upland acid grassland**

Acid grassland dominated the southern half of the sites, and there were large patches of the habitat present in the north of the site, as well as forming part of the mosaic habitat D5: Dry heath/acid grass mosaic. Dominant species consisted of purple moor-grass *Molinia caerulea*, deer-grass *Scirpus cespitosus*, mat grass *Nardus stricta*. Other species included Sphagnum moss *Sphagnum ponticum*, heath rush *Juncus squarrosus*, heath bedstraw *Galium saxatile*, turf moss *Rhytidadelphus* sp., sweet vernal-grass *Anthoxanthum odoratum*, tormentil *Potentilla erecta*.

Plate 3: Upland grassland at the site



3.3.4 B2.1: Unimproved Neutral Grassland **g3c8 160 *Holcus* – *Juncus* neutral grassland**

There was a very small patch of species-rich neutral grassland on the south boundary of an area of continuous bracken at NT224 064. The area was less than 20m by 5m in size and was located on an east-facing slope. The grassland was surrounded by dense bracken and was temporarily wet. Species include soft rush *Juncus effusus*, Yorkshire fog *Holcus lanatus* and white sedge *Carex curta*. Other species consist of field forget-me-not *Myosotis arvensis*, bracken *Pteridium aquilinum*, marsh thistle *Cirsium palustre*, heath bedstraw *Galium saxatile*, creeping buttercup *Ranunculus repens*, burnet saxifrage *Pimpinella saxifrage*, lesser celandine *Ficaria verna*, and star sedge *Carex echinate*.

3.3.5 C1.1: Continuous Bracken **g1c bracken**

There were four noticeable areas of continuous bracken. These were located in the centre of the site at NT222 066; along the eastern boundary in the southern half of the site (NT232 056), and in the north east of the site at NT220 085 and NT220 075.

3.3.6 D5: Dry Heath – Acid Grassland Mosaic **h1b5 13 dry heaths upland, scattered dwarf shrubs)**

D5 dwarf shrub heath – acid grassland mosaic covered the entire of the northern fifth of the site (with the exception of small patches of remnant blanket bog). The remaining patches of blanket bog suggest that at one time the area now covered by D5 was blanket bog but that this has now dried out and degraded due to drainage.

Dominant species consisted of purple moor-grass *Molinia caerulea*, heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus*, deer-grass *Scirpus cespitosus*, mat grass *Nardus stricta*. Mosses present consisted of *Sphagnum* sp. and *Rhytidadelphus* sp. Other species included bilberry

Vaccinium mytilis, Sphagnum moss *Sphagnum ponticum*, heath rush *Juncus squarrosus*, heath bedstraw *Galium saxatile*, mat-grass *Nardus stricta*, turf moss *Rhytidadelphus* sp., sweet vernal-grass *Anthoxanthum odoratum*, tormentil *Potentilla erecta*.

Plate 3: Dry heath – acid grass mosaic



3.3.7 E1.6.1: Blanket Bog f1a6 24 degraded blanket bog, depressions on peat substrates

There were three small areas of blanket bog totalling an area of 3.16 ha or 0.45% of the site. These areas were located within the dry heath-acid grassland mosaic in the north of the site, and on the eastern edge of the site bounded by continuous bracken. It is most likely that these small patches of blanket bog are remnants from a previously much larger area that has diminished as a result of historical land use. The remaining blanket bog patches are located in depressions in the ground where peat is present. The habitat surrounding the blanket bog patches consists of D5 - Dry heath/Acid grassland mosaic. Vegetation within the patches of blanket bog consists of *Sphagnum* sp. and *Eriophorum vaginatum*-dominated vegetation. Species list recorded included hare's-tail cottongrass *Eriophorum vaginatum*, Sphagnum moss *Sphagnum palustre*, heath rush *Juncus squarrosus*, purple moor-grass *Molinia caerulea*, wavy hair-grass *Deschampsia flexuosa*, heather *Calluna vulgaris* and bilberry *Vaccinium mytilis*.

Plate 3: Blanket Bog



3.3.8 E2.1: Acid Flush **f2c 129 upland flushes, fens and swamps, flush**

In the northeast corner of the site was a small patch of acid flush where a small watercourse/drain entered the site. The vegetation within this flush was dominated by deer grass *Trichophorum germanicum*, wavy hair-grass *Deschampsia flexuosa*, purple moor-grass *Molinia caerulea* and sweet vernal-grass *Anthoxanthum odoratum*. Other species included cross-leaved heath *Erica tetralix*, tormentil *Potentilla erecta*, common heather *Calluna vulgaris*, bracken *Pteridium aquilinum*, star sedge *Carex echinate*, Sphagnum palustre, bilberry *Vaccinium myrtillus*, marsh thistle *Cirsium palustre*, male fern *Dryopteris filix-mas*, hare's-tail cottongrass *Eriophorum vaginatum*, heath bedstraw *Galium saxatile*, coltsfoot *Tussilago farfara*, forget-me-not *Myosotis* sp., northern marsh orchid *Dactylorhiza purpurella* and Lousewort *Pedicularis sylvatica*.

3.3.9 G1: Standing Water **r1 362 standing open water, artificial pond**

There was one small pond present in the northern half of the site (0.60 ha in size) (Table 2). A habitat suitability assessment of this pond produced a score of 0.29 which is considered *poor* quality as great crested newt habitat and is unlikely to host this species (Table 3).

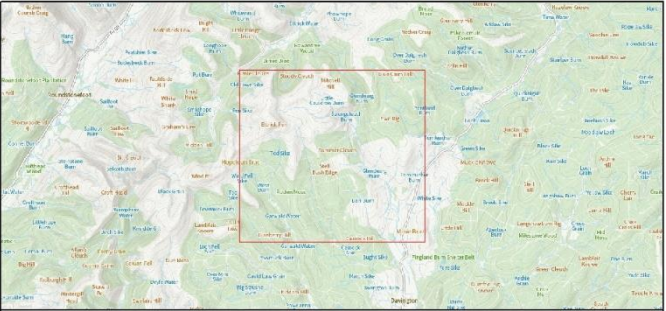
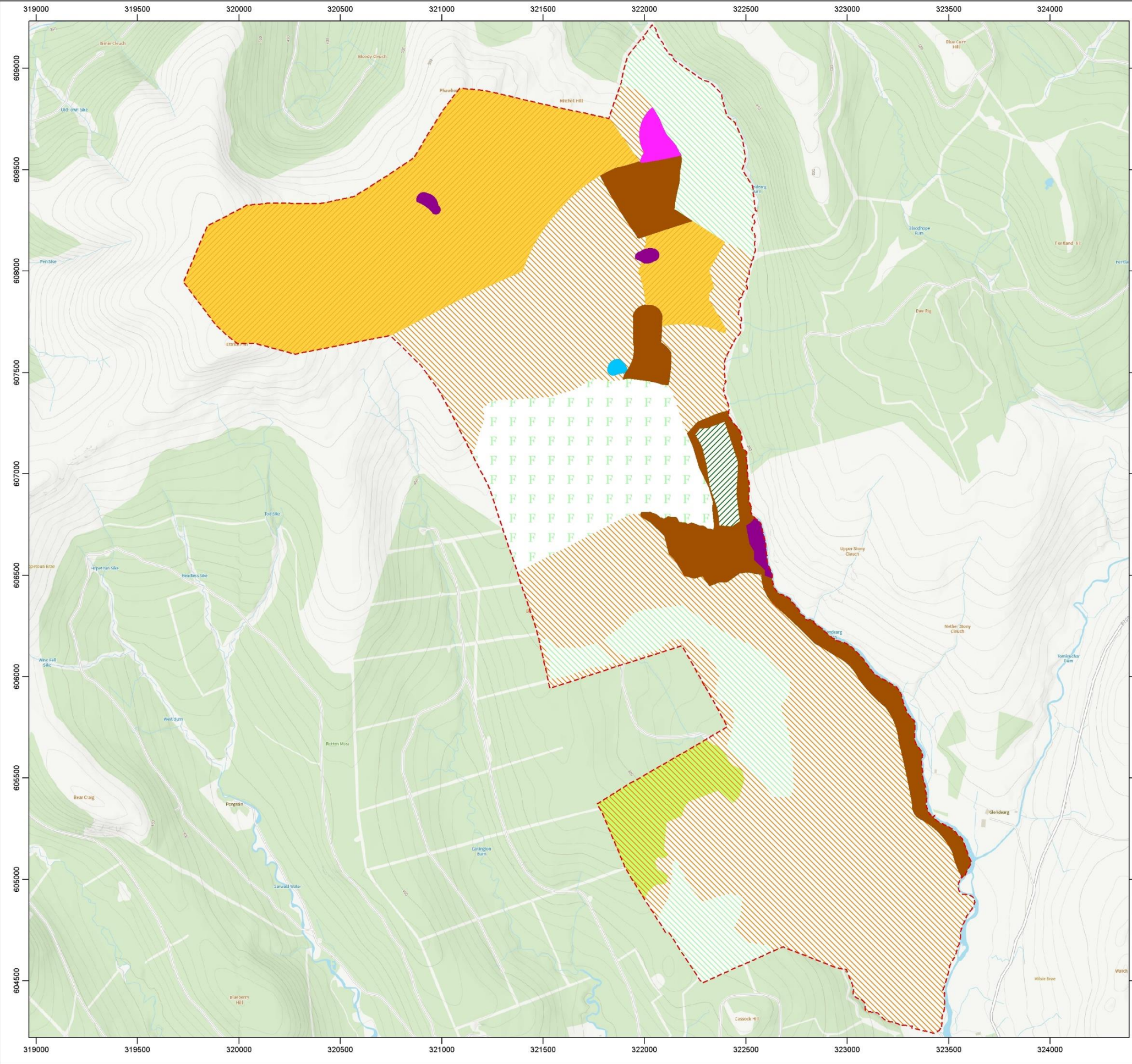
3.4 Summary of Habitats with Biodiversity Value

A summary of the habitats and their biodiversity value is presented in Table 2.

Table 2: Summary of habitats in the survey area

Habitats	Areas		Biodiversity value
	Total area covered by habitat (ha)	Percentage of the site accounted for	Comments
A1.1.2: Broadleaved Plantation Woodland (w1g7 36 47)	6.57	0.93	The A1.1.2 habitat present consisted of newly planted trees which resembled scattered scrub. As these trees grow their biodiversity value will change and develop as they will host different faunal assemblages at different stages of development. At the time of writing this area provides habitat for scrub-nesting bird species such as willow warblers as well as reptiles such as common lizard and adder.
A1.2.2: Conifer Plantation (w2c)	103.7	14.63	As with the A1.1.2 habitat the plantation conifer at the site consisted of newly planted trees which resembled scattered scrub. As these trees grow their biodiversity value will change and develop as they will host different faunal assemblages at different stages of development. At the time of writing this area provides habitat for scrub-nesting bird species such as willow warblers as well as reptiles such as common lizard and adder.
A4.2: Felled Conifer Plantation (w2c 53)	74.25	10.47	The felled conifer is surrounded largely by open habitats. The area of felled conifer contains an abundance of brash and tree stumps providing good cover and ample basking sites for reptiles such as common lizard and adder. The brash also provides nesting cover for species such as wren.
B1.1: Unimproved Acid Grassland (g1b 13 58 60 80)	306.28	43.21	The most frequent habitat at the site. Acid grassland covered most of the southern half of the site as well as large areas of the northern half. The dominant species was purple moor-grass <i>Molinia caerulea</i> . The grassland provides suitable nesting habitat for a range of upland bird species.
B2.1: Unimproved Neutral Grassland (g3c8 160)	N/A	N/A	There was one very small patch of neutral grassland at the site where the slope of the ground led to better drainage.
C1.1: Continuous Bracken (g1c)	47.76	6.74	There were several patches of continuous bracken, especially along the eastern edge of the site. This provides suitable habitat for reptiles such as adder and common lizard.
D5: Dry Heath – Acid Grassland Mosaic (h1b5 13)	163.29	23.04	The second most abundant habitat at the site. D5 was dominant in the north of the site. Within the D5 habitat were small patches of remnant blanket bog indicating the habitat in the area was originally blanket bog which has degraded over time.

Habitats	Areas		Biodiversity value
	Total area covered by habitat (ha)	Percentage of the site accounted for	Comments
E1.6.1: Blanket Bog (f1a6 24)	3.16	0.45	The blanket bog at the site covers a very small area and is in a degraded state.
E2.1: Acid Flush (f2c 129)	3.22	0.15	Acid flush was represented on site by a small area in the north-eastern corner of the site. This was surrounded by conifer plantation to the east, continuous bracken to the south, and acid grassland to the north and west. The acid flush was present due to a drainage channel leaving the forestry plantation and heading onto the site.
G1: Standing Water (r1 362)	0.60	0.08	Standing water consisted of one small pond 0.60ha in area located in acid grassland. This pond had a poor habitat suitability for great crested newts.
TOTAL	708.83	100.00	



Survey Information

	Survey extent (708.83ha)
	Broadleaved plantation woodland (6.57ha)
	Coniferous plantation woodland (81.06ha)
	Recently felled coniferous plantation woodland (74.25ha)
	Unimproved acid grassland with planted conifers (22.64ha)
	Unimproved acid grassland (306.28ha)
	Continuous bracken (47.76ha)
	Dry heath / acid grassland mosaic (163.29ha)
	Acid flush (3.22ha)
	Blanket bog (3.16ha)
	Standing water (0.60ha)

Source:
Ordnance Survey © Crown copyright 2021, All rights reserved. Licence Number 100049837.

0100200400600800
Metres

PROJECT TITLE

OVER CASSOCK RIFLE RANGE

DRAWING TITLE

Figure 2: Phase 1 Habitat Map

VER	DATE	COMMENTS	Drawn	Checked
1.1	27/07/21	Phase 1	MP	MG

DRAWING NUMBER:

SOLWAYECOLOGY/OverCassock/Phase1

SCALE	1:18,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG
-------	----------	-----------	----	-------	------	------------	-----

Solway Ecology (Consulting) Ltd

www.solwayecology.co.uk
Eskholm, Rosevale Street, Langholm, DG13 0DS

3.5 Protected and Priority Species Survey

A detailed search for protected and priority species was carried out during the survey and the potential for habitats to support them was noted (along with the potential for the habitats to host breeding birds).

3.5.1 Birds

No bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) or Annex 1 of the EC Birds Directive was recorded during the survey. The site provides suitable habitat for a number breeding birds species including those associated with heathland, scrub, and grassland.

A number of Schedule 1 bird species were returned by the data search in the wider vicinity. These included greenshank, goshawk, golden eagle, osprey, peregrine, and fieldfare. The non-Schedule 1, but priority species, black grouse, was also reported.

3.5.2 Badgers

No evidence of badgers was recorded during the survey. Badgers have been reported in the wider area.

3.5.3 Red Squirrels and Pine Marten

No evidence of red squirrels or pine marten were recorded during the survey. Whilst the surrounding habitat was suitable for both species, the site currently lacks suitable habitat for red squirrel. There were no features on site that provide suitable den sites for pine marten.

3.5.4 Otter and Water Vole

There were no watercourses on site. The White Esk borders the southern boundary of the site. The White Esk is a small watercourse and the closest watercourse of significant size is the River Esk, 16.5km downstream from the site. No evidence of otters was recorded during the survey. Whilst some of the wetter areas do provide potential habitat for water voles no evidence of the species was recorded.

3.5.5 Bats

No evidence of bats was recorded during the walkover survey. There were no buildings or mature trees within the site boundary suitable for roosting bats. Bats from nearby properties may forage over the site.

3.5.6 Amphibians and Reptiles

No amphibians were recorded during the survey. The only waterbody was the pond at NY059 895 to the north of the felled plantation. This pond had a *below average* potential for great crested newts based on the Habitat Suitability Index for great crested newt (Table 4).

A single common lizard was recorded during the walkover survey. The heathland in the northern part of the site provides suitable habitat for common lizard and adders.

Table 3: Habitat suitability of waterbodies to host great crested newts

Geographical Location	Pond Area (m ²)	Pond drying	Water Quality	Shade	Fowl	Fish	Pond Count	Terrestrial Habitat	Macrophytes
C	25	Sometimes	Moderate	None	Minor	Absent	0	Poor	None
0.01	0	0.5	0.67	1	0.67	1	0.1	0.33	0.3
Habitat Suitability Index Score				0.20	Habitat Suitability				Poor

No records of great crested newts were found within 5km of the site during the SWERC data search.

3.6 Summary of Protected and Priority Species

Table 5: Summary of protected and notable species in the field survey

Protected or notable species	Protection	Location
Birds	All breeding birds are protected under the Part 1, Section 1 of the Wildlife and Countryside Act 1981 as amended. In addition, birds listed on Schedule 1 of the Act are protected against disturbance during the nesting season.	The site currently provides suitable habitat for a range of breeding birds, including species associated with woodland edge and open habitats.
Bats	All bat species are protected under the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended).	There were no features identified within the site boundary suitable for roosting bats.
Badgers	Protected under the Protection of Badgers Act 1992.	No evidence of badgers was recorded during the survey.
Riparian Mammals	Water voles are afforded limited protection under the Wildlife and Countryside Act 1981 (as amended), whilst otters are fully protected under the Conservation (Natural	No evidence of riparian mammals was recorded during the survey. There no suitable watercourses or waterbodies suitable for otters. There are limited ditches or

Protected or notable species	Protection	Location
	Habitats, &c.) Regulations 1994 (as amended).	small watercourses limiting the opportunities for water voles.
Red Squirrel and Pine Marten	Red squirrels are fully protected under the Wildlife and Countryside Act 1984 (as amended).	The is no habitat on site suitable for red squirrel or pine marten.
Reptiles and Amphibians	Common reptiles, i.e., grass snake, adder, slow worm and common lizard are protected against killing or injuring under the Wildlife and Countryside Act 1984 (as amended). Great crested newts are protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).	The are no ponds suitable for great crested newts present within the site. The habitat is suitable for adders across the site.

4 DISCUSSION AND RECOMMENDATIONS

4.1 Overview

The habitats at the site were dominated by open habitats. The only mature woodland consisted of a conifer crop that had recently been clear-felled. There were some small areas of very young plantation both broadleaved and coniferous. The largest habitat by area was acid grassland which accounted for 306.28 ha or 43.2% of the survey area on its own; or 492.21 ha / 69.4% if areas where it is a significant part of a mosaic habitat is included. The other open habitats consist of dry heath-acid grassland mosaic (23.04%), continuous bracken (6.74%), blanket bog (0.45%), acid flush (0.15%) and standing water (0.08%)

The proposed shooting targets are distributed in a north-south pattern along the valley. For safety reasons the targets will be located in bunkers dug into the ground with low earth mounds surrounding them. In most cases these bunkers are already in place and are currently in use for target shooting. In these cases, the only change is to be the replacement of the existing targets with new targets.

The shooting will take place from a fixed location located at the southern end of the site, shooting in a generally north direction. Shooting will be carried out using small arms in various calibres. It is understood that each participant will start by aiming at the closer targets first and will only progress to the further out targets once the Range Conducting Officer is satisfied that they are capable of hitting those targets. Consequently, the majority of projectiles should accumulate within the target bunkers, from where they will be routinely collected to be recycled. There is theoretically the risk of animals such as deer or sheep straying into the firing line, however farm animals are cleared from the range immediately prior to the ranging going live. This will also discourage wild deer.

As a target shooting club, no live quarry is ever shot at.

4.2 Ecological Value of Habitats Present

The site provides a mosaic of habitats that have the potential to host a range of breeding birds species. These species range from waders such as curlew, snipe and lapwing, to woodland edge and scrub nesting species such as dunnock and various warbler species. In addition, the site provides suitable hunting and nesting habitat for species such as short-eared owl, and hen harrier (although no evidence of these species being present was recorded during the habitat and protected species surveys). The habitats in the wider area are similar to those on site with extensive areas of upland grassland, heath and afforestation.

The habitats are confirmed to host common lizard and there is high potential for adders to be present due to the cover provided by the heath and the abundance of suitable basking sites distributed throughout the site.

4.3 Protected and Notable Species

4.3.1 Birds

All breeding birds are protected under the EC Birds Directive and the Wildlife & Countryside Act 1981 (as amended).

The site provides nesting habitat for a range of upland nesting birds associated with open habitats, i.e., upland moorland birds. It is understood that the land use (target shooting) is not changing in terms of frequency or size of calibre used. As such it is envisaged that disturbance caused by shooting will remain as it currently is. Therefore, the noise/disturbance caused by the use of the range is considered to be background disturbance.

4.3.2 Badgers

Badgers and their setts are protected under the Protection of Badgers Act 1992. No evidence of badger was recorded during the survey.

4.3.3 Red Squirrel and Pine Marten

Red squirrels are present within the wider area. No evidence of red squirrels was recorded on site during the survey and no dreys or feeding remains were present within the survey area.

No evidence of pine marten was recorded during the survey. Whilst it is very difficult to detect pine marten, the site is in an area where there is an abundance of suitable pine marten habitat present and there are pine martens present within the Galloway Forest Park to the west, and in Kielder Forest to the south. The population is in process of becoming established in the eastern part of Dumfries and Galloway.

4.3.4 Otters and Water Voles

There was no evidence of otters or water voles within the survey area. There are no watercourse or waterbodies large enough to provide suitable food sources for otters within the site. No waterbodies or watercourses capable of sustaining water voles were found within the site, and the habitat was not that where fossorial water voles are commonly found.

4.3.5 Bats

No trees or buildings capable of hosting roosting bats were recorded during the survey.

4.3.6 Amphibians and Reptiles

The site provides abundant habitat with the potential to host reptiles, particularly adder and common lizard. No reptiles were recorded during the survey, but both of these species are known to be present within the wider geographical area. Whilst common frog, common toad and palmate newt may take advantage of short-term opportunities such as temporary puddles to spawn, the site lacks suitable breeding pools for great crested newt and other amphibians.

4.4 Ecological Impact

Given that the project is limited to the in-situ replacement of existing targets, with some minor amendments to the structure of the target bunkers; and the replacement of a portacabin/shipping container the impact on the ecology of the site will be none to negligible. This conclusion is further supported by the fact that there is to no change in the calibre of weapons used at the range.

During operational days livestock are physically removed from the range (e.g., rounded up by dog and off-road vehicle). This process will also encourage any wild deer to leave the area. Once shooting starts the noise disturbance is likely to discourage them from returning during the active shooting session. Deer are likely to then re-frequent the area once a shooting session has finished.

Range rules require that any person shooting on the range must pass competency tests prior to admission to the range, thus all shooters are competent marksmen and there is little chance of stray bullets impacting on wildlife.

5 CONCLUSIONS

Table 5 provides an overview of the potential mitigation measures, recommendations and/or further survey work that may be required with regard to the proposals.

Table 5: Summary of protected and notable species in the field survey

Feature	Recommendations	Further survey required
Habitats		
A1.1.2: Plantation broadleaved woodland (w1g7 36 47)	This habitat on site is currently young and of scrub-like nature. Overtime this will develop into woodland habitat benefiting wildlife and increasing the sites biodiversity.	No further survey required.
A1.2.2: Conifer plantation (w2c)	This habitat on site is currently young and of scrub-like nature. Overtime this will develop into woodland habitat benefiting wildlife and increasing the sites biodiversity.	No further survey required
A4.2: Felled Conifer Plantation (w2c 53)	This habitat is likely to be re-stocked. If it is re-stocked consideration should be made to increase its diversity by planting a mixture of conifer and broadleaved species.	No further survey required
B1.1: Unimproved Acid Grassland (g3c8 160)	Whilst this is the dominant habitat at the site, the limited nature of the development and the limited nature of the impact of the use of rifles will not result in any significant detrimental impact.	No further survey required.
C1.1: Continuous Bracken (g1c)	This habitat will not be affected by the proposals.	No further survey required.
D5: Dry Heath – Acid Grassland Mosaic (h1b5 13)	This habitat will not be affected by the proposals.	No further survey required.
E1.6.1: Blanket Bog (f1a6 24)	Whilst this habitat accounts for a very small area on the site, it should be avoided wherever possible.	No further survey required.
E2.1: Acid Flush (f2c 129)	Whilst this habitat accounts for a very small area on the site, it should be avoided wherever possible.	No further survey required.

Feature	Recommendations	Further survey required
G1: Standing Water (r1 362)	This habitat will not be affected by the proposals.	No further survey required.
Notable species		
Birds	The habitats at the site provide good nesting habitat for breeding birds, particularly tree nesting species. Care should be taken to avoid active nests.	No further survey required.
Bats	The site does not have any suitable roosting opportunities for bats. However, the site does provide suitable foraging habitat.	No further survey required
Badgers	The works will not have any impact on badgers.	No further survey required
Red squirrels and pine marten	The site does not provide suitable habitat for red squirrels in its current state.	No further survey required
Otters and water voles	There are no waterbodies or watercourse capable of sustaining otters or water voles on site.	No further survey required
Amphibians and reptiles	The site provides suitable habitat for reptiles such as common lizard and adder. There is not suitable habitat for great crested newts, however frogs, common toads and palmate newts may make use of temporary pools.	No further survey required

6 REFERENCES

Multi-Agency Geographic Information for the Countryside Website. <http://www.magic.gov.uk/> accessed January 2020.

JNCC (2010) *Phase 1 habitat survey – a technique for environmental audit*. JNCC, Peterborough, England, UK.

Stace, C.A. (2010) *New flora of the British Isles*. Cambridge University Press, Cambridge, England, UK.

UKHAB (2020) *UK Habitat Classification User Manual*. UKHAB Ltd. Stockport, England, UK.

7 APPENDICES

7.1 Target Note Table

Target Note Number	Grid Reference	Details
1	NT20916 08569	D5 – Dry Heath/Acid Grass Mosaic Large expanse of dry heath – acid grassland mosaic (D5). Dominant species consist of purple moor-grass <i>Molinia caerulea</i> , heather <i>Calluna vulgaris</i> , bilberry <i>Vaccinium mytilis</i> , deer-grass <i>Scirpus cespitosus</i> , mat grass <i>Nardus stricta</i> . Mosses consist of <i>Sphagnum</i> sp. And <i>Rhytidadelphus</i> sp. Species list recorded: <i>Calluna vulgaris</i> , <i>Molinia caerulea</i> , deer-grass, bilberry <i>Vaccinium mytilis</i> , <i>Sphagnum</i> moss <i>Sphagnum ponticum</i> , <i>Juncus squarrosus</i> , <i>Galium saxatile</i> , <i>Nardus stricta</i> , <i>Rhytidadelphus</i> sp., <i>Anthoxanthum odoratum</i> , <i>Potentilla erecta</i> .
2	NT20951 08378	E1.6.1 – Blanket Bog Small patch of blanket bog located in large natural depression in deep peat. Vegetation consists of <i>Sphagnum</i> sp. and <i>Eriophorum vaginatum</i> -dominated vegetation. Surrounding habitat consists of D5 - Dry heath/Acid grassland mosaic. Species list recorded: <i>Eriophorum vaginatum</i> , <i>Sphagnum palustre</i> , <i>Juncus squarrosus</i> , <i>Molinia caerulea</i> , <i>Deschampsia flexuosa</i> , <i>Calluna vulgaris</i> and <i>Vaccinium mytilis</i>
3	NT21305 08157	E1.6.1 – Blanket Bog Very small patch of dry blanket bog surrounded by D5 - Dry heath/Acid grassland mosaic. Species include: heather <i>Calluna vulgaris</i> , cross-leaved heath <i>Erica tetralix</i> , <i>Sphagnum palustre</i> , heath bedstraw <i>Galium saxatile</i> , tormentil <i>Potentilla erecta</i> , bilberry <i>Vaccinium mytilis</i> , and purple moor-grass <i>Molinia caerulea</i> .
4	NT22252 07194	A1.1.2 – Broadleaved Plantation and B1.1 Acid Grassland. Broadleaved plantation. Very young, currently resembling scattered scrub. Species include birch <i>Betula</i> sp., oak <i>Quercus</i> sp. and rowan <i>Sorbus aucuparia</i> . Field layer consists of bracken <i>Pteridium aquilinum</i> , wavy hair-grass <i>Deschampsia flexuosa</i> , foxglove <i>Digitalis purpurea</i> , heath bedstraw <i>Galium saxatile</i> and purple moor-grass <i>Molinia caerulea</i> .
5	NT22543 06648	E1.6.1 – Blanket Bog. Small area of wet, deep (>0.5m) peat. On a gentle slope. Vegetation is species poor consisting of soft rush <i>Juncus effusus</i> , <i>Sphagnum</i> sp., compact rush, <i>Juncus conglomeratus</i> , heath rush <i>Juncus squarrosus</i> , jointed rush <i>Juncus articulatus</i> , and red fescue <i>Festuca rubra</i> . Other species present include tormentil <i>Potentilla erecta</i> , heath bedstraw <i>Galium saxatile</i> , Yorkshire fog <i>Holcus lanatus</i> , purple moor-grass <i>Molinia caerulea</i> and male fern <i>Dryopteris filix-mas</i> .
6	NT22561 06585	E2.1 – Acid Flush. Small area of acid flush adjacent to small watercourse. Dominant species consisted of deer grass <i>Trichophorum germanicum</i> , wavy hair-grass <i>Deschampsia flexuosa</i> , purple moor-grass <i>Molinia caerulea</i> and sweet vernal-grass <i>Anthoxanthum odoratum</i> . Other species included cross-leaved heath <i>Erica tetralix</i> , tormentil <i>Potentilla erecta</i> , common heather <i>Calluna vulgaris</i> , bracken <i>Pteridium aquilinum</i> , star sedge <i>Carex echinate</i> , <i>Sphagnum palustre</i> , bilberry <i>Vaccinium myrtillus</i> , marsh thistle <i>Cirsium palustre</i> , male fern <i>Dryopteris filix-mas</i> , hare's-tail cottongrass <i>Eriophorum vaginatum</i> , heath bedstraw <i>Galium saxatile</i> , coltsfoot <i>Tussilago farfara</i> , forget-me-not <i>Myosotis</i> sp., northern marsh orchid <i>Dactylorhiza purpurella</i> and Lousewort <i>Pedicularis sylvatica</i> .

Target Note Number	Grid Reference	Details
7	NT22606 06435	B2.1 Neutral Grassland Species rich neutral grassland on east-facing slope. Edged by dense bracken. Grassland is temporary wet. Species include soft rush <i>Juncus effusus</i> , Yorkshire fog <i>Holcus lanatus</i> and white sedge <i>Carex curta</i> . Other species consist of field forget-me-not <i>Myosotis arvensis</i> , bracken <i>Pteridium aquilinum</i> , marsh thistle <i>Cirsium palustre</i> , heath bedstraw <i>Galium saxatile</i> , creeping buttercup <i>Ranunculus repens</i> , burnet saxifrage <i>Pimpinella saxifrage</i> , lesser celandine <i>Ficaria verna</i> , and star sedge <i>Carex echinate</i> .
8	NT22650 06416	D5 – Dry heath/acid grassland mosaic Old riverbed consisting of acid grassland transitioning to dwarf shrub heath. Species include mat grass <i>Nardus stricta</i> , bird's-foot trefoil <i>Lotus corniculatus</i> , cock's-foot <i>Dactylis glomerata</i> , purple moor-grass <i>Molinia caerulea</i> , common sedge <i>Carex nigra</i> , sweet vernal-grass <i>Anthoxanthum odoratum</i> , heath bedstraw <i>Galium saxatile</i> and white clover <i>Trifolium repens</i> .
9	NT22760 06021	B1.1 – Unimproved acid grassland. Species-rich acid grassland on east facing slope. Patches of dense bracken scattered throughout. Dominant plant species is sweet vernal-grass <i>Anthoxanthum odoratum</i> . Other species include wavy hair-grass <i>Deschampsia flexuosa</i> , creeping bent <i>Agrostis stolonifera</i> , soft rush <i>Juncus effusus</i> , bracken <i>Pteridium aquilinum</i> , compacted rush <i>Juncus conglomeratus</i> , meadow brome <i>Bromus erectus</i> , heath rush <i>Juncus squarrosus</i> , self-heal <i>Prunella vulgaris</i> , tormentil <i>Potentilla erecta</i> , stictwort <i>Stellaria</i> sp., Yorkshire fog <i>Holcus lanatus</i> , star sedge <i>Carex echinate</i> , marsh thistle <i>Cirsium palustre</i> , common vetch <i>Vicia sativa</i> , creeping cinquefoil <i>Potentilla reptans</i> , bog cotton <i>Eriophorum angustifolium</i> , white clover <i>Trifolium repens</i> , lousewort <i>Pedicularis sylvatica</i> , creeping buttercup <i>Ranunculus repens</i> , heath bedstraw <i>Galium saxatile</i> , Sphagnum moss <i>Sphagnum ponticum</i> , foxglove <i>Digitalis purpurea</i> , coltsfoot <i>Tussilago farfara</i> , burnet-saxifrage <i>Pimpinella saxifrage</i> , star of Bethlehem <i>Ornithogalum umbellatum</i> , butterwort <i>Pinguicula</i> sp., catmint <i>Nepeta</i> sp. and male fern <i>Dryopteris filix-mas</i> .
10	-	Areas covered by bracken (general) Species present in the areas of continuous bracken include: Yorkshire fog <i>Holcus lanatus</i> , tormentil <i>Potentilla erecta</i> , field buttercup <i>Ranunculus acris</i> , eyebright <i>Euphrasia officinalis</i> , marsh thistle <i>Cirsium palustre</i> , white clover <i>Trifolium repens</i> , greater stitchwort <i>Rabiera holostea</i> , germander speedwell <i>Veronica chamaedrys</i> , colts-foot <i>Tussilago farfara</i> , heath bedstraw <i>Galium saxatile</i> , wavy hair-grass <i>Deschampsia flexuosa</i> , bog asphodel <i>Narthecium ossifragum</i> , butterwort <i>Pinguicula vulgaris</i> , self-heal <i>Prunella vulgaris</i> , soft rush <i>Juncus effusus</i> , cuckoo flower <i>Cardamine pratensis</i> , foxglove <i>Digitalis purpurea</i> , bog cotton <i>Eriophorum angustifolium</i> , bell heather <i>Erica cinerea</i> , bilberry <i>Vaccinium myrtillus</i> , spear thistle <i>Cirsium vulgare</i> , deergrass <i>Scirpus cespitosus</i> , purple moor-grass <i>Molinia caerulea</i> and Timothy grass <i>Phleum pratense</i> .

7.2 Species Lists (not exhaustive)

7.2.1 Botanical Species List¹

Common Name	Scientific Name
Bell heather	<i>Erica cinerea</i>
Bilberry	<i>Vaccinium myrtillus</i>
Birch	<i>Betula</i> sp.
Bird's-foot Trefoil	<i>Lotus corniculatus</i>
Bog asphodel	<i>Narthecium ossifragum</i>
Bog cotton	<i>Eriophorum angustifolium</i>
Bracken	<i>Pteridium aquilinum</i>
Burnet saxifrage	<i>Pimpinella saxifrage</i>
Butterwort	<i>Pinguicula</i> sp.
Cat mint	<i>Nepeta</i> sp.
Cock's-foot	<i>Dactylis glomerata</i>
Coltsfoot	<i>Tussilago farfara</i>
Common sedge	<i>Carex nigra</i>
Common vetch	<i>Vicia sativa</i>
Compact rush	<i>Juncus conglomeratus</i>
Creeping bent	<i>Agrostis stolonifera</i>
Creeping buttercup	<i>Ranunculus repens</i>
Creeping cinquefoil	<i>Potentilla reptans</i>
Cross-leaved heath	<i>Erica tetralix</i>
Cuckoo flower	<i>Cardamine pratensis</i>
Deer-grass	<i>Scirpus cespitosus</i>
Eyebright	<i>Euphrasia officinalis</i>
Field buttercup	<i>Ranunculus acris</i>
Field Forget-me-not	<i>Myosotis arvensis</i>
Foxglove	<i>Digitalis purpurea</i>
Germander speedwell	<i>Veronica chamaedrys</i>
Greater stitchwort	<i>Rubra holostea</i>
Hare's-tail cottongrass	<i>Eriophorum vaginatum</i>
Heath bedstraw	<i>Galium saxatile</i>
Heath rush	<i>Juncus squarrosus</i>
Heather	<i>Calluna vulgaris</i>
Jointed rush	<i>Juncus articulatus</i>
Lesser celandine	<i>Ficaria verna</i>
Lousewort	<i>Pedicularis sylvatica</i>
Male fern	<i>Dryopteris filix-mas</i>
Marsh thistle	<i>Cirsium palustre</i>
Mat grass	<i>Nardus stricta</i>
Meadow brome	<i>Bromus erectus</i>
Moss	<i>Rhizadelphus</i> sp.
Northern marsh orchid	<i>Dactylorhiza purpurella</i>
Oak	<i>Quercus</i> sp.
Purple moor-grass	<i>Molinia caerulea</i>
Red fescue	<i>Festuca rubra</i>
Rowan	<i>Sorbus aucuparia</i>
Self-heal	<i>Prunella vulgaris</i>
Sitka spruce	<i>Picea sitchensis</i>
Soft rush	<i>Juncus effusus</i>
Spear thistle	<i>Cirsium vulgare</i>

¹ This list focuses on key species used to determine habitat classifications and is not an exhaustive list of the tree species present in the arboretum.

Common Name	Scientific Name
Sphagnum moor	<i>Sphagnum ponticum</i>
Star of Bethlehem	<i>Ornithogalum umbellatum</i>
Star sedge	<i>Carex echinate</i>
Stitchwort	<i>Stellaria</i> sp.
Sweet vernal-grass	<i>Anthoxanthum odoratum</i>
Timothy	<i>Phleum pratense</i>
Tormentil	<i>Potentilla erecta</i>
Wavy hair-grass	<i>Deschampsia flexuosa</i>
White clover	<i>Trifolium repens</i>
White sedge	<i>Carex curta</i>
Yorkshire fog	<i>Holcus lanatus</i>

7.3 Records Centre Data

Insects		
<i>Bembidion monticola</i>	insect - beetle (Coleoptera)	insect - beetle (Coleoptera)
<i>Hydroporus longicornis</i>	insect - beetle (Coleoptera)	insect - beetle (Coleoptera)
<i>Oreodytes davisii</i>	insect - beetle (Coleoptera)	insect - beetle (Coleoptera)
<i>Cyphon punctipennis</i>	insect - beetle (Coleoptera)	insect - beetle (Coleoptera)
<i>Gymnusa variegata</i>	insect - beetle (Coleoptera)	insect - beetle (Coleoptera)
<i>Bryotropha boreella</i>	Mountain Groundling	insect - moth
<i>Coenonympha pamphilus</i>	Small Heath	insect - butterfly
<i>Entephria caesiata</i>	Grey Mountain Carpet	insect - moth
<i>Xanthorhoe decoloraria decoloraria</i>	Red Carpet	insect - moth
<i>Tyria jacobaeae</i>	Cinnabar	insect - moth
<i>Diarsia rubi</i>	Small Square-spot	insect - moth
<i>Sympetrum striolatum</i>	Common Darter	insect - dragonfly (Odonata)
Amphibians and Reptiles		
<i>Bufo bufo</i>	Common Toad	amphibian
<i>Rana temporaria</i>	Common Frog	amphibian
<i>Lissotriton helveticus</i>	Palmate Newt	amphibian
<i>Zootoca vivipara</i>	Common Lizard	reptile
Fish		
<i>Anguilla anguilla</i>	European Eel	bony fish (Actinopterygii)
<i>Salmo salar</i>	Atlantic Salmon	bony fish (Actinopterygii)
<i>Salmo trutta</i>	Brown/Sea Trout	bony fish (Actinopterygii)
Birds		
<i>Anas crecca</i>	Teal	bird
<i>Anas platyrhynchos</i>	Mallard	bird
<i>Branta canadensis</i>	Canada Goose	bird
<i>Cygnus olor</i>	Mute Swan	bird
<i>Apus apus</i>	Swift	bird
<i>Charadrius hiaticula</i>	Ringed Plover	bird
<i>Haematopus ostralegus</i>	Oystercatcher	bird
<i>Pluvialis apricaria</i>	Golden Plover	bird
<i>Vanellus vanellus</i>	Lapwing	bird
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	bird
<i>Larus canus</i>	Common Gull	bird
<i>Actitis hypoleucos</i>	Common Sandpiper	bird
<i>Gallinago gallinago</i>	Snipe	bird
<i>Numenius arquata</i>	Curlew	bird
<i>Scolopax rusticola</i>	Woodcock	bird
<i>Cuculus canorus</i>	Cuckoo	bird
<i>Falco tinnunculus</i>	Kestrel	bird

<i>Lagopus lagopus</i>	Red Grouse	bird
<i>Alauda arvensis</i>	Eurasian Skylark	bird
<i>Cinclus cinclus</i>	Dipper	bird
<i>Emberiza citrinella</i>	Yellowhammer	bird
<i>Acanthis cabaret</i>	Lesser Redpoll	bird
<i>Acanthis flammea</i>	Common (Mealy) Redpoll	bird
<i>Loxia curvirostra</i>	Red Crossbill	bird
<i>Pyrrhula pyrrhula</i>	Eurasian Bullfinch	bird
<i>Spinus spinus</i>	Siskin	bird
<i>Delichon urbicum</i>	Common House Martin	bird
<i>Locustella naevia</i>	Grasshopper Warbler	bird
<i>Anthus pratensis</i>	Meadow Pipit	bird
<i>Anthus trivialis</i>	Tree Pipit	bird
<i>Motacilla cinerea</i>	Grey Wagtail	bird
<i>Muscicapa striata</i>	Spotted Flycatcher	bird
<i>Phoenicurus phoenicurus</i>	Redstart	bird
<i>Saxicola rubetra</i>	Whinchat	bird
<i>Passer domesticus</i>	House Sparrow	bird
<i>Phylloscopus trochilus</i>	Willow Warbler	bird
<i>Prunella modularis</i>	Dunnock	bird
<i>Sturnus vulgaris</i>	Starling	bird
<i>Turdus philomelos</i>	Song Thrush	bird
<i>Turdus torquatus</i>	Ring Ouzel	bird
<i>Turdus viscivorus</i>	Mistle Thrush	bird
<i>Strix aluco</i>	Tawny Owl	bird
<i>Tyto alba</i>	Western Barn Owl	bird

Mammals

<i>Cervus nippon</i>	Sika Deer	terrestrial mammal
<i>Erinaceus europaeus</i>	West European Hedgehog	terrestrial mammal
<i>Lepus europaeus</i>	Brown Hare	terrestrial mammal
<i>Lepus timidus</i>	Mountain Hare	terrestrial mammal
<i>Sciurus carolinensis</i>	Eastern Grey Squirrel	terrestrial mammal
<i>Sciurus vulgaris</i>	Eurasian Red Squirrel	terrestrial mammal

Botanica

<i>Cladonia coccifera s. lat.</i>	Scarlet-cup Lichen	lichen
<i>Lobaria virens</i>	lichen	lichen
<i>Sticta sylvatica</i>	lichen	lichen
<i>Nephroma laevigatum</i>	lichen	lichen
<i>Parmeliella triptophylla</i>	lichen	lichen
<i>Dichodontium flavescens</i>	Yellowish Fork-moss	moss
<i>Hymenophyllum wilsonii</i>	Wilson's Filmy-fern	fern
<i>Asplenium viride</i>	Green Spleenwort	fern
<i>Botrychium lunaria</i>	Moonwort	fern

<i>Diphasiastrum alpinum</i>	Alpine Clubmoss	clubmoss
<i>Meum athamanticum</i>	Spiguel	flowering plant
<i>Gymnadenia borealis</i>	Heath Fragrant-orchid	flowering plant
<i>Antennaria dioica</i>	Mountain Everlasting	flowering plant
<i>Cochlearia pyrenaica</i>	Pyrenean Scurvygrass	flowering plant
<i>Sagina subulata</i>	Heath Pearlwort	flowering plant
<i>Persicaria vivipara</i>	Alpine Bistort	flowering plant
<i>Vicia sylvatica</i>	Wood Vetch	flowering plant
<i>Galium boreale</i>	Northern Bedstraw	flowering plant
<i>Galium sternerii</i>	Limestone Bedstraw	flowering plant
<i>Scrophularia auriculata</i>	Water Figwort	flowering plant
<i>Salix caprea</i> subsp. <i>sphacelata</i>	Willow	flowering plant
<i>Salix cinerea</i> x <i>myrsinifolia</i> = <i>S. x strepida</i>	Willow	flowering plant
<i>Salix myrsinifolia</i> x <i>phylicifolia</i> = <i>S. x tetrapla</i>	Willow	flowering plant
<i>Salix viminalis</i> x <i>cinerea</i> = <i>S.</i> <i>x holosericea</i>	Silky-leaved Osier	flowering plant
<i>Helianthemum</i> <i>nummularium</i>	Common Rock-rose	flowering plant
<i>Carex bigelowii</i>	Stiff Sedge	flowering plant
<i>Eleocharis mamillata</i> subsp. <i>austriaca</i>	Northern Spike-Rush	flowering plant
<i>Eriophorum latifolium</i>	Broad-leaved Cottongrass	flowering plant
<i>Festuca altissima</i>	Wood Fescue	flowering plant
<i>Ranunculus trichophyllus</i>	Thread-leaved Water-crowfoot	flowering plant
<i>Thalictrum alpinum</i>	Alpine Meadow-rue	flowering plant
<i>Rosa spinosissima</i>	Burnet Rose	flowering plant
<i>Sedum rosea</i>	Roseroot	flowering plant
<i>Sedum villosum</i>	Hairy Stonecrop	flowering plant
<i>Myriophyllum spicatum</i>	Spiked Water-milfoil	flowering plant
<i>Myosotis stolonifera</i>	Pale Forget-me-not	flowering plant