
PHASE II SURVEY REPORT ADDENDUM

1.0 INTRODUCTION

1.1 OVERVIEW

Greengage Environmental Limited (Greengage) was commissioned by Cumberland Council to produce an addendum to update the 2023 Phase II Survey report¹ produced by Greengage relating to Hodbarrow Nature Reserve and a parcel of land immediately north of the nature reserve proposed for development as a Visitor Centre and car park, located on the south-west coast of Cumbria. For the purpose of this report the 'site' refers to the nature reserve and the land proposed for the Visitor Centre and car park, as shown on Appendix A Figure A.1.

This addendum includes a review of additional data and survey information relating to breeding birds, overwintering birds and natterjack toad *Epidalea calamita* which has become available since the production of the 2023 Phase II Survey report. This addendum has been produced to inform an updated Ecological Impact Assessment (EclA)² which subsequently informs an updated planning application for the site which seeks:

"Erection of Visitor Centre with café/shop, group room, staff/volunteer, toilet facilities and vehicle parking; consolidation, repair and installation of interpretive sculpture to Towsey Hole Windmill; refurbishment of existing Tern Island Hide; new bird hides, pathways, gateway features, street furniture, and demarcation of spaces at existing car park; enhancement of wildlife habitats; associated landscaping and drainage infrastructure; and maintenance of byway with restricted vehicular access -The Iron Line Project."

The Hodbarrow Nature Reserve (hereafter referred to as 'the nature reserve') is part of the Duddon Estuary Site of Special Scientific Interest (SSSI) and Morecambe Bay and Duddon Estuary Special Protection Area (SPA), Morecambe Special Area of Conservation (SAC) and Duddon Estuary Ramsar site. The wider Morecambe bay and Duddon Estuary is designated for the presence of internationally important coastal habitats which support internationally and nationally important assemblages of breeding, over-wintering and migratory birds. Other protected and notable species present include great crested newts (GCN) *Triturus cristatus*, natterjack toads, nationally scarce plants including *Epipactis dunensis*, *Limonium humile*, *Centaurium littorale*, *Pyrola rotundifolia*, *Equisetum variegatum*, *Corallorhiza trifida*, *Coincya monensis* ssp. *monensis* and at least two British Red Data Book invertebrates *Colletes cunicularius*, *Psen littoralis*, *Hypocaccus rugiceps*. The land that is proposed for construction of the Visitor Centre and car park lies outside but adjacent the boundary of these statutory designated areas.

An understanding of the ecological baseline of the site and surroundings is required to fully understand the potential impacts of the proposed development upon the site and wider designations. As such, the impacts relating to construction, e.g. development of the Visitor Centre and car park, and potential operational impacts, e.g. associated with the increase in visitor numbers linked to the access improvement works across the nature reserve, previously stated in the Greengage 2023 Phase II Survey report have been revisited and reviewed taking the additional, up to date information into account. Dependant upon the outcome of the review, the below addendum either provides an amended conclusion, or confirms that previous conclusions/statements remain unchanged (as applicable).

This report includes a National Vegetation Classification (NVC) update undertaken by Styles Ecology Ltd on 3rd and 4th May 2025³. The aim was to re-establish the presence of, or potential for, designated sites and legally protected/priority habitats and species at the site or within the zone of influence, as identified within previous NVC reports.

1.2 ECOLOGICAL BACKGROUND SUMMARY

2023 Phase II Survey report included a desk study, a desktop review of the breeding and wintering bird assemblages associated with the identified statutory designated sites (see below), in combination with a suite of Phase II habitat and protected species surveys undertaken throughout 2021 and 2022. These included a National Vegetation Classification (NVC) survey, amphibian, reptile and invertebrate surveys.

Key findings from the 2023 Phase II Survey report are set out in Table 1.1 below.

Table 1.1 Summary of 2023 Phase II Survey data

Receptor	Details
Designated sites	The nature reserve was identified to be situated within the statutorily designated boundaries of the Duddon Estuary SSSI, the Morecambe Bay and Duddon Estuary SPA, the Morecambe Bay SAC and the Duddon Estuary Ramsar. The proposed Visitor Centre and car park development footprint was identified to lie outside but adjacent the designated sites boundaries.
Habitats	The NVC was undertaken by Joshua Styles in June 2021 and May 2022. The survey identified that internationally important Annex I habitats are present on site: - The nature reserve and the proposed Visitor Centre and car park site supported semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210); - The nature reserve supported Annex 1 H2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) which is listed as one of the qualifying features for the Morecambe Bay SAC designation. Several nationally, regionally and locally important habitats were identified to be present on site.
Notable plants	A Phase 3 Notable Plant Survey was also undertaken by Josh in May 2022. The habitats present on site were identified to support several internationally, nationally, regionally and locally important plants including Irish dandelion <i>Taraxacum aesculosum</i> and pillwort <i>Pilularia globulifera</i> .
Invasive species	There have been a number of invasive species identified on site, including cotoneaster <i>Cotoneaster</i> spp, variegated yellow archangel <i>Lamiasrum galeobdolon</i> subsp. <i>argentatum</i> , montbretia <i>Crocasmia x crocosmiiflora</i> , Japanese knotweed <i>Reynoutria japonica</i> and sea buckthorn <i>Hippophae rhamnoides</i> .
Birds	The nature reserve, specifically purpose built limestone slag islands on Hodbarrow lagoon, was identified to support important breeding bird assemblages such as the breeding colonies of common terns <i>Sterna hirundo</i> , Sandwich terns <i>Thalasseus sandvicensis</i> and little terns <i>Sternula albifrons</i> . The nature reserve, specifically Hodbarrow lagoon, was also confirmed to support important over-wintering and migratory bird assemblages including overwintering redshank <i>Tringa totanus</i> , knot <i>Calidris canutus</i> and passage by black tailed godwit <i>Limosa limosa</i> .

	Both the nature reserve and the proposed Visitor Centre and car park site were identified to support a variety of nesting birds during spring/summer in the scrub, trees and waterbodies.
Amphibians	Tyrer Ecological Consultants Ltd undertook amphibian surveys in 2021 and 2022. Surveys identified likely absence of natterjack toads and GCN on site. However, a confirmed natterjack breeding pond was identified approximately 400 metres (m) north east from the planning application boundary and 570m north-east of the nearest works associated with maintenance of the Byway Open to All Traffic (BOAT)). Male natterjack toads were heard calling off-site c. 20m to the east (95m north-east of the nearest works associated with the maintenance of the BOAT). The waterbodies onsite were confirmed in 2021 and 2022 to support common amphibians, smooth newt <i>Lissotriton vulgaris</i> , common toad <i>Bufo bufo</i> and common frog <i>Rana temporaria</i> .
Reptiles	Lucy Gibson Consulting and Appletons undertook reptile surveys in 2021 and 2022 surveys which recorded a 'Good' population of common lizard <i>Zootoca vivipara</i> in habitats across the site and one slow-worm <i>Anguis fragilis</i> was recorded within the nature reserve. Common lizard and slow-worm are fairly widespread species in Cumbria and thus the value of the site for reptiles was assessed to be at the Local level.
Invertebrates	The invertebrate surveys were undertaken by in May, June, July 2021 and April and May 2022 by Stenecology. The nature reserve was identified to support at least 159 species of terrestrial invertebrates: 26 species (~16%) are regarded as locally common or locally scarce, three (~2%) are currently accorded Nationally Scarce or Section 41 status, pertaining to <i>Attactagenus plumbeus</i> , <i>Saprinus aeneus</i> and <i>Coenonympha nymphula</i> , and one is classed as data deficient, pertaining to <i>Cerutuella virgata</i> . All records were identified in Appendix B.3 of the 2023 Phase II survey report. The nature reserve is considered to be of district (low) importance for invertebrates. The proposed Visitor Centre and car park site supports at least 86 terrestrial invertebrate species, three of which are notable, including: beetle <i>Amara curta</i> Dejean, weevil <i>Orthochaetes setiger</i> , and dingy skipper <i>Erynnis tages</i> . The proposed Visitor Centre and car park site is considered to be of district (low) importance for invertebrates.

2.0 METHODOLOGY

It has been discussed with Cumberland Council, Natural England and RSPB that a review of available RSBP data on the breeding, wintering bird assemblages and the amphibian surveys would be reviewed and the previous National Vegetation Classification (NVC) survey will also be updated by Greengage. During a meeting held on 23rd April 2025, Natural England and the RSPB agreed that the revised survey effort seemed proportionate and appropriate. Cumberland Council planning consultant, lacking input from their in-house ecologist at the time who was on maternity leave, confirmed that they were satisfied with the approach, provided that Natural England and the RSPB were content.

2.1 REVIEW OF RSBP DATASETS

This addendum provides a review of additional data and survey information relating to breeding birds, overwintering birds and natterjack toad which has become available since the production of the 2023 Phase II Survey report.

The data has been collected and provided by the RSPB team that manage and monitor Hodbarrow Nature Reserve and includes the following datasets:

- Breeding birds recorded in 2023 and 2024;
- All bird data for 2023 and 2024; and,
- Amphibian survey results for the pools on site collected during April and August 2024.

RSPB confirmed that breeding bird surveys are completed using BBS methodology on a set transect whilst tern records are completed through almost daily surveys completed by staff throughout the breeding season with the peak numbers used for the end result. Wintering bird numbers are collected by RSPB through ad-hoc observations.

RSPB confirmed Amphibian Reptile Conservation (ARC) methodology was used for surveying pools⁴.

The breeding and overwintering bird assemblages known to use the nature reserve contribute to the qualifying species of the Morecambe Bay and Duddon Estuary Special SPA and Duddon Estuary Ramsar designated sites. The 2023 Phase II Survey report had received RSPB data up until 2022. Given the time since the previous report, an updated review of the 2023 and 2024 records was deemed necessary to understand if any additional qualifying or notable species of breeding and overwintering birds have been identified using the site.

As there were no surveys undertaken in the proposed Visitor Centre and car park site, as per the 2023 Phase II Survey report, all passerine species recorded on the nature reserve were also considered likely to use the habitats available in the proposed Visitor Centre and car park site.

To assess the wintering bird data, Greenage filtered the data to show the winter months only (September to March inclusive). This resulted in data for January to March 2023 September to December 2023 and January to March 2024).

Additionally, since the previous amphibian survey undertaken in 2021 and 2022, the RSPB were awarded funding from the Species Recovery Trust and have undertaken habitat management at the nature reserve in the winter of 2023. The aim of the habitat management was to improve the suitability of the nature reserve habitats to support natterjack toads. Work included scrub clearance and creation of additional scrapes/pools. Natterjack toads are a qualifying species of the

Duddon Estuary Ramsar designation and are also included in the Duddon Estuary SSSI citation. Given the time since the previous amphibian surveys, a review of the results from additional survey effort was deemed necessary to re-confirm presence/likely absence of natterjack toads in the additional scrapes/pools on the site. Monitoring of the additional scrapes/pools on-site was undertaken by the RSPB in April and August 2024. The maps provided by RPSB are included in the Appendix B and Appendix C. No maps for the breeding and overwintering bird data has been provided by RSPB.

2.2 NATIONAL VEGETATION CLASSIFICATION

Desk Based Survey

Biological records were obtained from the Cumbria Biodiversity Data Centre (CBDC), and previous NVC reports^{5,6} were reviewed prior to site survey visits. Data was also reviewed across Multi-Agency Geographic Information for the Countryside (MAGIC), the Natural England designated sites view, Botanical Society of Britain and Ireland (BSBI) Maps and Halliday (1997).

Site Survey

The NVC survey was undertaken across the survey area as mapped out in Figure 2.1. Key areas were identified for the previous planning application which were 20m either side of existing main paths, the visitor centre and car park area. The survey was undertaken to the standard of Rodwell (ed.)⁷ on 3rd-4th May 2025 in favourable weather conditions.

Figure 2.1 NVC survey boundaries provided by Styles Ecology Ltd



While survey effort was restricted to the red-line survey boundary as identified within Figure 2.1, incidental observations considered relevant were also given as appropriate.

The NVC methodology notes *"Where large, relatively homogeneous stands existed, a minimum of five targeted quadrat samples (relevés) of an appropriate size for the habitat were deployed wherever possible, excluding scrub communities which are simply described. This included samples which were appropriately sized for the habitat type, as per standing guidance provided by Rodwell (2006)⁷. In circumstances where stand area was limited and/or demonstrated characteristics of one or more communities, these were simply described in the absence of quadrat data.*

Measures for frequency were calculated using the Domin scale [see Table 4.1] dependent upon abundance within any given sample. Where five quadrats or more were collected for a stand, a constancy value of I-V was calculated for all species dependent upon the presence of said species through samples."

Table 2.1 The Domain Scale

Cover	Domain
91-100%	10
76-90%	9
51-75%	8
34-50%	7
26-33%	6
11-25%	5
4-10%	4
<4% (many individuals)	3
<4% (several individuals)	2
<4% (few individuals)	1

Floristic survey data was analysed with use of floristic tables and habitat descriptions across the Rodwell series⁸ to evidence characterisation. Modular Analysis of Vegetation Information System (MAVIS) was used to add further support to habitat characterisation where quadrat data was obtained. All NVC stands within the survey area were mapped with use of Quantum Geographic Information Systems (QGIS) See Appendix D for maps.

Following the identification of stand types to community and, where possible, sub-community level, NVC types were correlated to relevant priority, Annex I and irreplaceable habitats aligned with published guidance and their relative floristic importance. A broad range of core best-practice guidance was used to support characterisation. A full list of the best-practice guidance is included in the NVC report in Appendix E.

The presence and abundance of important taxa was ascertained through a search of the site survey area. Each important species underwent a population-level assessment and had distributions mapped in QGIS where these differed significantly from the 2021 and 2022 botanical surveys. For clarity, important taxa include those species which are:

- Red-listed in England or Great Britain⁹
- Occurring at fewer than 100 hectad¹⁰ localities at country or GB level (country-scarce nationally scarce); 17
- Occurring at fewer than 15 hectad localities at country or GB level (country-rare/nationally rare);

- Endemic;
- Scarce or rare at regional, county or local level which was asserted through a review of BSBI and British Bryological Society mapped plant distributions;
- Listed under s.41 National Environment and Rural Communities Act 2006¹¹; and/or
- Listed under Schedule 5 Conservation of Habitats and Species Regulations 2007 (as amended); and/or
- Listed under Schedule 8 Wildlife & Countryside Act 1981 (as amended).

Nomenclature for higher plants follows New Flora of the British Isles 4th edition¹² and follows the British and Irish BBS checklist for bryophytes.¹³

Following the identification of sward types and important taxa, the relative importance of these along a geographic frame of reference was characterised. This was done with use of the below, adapted from existing Chartered Institute of Ecology and Environmental Management (CIEEM) guidance including EcIA guidelines,¹⁴ and the Design Manual for Roads and Bridges, LA 108: Sustainability & Environment Appraisal LA 108 Biodiversity.¹⁵ A geographic frame of reference for each habitat type was applied from international to negligible, to give indication of the conservation importance of each habitat on a geographic scale.

Surveyor Competencies

Joshua Styles MSc AMRSB MCIEEM FISC Level 6 is Director, Principal Ecologist and Botanical Specialist at Styles Ecology Ltd. Joshua has over 9 years consultancy experience, and many more years experience in botanical recording. He is also licensed in England for the specially protected plants floating water-plantain (*Luronium natans*), viper's-grass (*Scorzonera humilis*) and field wormwood (*Artemisia campestris*) and sits on the CIEEM northwest and ecological restoration committees. He is regularly commissioned nationally to survey a range of cryptic and rare habitat types, and has particularly extensive experience in the survey, assessment and restoration of lowland grasslands and ombrogenous mires.

Limitations

The NVC reports the following limitations:

"Botanical surveys were conducted within the optimal period for the surveyed habitat types. However, while surveys were conducted within the broadly optimal period, it is likely that some plant species may have been missed due to later phenologies. Nonetheless, the survey was led by a highly experienced, FISC 6 botanical specialist who is satisfied with the survey effort as it relates to specified survey objectives.

Many cryptic taxa, namely including apomictic species under the genera Hieracium, Rubus and Taraxacum, could not always be identified to species-level due to seasonal constraints. Plants across these genera are only able to be identified in the presence of all relevant vegetative parts, flowers and/or fruits. Furthermore, most species within these genera may only reliably be identified by country experts, of which there are 3 for Hieracium, 6 for Rubus and 1 for Taraxacum²⁴. It is unrealistic to identify all cryptic taxa on any site which were recorded to aggregate level where appropriate. This limitation has therefore been addressed as far as is reasonably practicable and is not considered by the author to be a significant constraint for the purposes of this survey and assessment.

The surveyor is not a specialist bryologist and some taxa, particularly those which require microscopic identification, are likely to have been omitted from survey data. However, a reasonable effort was made to identify non-vascular plants wherever possible. This report does not constitute a specialist bryological assessment or an assessment for other visually similar groups, including lichenised or other macro fungi.

QGIS mapping of habitats was done with use of aerial and other imagery. Although every reasonable effort has been made to be as accurate as possible with regards to habitat boundaries, there is an inevitable margin of error associated with habitat mapping."

2.3 EXCLUSIONS

Given the previous survey effort and understanding of the site, no updates to earlier surveys of GCN, reptiles or terrestrial invertebrates have been carried out, further justification for which has been provided below.

GCN

The results from the Tyrer Ecological Consultants Ltd amphibian surveys were presented in the 2023 Phase II Survey report and identified likely-absence of GCN within the surveyed waterbodies on site in 2021. The waterbodies present included three small ponds and three lagoons (measuring 13,100m² and 26,000m²). The lagoons which were not surveyed support a large number of waterfowl which reduce suitability for GCN and additionally, in accordance with Habitat Suitability Index (HSI) for GCN, ponds larger than 2,000m² are omitted because "*there are few data for great crested newt occupancy of ponds of this size and above*". The optimal size for waterbodies for GCN use is considered to be around 50-250m².

In 2022 additional waterbodies situated outside of the planning application boundary were surveyed by Tyrer Ecological Consultants Ltd and presented in the 2023 Phase II Survey report. From review of the Tyrer Ecological Consultants Ltd map and measurement by Greengage using aerial imagery the waterbodies surveyed were situated within 500m of the site. No GCN were identified during these surveys, however presence of natterjack toads, smooth newts, common toads and common frogs was confirmed.

All waterbodies to the north east within 500m of the site fall within coastal floodplain grazing marsh habitat which indicates that these waterbodies may be brackish and as such not suitable for GCN.

The records search acquired in 2021 identified two records of GCN from 1980 and 1981; both are historic. One of the records is from Haverigg which is over 500m away and the other is separated from the site by the Duddon Estuary (which forms part of the Duddon Estuary SSSI, the Morecambe Bay and Duddon Estuary SPA, the Morecambe Bay SAC and the Duddon Estuary Ramsar), therefore limiting opportunity for dispersal of GCN from this record location to the site. A lack of records does not automatically prove absence of a species, however the records did also identify that regular natterjack toad surveys have taken place within 2km of the site since 2013. During these surveys 78 records of smooth and palmate newts have been recorded but no GCN have been recorded on any occasions. The absence of recent GCN records in this instance suggests that the surrounding area does not support GCN.

In 2023, the RSPB received funding from the Species Recovery Trust to create new swales and pools on site, although specifically for natterjack toads and which therefore should be kept absent of emergent vegetation. This reduces suitability for GCN use as vegetation leaves are required for

egg laying. These pools have been created and will be retained and protected during the development.

There is suitable terrestrial habitat for GCN situated within the immediate zone (c. 0 - 100m) around on site waterbodies, however likely absence of GCN in relation to these waterbodies has been previously determined. The suitable terrestrial habitat in the immediate zone of the on site waterbodies will also be retained and protected as part of the proposals. In accordance with the Natural England rapid risk assessment tool in relation to GCN impacts¹⁶, while the development will result in a permanent loss of scrub habitat which is situated within the intermediate zone (c. 100 - 250m) around these waterbodies it will be small scale (approximately 0.03ha) and the output concludes that *"an offense is highly unlikely"*. Given that the nearest off-site waterbodies are likely unsuitable (brackish) and no GCN have been recorded in other off-site waterbodies between 250 - 500m from the site, GCN dispersal onto site is considered highly unlikely and the 2022 likely absence status is considered to remain valid.

Reptiles

Data collected to inform the 2023 Phase II Survey report for reptiles recorded a 'Good' population of common lizard and a single slow-worm on the site. Given that these species are common and relatively widespread in the Cumbria area, that high value habitat for these species on site will be retained and protected, and that it is unlikely population numbers would have changed significantly in the interim period, the previous mitigation measures proposed is considered to remain valid and unchanged.

Terrestrial invertebrates

Both the proposed Visitor Centre and car park site and the nature reserve were considered to be of district (low) importance for terrestrial invertebrates in accordance with the Table 4.3 of the Phase 2 report¹. Given that habitats have remained broadly the same since the 2021 and 2022 surveys (as described in the EclA update report²), it is considered unlikely that assemblages have changed significantly in the interim period and the results remain valid.

3.0 RESULTS

For the purposes of this report, impacts relating to construction, e.g. development of the proposed Visitor Centre and car park site, and potential operational impacts, e.g. associated with the increase in visitor numbers linked to proposed access improvement works across the nature reserve, have been considered separately for receptors at the nature reserve and the proposed Visitor Centre and car park site location.

3.1 BREEDING BIRDS

Nature Reserve

Table 3.1 details the data provided by the RSPB for breeding pairs at the site in 2023 and 2024. Table 3.2 details the peak number of adults, adults on nests (AONs) and fledglings for tern species *Sternidae* spp. and black-headed gull *Chroicocephalus ridibundus*.

The conservation and/or legislative status has also been provided for each species, detailing:

- Birds of Conservation Concern (BoCC) status (Red, Amber or Green);
- Any extra legislative protection above standard including under Schedule 1 and Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA) (Schedule 1; Schedule 9);
- The inclusion of species under the Annex I of the European Union (EU) Directive on the Conservation of Wild Birds (also known as the Birds Directive), listed in the designation for the Morecambe Bay and Duddon Estuary Special Protection Area (SPA) (Qualifying species for SPA designation); and,
- Those listed Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (S41 NERC).

Table 3.1 Number of breeding pairs for species in 2023 and 2024

Common Name	Scientific Name	Conservation and Legislative Status	Breeding Pairs 2023	Breeding Pairs 2024
Recorded in association with habitats around the nature reserve				
Linnet	<i>Carduelis cannabina</i>	Red; S41 NERC	No data	5
Grasshopper warbler	<i>Locustella naevia</i>	Red; S41 NERC	No data	0
Greenfinch	<i>Chloris chloris</i>	Red	No data	2
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber; S41 NERC	No data	1
Reed bunting	<i>Emberiza schoeniclus</i>	Amber; S41 NERC	No data	1
Dunnock	<i>Prunella modularis</i>	Amber; S41 NERC	No data	4
Song thrush	<i>Turdus philomelos</i>	Amber; S41 NERC	No data	4
Whitethroat	<i>Sylvia communis</i>	Amber	No data	4

Sedge warbler	<i>Acrocephalus schoenobaenus</i>	Amber	No data	0
Willow warbler	<i>Phylloscopus trochilus</i>	Amber	No data	23
Wren	<i>Troglodytes troglodytes</i>	Amber	No data	10
Meadow pipit	<i>Anthus pratensis</i>	Amber	No data	2
Wood pigeon	<i>Columba palumbus</i>	Amber	No data	5
Rock pipit	<i>Anthus petrosus</i>	Green	No data	1
Pied wagtail	<i>Motacilla alba</i>	Green	No data	1
Robin	<i>Erithacus rubecula</i>	Green	No data	11
Stonechat	<i>Saxicola torquatus</i>	Green	No data	1
Blackbird	<i>Turdus merula</i>	Green	No data	3
Blackcap	<i>Sylvia atricapilla</i>	Green	No data	9
Lesser whitethroat	<i>Sylvia curruca</i>	Green	No data	1
Reed warbler	<i>Acrocephalus scirpaceus</i>	Green	No data	2
Chiffchaff	<i>Phylloscopus collybita</i>	Green	No data	16
Great tit	<i>Parus major</i>	Green	No data	3
Blue tit	<i>Cyanistes caeruleus</i>	Green	No data	4
Long-tailed tit	<i>Aegithalos caudatus</i>	Green	No data	0
Magpie	<i>Pica pica</i>	Green	No data	0
Jay	<i>Garrulus glandarius</i>	Green	No data	0
Carrion crow	<i>Corvus frugilegus</i>	Green	No data	1
Chaffinch	<i>Fringilla coelebs</i>	Green	No data	9
Goldfinch	<i>Carduelis carduelis</i>	Green	No data	4
Recorded in associated with the lagoons				
Ringed plover	<i>Charadrius hiaticula</i>	Red; Qualifying species for SPA designation	9	5
Oystercatcher	<i>Haematopus ostralegus</i>	Amber; Qualifying species for SPA designation	5	11
Shelduck	<i>Tadorna tadorna</i>	Amber; Qualifying species for SPA designation	1	1
Lapwing	<i>Vanellus vanellus</i>	Red; S41 NERC	1	5

Common gull	<i>Larus canus</i>	Red	No data	No data
Greylag goose	<i>Anser anser</i>	Amber; Schedule 1	3	2
Spoonbill	<i>Platalea leucorodia</i>	Amber; Schedule 1	4	1
Mallard	<i>Anas platyrhynchos</i>	Amber	1	1
Eider	<i>Somateria mollissima</i>	Amber	71	79
Red-breasted merganser	<i>Mergus serrator</i>	Amber	1	1
Moorhen	<i>Gallinula chloropus</i>	Amber	12	3
Great crested grebe	<i>Podiceps cristatus</i>	Green	1	1
Cormorant	<i>Phalacrocorax carbo</i>	Green	1	43
Grey heron	<i>Ardea cinerea</i>	Green	0	1
Tufted duck	<i>Aythya marila</i>	Green	4	3
Little egret x Cattle egret	<i>Egretta garzetta</i> x <i>Bubulcus ibis</i>	N/A	30	1
Canada goose	<i>Branta canadensis</i>	Not assessed; Schedule 9	5	3

Table 3.2 Peak number of adults, adults on nests (AONs) and fledglings for tern species and black-headed gull in 2023 and 2024

Common Name	Scientific Name	Conservation and Legislative Status	Peak No. of Adults	Peak No. of AONs	Peak No. of Fledglings
2023					
Sandwich tern	<i>Thalasseus sandvicensis</i>	Amber; Qualifying species for SPA designation	927	596	335
Common tern	<i>Sterna hirundo</i>	Amber; Qualifying species for SPA designation	80	53	78
Little tern	<i>Sternula albifrons</i>	Amber; Schedule 1; Qualifying	81	53	0

		species for SPA designation			
Black-headed gull	<i>Chroicocephalus ridibundus</i>	Amber	1202	590	307
Arctic tern	<i>Sterna paradisaea</i>	Amber	7	3	0
2024					
Sandwich tern	<i>Thalasseus sandvicensis</i>	Amber; Qualifying species for SPA designation	805	332	396
Common tern	<i>Sterna hirundo</i>	Amber; Qualifying species for SPA designation	102	63	39
Little tern	<i>Sternula albifrons</i>	Amber; Schedule 1; Qualifying species for SPA designation	72	32	7
Black-headed gull	<i>Chroicocephalus ridibundus</i>	Amber	1187	796	735
Arctic tern	<i>Sterna paradisaea</i>	Amber	15	4	0

Changes since previous report

The data shows the site still supports a number of red and amber list, Schedule 1 and S41 bird species and Hodbarrow lagoon is still supporting qualifying breeding bird species. There has been an increase in cormorants from 4 estimated breeding pairs in 2022.

The 2023 levels of sandwich terns have shown a slight decrease in adults but an increase in adults on nests and decrease in fledglings. Common terns had similar levels to 2022. Little terns and arctic terns have had an increase in adult numbers and adults on nests.

The 2024 levels of sandwich terns have shown a slight decrease in each count since 2022. Common terns and arctic terns shown a slight increase in numbers adults and adults on nests but a slight decrease in fledgling success. Little terns have seen an increase in adult numbers but a decrease in the adults on nest and fledgling counts.

Black headed gulls had higher numbers in all counts in both 2023 and 2024 with exception to fledgling numbers in 2023. Their numbers of fledglings has doubled in 2024.

One new species, not previously identified in relation to the site at all, was returned between 2023 and 2024, pertaining to the little egret x cattle egret hybrid.

Six species that had been previously recorded at the site in general, but not during the breeding bird season (April to August inclusive), were returned between 2023 - 2024. These pertained to; rock pipit, stonechat, grasshopper warbler, long-tailed tit, jay and arctic tern. However, none of these species are listed under Annex I of the Morecambe Bay and Duddon Estuary SPA or within the Duddon Estuary Ramsar citation.

Proposed Visitor Centre and Car Park site

Whilst no bird data specifically relates to the Visitor Centre and car park site, habitats suitable for bird nesting were present, include scrub such as dense bramble *Rubus fruticosus*, hawthorn *Crataegus monogyna* and willows *Salix sp.* .

According to RSPB records there are breeding warblers, including whitethroat *Sylvia communis* and lesser whitethroat *Sylvia curruca* on the nature reserve of which the scrub habitat at the proposed Visitor Centre and car park site could support.

Bird species noted using habitats around the nature reserve, which would likely nest in dense scrub habitat are provided within Table 3.3 below. As there is no breeding bird data available, the geographic value of the species has been estimated using information gathered from Cumbria Biodiversity Data Centre¹⁷.

Table 3.3 Birds likely to nest within the dense scrub associated with the proposed Visitor Centre and car park site

Common Name	Scientific Name	Conservation and Legislative Status	Geographic Value
Greenfinch	<i>Chloris chloris</i>	Red	Local
Linnet	<i>Linaria cannabina</i>	Red	Local
Dunnock	<i>Prunella modularis</i>	Amber; S41 NERC	Local
Song thrush	<i>Turdus philomelos</i>	Amber; S41 NERC	Local
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber; S41 NERC	Local
Wren	<i>Troglodytes troglodytes</i>	Amber	Local
White throat	<i>Sylvia communis</i>	Amber	Local
Willow warbler	<i>Phylloscopus trochilus</i>	Amber	Local
Magpie	<i>Pica pica</i>	Green	Site
Chaffinch	<i>Fringilla coelebs</i>	Green	Site
Blackbird	<i>Turdus merula</i>	Green	Site
Goldfinch	<i>Carduelis carduelis</i>	Green	Site
Robin	<i>Erithacus rubecula</i>	Green	Site
Wood pigeon	<i>Columba palumbus</i>	Green	Site
Crow	<i>Corvus corone</i>	Green	Site
Great tit	<i>Parus major</i>	Green	Site
Blue tit	<i>Cyanistes caeruleus</i>	Green	Site
Chiffchaff	<i>Phylloscopus collybita</i>	Green	Site
Blackcap	<i>Sylvia atricapilla</i>	Green	Site
Long-tailed tit	<i>Aegithalos caudatus</i>	Green	Site

Changes since previous report

The 2023 and 2024 data reveal there were no new additional bird species recorded that would likely nest in dense scrub habitat compared to those identified in the 2023 Phase II Survey report¹.

3.2 OVERWINTERING BIRDS

Nature Reserve

The RSPB provided data for species recorded at the site during winter months (September to March inclusive) in 2023-2024, which is detailed in Table 3.4 below.

Table 3.4 Species recorded at the site during winter months 2023-2024

Common Name	Scientific Name	Conservation and Legislation Status
Dunlin	<i>Calidris alpina</i>	Red; Qualifying species for SPA designation
Ringed plover	<i>Charadrius hiaticula</i>	Red; Qualifying species for SPA designation
Curlew	<i>Numenius arquata</i>	Red; S41 NERC; Qualifying species for SPA designation
Herring gull	<i>Larus argentatus</i>	Red; S41 NERC; Qualifying species for SPA designation
Scaup	<i>Aythya marila</i>	Red; Schedule 1; S41 NERC
Black-tailed godwit	<i>Limosa limosa</i>	Red; Schedule 1; S41 NERC
Long-tailed duck	<i>Clangula hyemalis</i>	Red; Schedule 1
Goldeneye	<i>Bucephala clangula</i>	Red; Schedule 1
Lapwing	<i>Vanellus vanellus</i>	Red; S41 NERC
Great black-backed gull	<i>Larus marinus</i>	Red
Whooper swan	<i>Cygnus cygnus</i>	Amber; Schedule 1; Qualifying species for SPA designation
Oystercatcher	<i>Haematopus ostralegus</i>	Amber; Qualifying species for SPA designation
Pink-footed goose	<i>Anser brachyrhynchus</i>	Amber; Qualifying species for SPA designation
Knot	<i>Calidris canutus</i>	Amber; Qualifying species for SPA designation
Turnstone	<i>Arenaria interpres</i>	Amber; Qualifying species for SPA designation
Redshank	<i>Tringa totanus</i>	Amber; Qualifying species for SPA designation

Shelduck	<i>Tadorna tadorna</i>	Amber; Qualifying species for SPA designation
Lesser black-backed gull	<i>Larus fuscus subsp. graellsii</i>	Amber; Qualifying species for SPA designation
Sandwich tern	<i>Sterna sandvicensis</i>	Amber; Qualifying species for SPA designation
Greenshank	<i>Tringa nebularia</i>	Amber; Schedule 1
Greylag goose	<i>Anser anser</i>	Amber; Schedule 1
Wigeon	<i>Anas penelope</i>	Amber
Teal	<i>Anas crecca</i>	Amber
Wheatear	<i>Oenanthe oenanthe</i>	Amber
Red-breasted merganser	<i>Mergus serrator</i>	Amber
Eider	<i>Somateria mollissima</i>	Amber
Snipe	<i>Gallinago gallinago</i>	Amber
Shoveler	<i>Anas clypeata</i>	Amber
Gadwall	<i>Anas/Mareca strepera</i>	Amber
Mallard	<i>Anas platyrhynchos</i>	Amber
Sparrowhawk	<i>Accipiter nisus</i>	Amber
Moorhen	<i>Gallinula chloropus</i>	Amber
Black-headed gull	<i>Chroicocephalus ridibundus</i>	Amber
Kestrel	<i>Falco tinnunculus</i>	Amber
Golden plover	<i>Pluvialis apricaria</i>	Green; Qualifying species for SPA designation
Little egret	<i>Egretta garzetta</i>	Green; Qualifying species for SPA designation
Kingfisher	<i>Alcedo atthis</i>	Green; Schedule 1
Mute swan	<i>Cygnus olor</i>	Green
Raven	<i>Corvus corax</i>	Green
Tufted duck	<i>Aythya fuligula</i>	Green
Grey heron	<i>Ardea cinerea</i>	Green
Cormorant	<i>Phalacrocorax carbo</i>	Green
Great crested grebe	<i>Podiceps cristatus</i>	Green
Little grebe	<i>Tachybaptus ruficollis</i>	Green
Coot	<i>Fulica atra</i>	Green
Canada goose	<i>Branta canadensis</i>	Not assessed; Schedule 9

Changes since previous report

Although previously recorded at the site during breeding bird surveys, wheatear had not been recorded on site during the 2021/2022 overwintering periods assessed to support the 2023 Phase II Report. Wheatear was the only new species recorded in the overwintering period of September

2023 - March 2024. This species is not listed under Annex I of the Morecambe Bay and Duddon Estuary SPA or within the Duddon Estuary Ramsar citation.

Proposed Visitor Centre and Car Park site

The terrestrial habitats associated with the proposed Visitor Centre and car park site are not considered to be of value or suitable for use by qualifying overwintering bird species, as these typically require coastal and estuarine habitats or large expanses of water.

3.3 NATTERJACK TOAD

The RSPB Warden confirmed by email on 26 February 2025 that findings from the 2025 monitoring programme would be shared once available. On this basis, and following discussion with Natural England and the RSPB, it was agreed that updated amphibian surveys were not required at this stage. Greengage has not yet received the 2025 monitoring data.

Consistent with previous amphibian survey findings, natterjack toad calls were recorded just off-site to the east in April and August 2024. On 17 April 2024, the reserve's Warden reported *that "to date there are around 5,000 tadpoles in the red areas marked unidentified tadpoles on the map (see Appendix B). These are assumed to be common toad until proved otherwise."* However, in their response to the planning application (ref: 4/25/2198/OF1) dated 24 August 2025, the RSPB advised that a precautionary assumption should be applied that the tadpoles were natterjack toads rather than common toads, given that the location is considered sub-optimal for common toad. This position was reiterated by the RSPB during a meeting on 24 November 2025, noting that the timing of spawning further supports the likelihood of natterjack toad.

Details of amphibian monitoring data recorded in 2024 is detailed in Table 3.5 below.

Table 3.5 Amphibian data from 2024 monitoring

Common Name	Scientific Name	Date	Details
Natterjack toad	<i>Epidalea calamita</i>	April 2024	Up to 8 males recorded calling c. 20m off-site to the east in neighbouring habitat, as shown in Figure B.1.
Natterjack toad (assumed)	<i>Epidalea calamita</i>	April 2024	Approximately 5000 tadpoles recorded on the nature reserve (SD 17827 78514 and SD 17868 78519), as shown in Figure B.1, assumed by RSPB to be natterjack tadpoles. No adults were identified on site.
Natterjack toad	<i>Epidalea calamita</i>	August 2024	Approximately 4 to 5 males recorded calling c. 20m off-site to the east, as shown in Figure C.1.

3.4 NATIONAL VEGETATION CLASSIFICATION

Nature Reserve

The following NVC communities were recorded on the site and are described below. Further detail is provided in Appendix D for the NVC maps and Appendix E for full report.

Table 3.6 describes the NVC communities identified on the nature reserve and their national and regional distribution.

Table 3.6 NVC communities, status and level of importance within the 20m buffer either side of the existing paths and BOAT up to the sea wall on site

NVC Classification (Code)	Status	Level of Importance
<i>Arrhenatherum elatius</i> grassland/ <i>Brachypodium pinnatum</i> grassland (MG1/CG4)	Annex 1 habitat- Semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210)	International
	HPI: Lowland calcareous grassland	
	LBAP: Calcareous grassland	
<i>Cynosurus cristatus</i> – <i>Centaurea nigra</i> / <i>Avenula pubescens</i> grassland (MG5/ CG6)	Annex 1 habitat- Semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210)	International
	HPI Lowland Calcareous Grassland and Lowland Meadows	
	LBAP: Hay Meadows and Lowland Pastures and LBAP: Calcareous Grasslands	
<i>Festuca ovina</i> – <i>Carlina vulgaris</i> (CG1)	Annex 1 habitat- Semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210)	International
	HPI: Lowland calcareous grassland	
	LBAP: Calcareous grassland	
<i>Briza media</i> – <i>Brachypodium sylvaticum</i> grassland	Annex 1 habitat- Semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210)	International
	HPI: Lowland calcareous grassland	
	LBAP: Calcareous grassland	

<i>Ammophila arenaria</i> – <i>Festuca rubra</i> semi- fixed dune community (SD7)	Annex 1 H2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) HPI: Coastal Sand Dunes	International
<i>Festuca rubra</i> – <i>Galium</i> <i>verum</i> fixed dune grassland (SD8)	Annex 1 H2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) HPI: Coastal Sand Dunes	International
<i>Arrhenatherum</i> <i>elatus</i> grassland <i>Centaurea nigra</i> sub- community (MG1e)	HPI: Lowland Meadow LBAP: Hay Meadows and Lowland Pastures	Regional
<i>Juncus</i> - <i>Galium</i> rush-pasture (M23b)	HPI:	Regional
<i>Potamogeton</i> <i>pectinalus</i> - <i>Myriophyllum spicatum</i> community (A11)	HPI: Eutrophic Standing Waters	Regional
Pond	HPI: Ponds	Regional
Lake	HPI: Eutrophic Standing Waters	Regional
Other habitat that does not qualify for priority status		
<i>Arrhenatherum elatus</i> grassland <i>Festuca rubra</i> sub-community (MG1a)		
<i>Lolium ley</i> (MG7)		
Swamp (S10)		
<i>Ulex europaeus</i> – <i>Rubus fruticosus</i> scrub (W23)		
<i>Rubus fruticosus</i> – <i>Holcus lanatus</i> underscrub (W24)		
<i>Pteridium aquilinum</i> - <i>Rubus fruticosus</i> underscrub (W25)		
<i>Argentina anserina</i> – <i>Carex nigra</i> dune slack (SD17)		
<i>Eleocharis palustris</i> swamp (S19)		

A total of 25 of the 30 original important plant species identified in the 2021-2022 surveys were observed during surveys within this area, including taxa of international to local conservation importance. An additional three importance plant species were identified: seaside centaury *Centaurea littorale*, heath dog violet *Viola canina*, and variegated horsetail *Equisetum variegatum*. An overview of these species, their location, abundance and conservation importance can be found in Table 3.7 below.

Table 3.7 Important Plant Species within 20m of the existing paths

Species	Conservation Status	Importance
Irish dandelion <i>Taraxacum aesculosum</i>	- Nationally rare in Britain - Critically Endangered for England	High (international level importance)

Pillwort <i>Pilularia globulifera</i>	- Nationally scarce in Britain - Vulnerable in England - S.41 species - Listed on Cumbria Rare Plant Register (RPR)	High (national importance)
Seaside centuary <i>Centaureum littorale</i>	- Nationally scarce in Britain - Least Concern in Britain	
Heath dog violet <i>Viola canina</i>	- Vulnerable in England - GB red list: Near threatened - Listed on Cumbria RPR	High (regional importance)
Variegated horsetail <i>Equisetum variegatum</i>	- Nationally scarce in Britain - Least Concern in Britain	
Small-fruited yellow sedge <i>Carex oederi</i>	- Nationally scarce in Britain - Least Concern in England - Rare in the region of north-west England - Scarce on the Cumbria RPR	
Thread-leaved water-crowfoot <i>Ranunculus trichophyllos</i>	- Least Concern in England - Rare within the region of north-west England	
Fennel pondweed <i>Potamogeton pectinatus</i>	- Least Concern in England - Rare species in Cumbria	County importance
Spiked water milfoil <i>Myriophyllum spicatum</i>	Least Concern in England	
Few-flowered spike-rush <i>Eleocharis quinqueflora</i>	- Least Concern in England - Species of Conservation Importance (SCI) plant for north-west England	
Heath speedwell <i>Veronica officinalis</i>	- Near-threatened in England - Widespread in Cumbria	
Lesser spearwort <i>Ranunculus flammula</i>	- Least Concern in England - Widespread but local Cumbria, - SCI plant for north-west England	
Marsh pennywort <i>Hydrocotyle vulgaris</i>	- Near-threatened in England - Widespread in Cumbria	
Northern marsh orchid <i>Dactylorhiza purpurella</i>	- Widespread in Cumbria and Northern Britain - SCI within north-west England	
Tormentil <i>Potentilla erecta</i>	Near-threatened in England and widespread.	
Wild strawberry <i>Fragaria vesca</i>	Near Threatened in England and widespread	

Moonwort *Botrychium lunaria*, yellow-horned poppy *Glaucium flavum*, a dandelion *Taraxacum naevosiforme*, Eyebright *Euphrasia sp.*, and flea sedge *Carex pulicaris* could not be found during 2025 surveys which may be down to survey timing, ephemeral population/small population status and/or genuine decline following habitat loss and deterioration.

Proposed Visitor Centre and car park

The following NVC communities were recorded on the site and are described below. Further detail is provided in Appendix D (NVC maps) and Appendix E (full report).

Table 3.8 describes the NVC communities and their national and regional distribution.

Table 3.8 NVC communities, status and level of importance for the proposed Visitor Centre and car park site

NVC Classification (Code)	Status	Level of Importance
<i>Festuca ovina</i> – <i>Carlina vulgaris</i> (CG1)	Annex 1 habitat- Semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210)	International
	HPI: Lowland calcareous grassland	
	LBAP: Calcareous grassland	
<i>Briza media</i> – <i>Brachypodium sylvaticum</i> grassland	Annex 1 habitat- Semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210)	International
	HPI: Lowland Calcareous Grassland	
	LBAP: Calcareous Grassland	
<i>Arrhenatherum elatius</i> grassland <i>Centaurea nigra</i> sub-community (MG1e)	Lowland Meadow	Regional
	HPI: Lowland Meadow	
	LBAP: Hay Meadows and Lowland Pastures	
Other habitat that does not qualify for priority status		
W24 <i>Rubus fruticosus</i> – <i>Holcus lanatus</i> underscrub.		

Changes since previous surveys

Previous surveys noted a total of seven important plant species within this area, including taxa of Regional to local conservation importance. The NVC did not cover a Phase 3 notable plant survey as it is presumed that these species are still present within the grassland habitats. Eyebright *Euphrasia sp.* was not found during 2025 surveys which may be down to survey timing, ephemeral population/small population status and/or genuine decline following habitat loss and deterioration.

Incidental findings

A range of internationally to regionally important floristic features were recorded along the BOAT along the old sea wall (outside the detailed survey area), including irreplaceable, priority and Annex I coastal sand dune, priority and Annex I calcareous grassland, and a nationally significant population of seaside centaury alongside regionally significant populations of heath dog violet and variegated horsetail.

As a result of these incidental findings, Styles Ecology Ltd undertook an updated site walkover on 23rd June 2025 to confirm the locations of these habitats. Greengage mapped these habitats and Styles Ecology Ltd confirmed via email on 30th June 2025 that these seem to be the reasonable locations.

As described within the NVC report "*While well outside of the defined survey boundary, disturbance which has opened up vegetation at the OSGR SD 18074 78320 has allowed for colonisation of early successional substrates by a number of important plant species, including several hundred plants of brookweed (*Samolus valerandi*) and small-fruited yellow sedge (*Carex oederi*), both Species of Conservation Importance within north-west England. In addition, smaller populations of lesser spearwort and bristle club-rush (*Isolepis setacea*), a Species of Conservation Importance within north-west England have also established.*"

Conclusions

Changes between the 2021/2022 surveys were noted including the following:

- Despite extensive search effort, five previously recorded important taxa were not relocated during the 2025 surveys. This may reflect survey timing, ephemeral or small population sizes, or genuine decline associated with habitat loss and deterioration. These taxa include moonwort *Botrychium lunaria*, yellow-horned poppy *Glaucium flavum*, dandelion *Taraxacum naevosiforme* *Euphrasia* sp. and flea sedge *Carex pulicaris*.
- Since the 2021–2022 surveys, habitats of high floristic interest have generally shown decline, largely due to lack of management and subsequent scrub encroachment, especially in the south and west. Correspondingly, scrub has increased in extent while key floristic communities have reduced.
- Despite this deterioration, the 2025 surveys still recorded a wide range of habitat types, including several priority, Annex I and irreplaceable habitats (as described in Table 3.6 and Table 3.8, see NVC maps in Appendix D for locations).
- Scrub expansion has resulted in the complete loss of MG10b grassland and substantial reductions in S10a, MG1e, MG1a and MG1/CG4 communities. This pattern is consistent with observations in the NVC report indicating continued adverse change due to the absence of active habitat management.
- Additional degradation was noted in CG1 grassland in the southwest, where heavy vehicle disturbance has markedly reduced condition. In MG1a and MG1/CG4 areas, unmanaged vegetation cutting and retained arisings have created dense thatch, further reducing species richness relative to 2021–2022.

4.0 CONCLUSIONS

Greengage was commissioned by Cumberland Council to produce an addendum to update the 2023 Phase II Survey report¹⁸ produced by Greengage for Hodbarrow Nature Reserve and a parcel of land immediately north of the nature reserve which is proposed for development as a Visitor Centre and car park.

This addendum had included a review of additional RSPB data and survey information relating to breeding birds, overwintering birds and natterjack toad which has become available since the production of the 2023 Phase II Survey report.

Seven additional species of breeding bird have been identified to be associated with the site in 2023 and 2024. These comprise little egret x cattle egret hybrid (not associated with the site previously at all), and rock pipit, stonechat, grasshopper warbler, long-tailed tit, jay and arctic tern (previously recorded at the site, but not during the breeding bird season (April to August inclusive)). However, none of these species are listed under Annex I of the Morecambe Bay and Duddon Estuary SPA or within the Duddon Estuary Ramsar citation.

Only new one species of overwintering bird (wheatear) was returned between 2023 and 2024. This had been previously recorded at the site, but not during the overwintering period. However, this species is not listed under Annex I of the Morecambe Bay and Duddon Estuary SPA or within the Duddon Estuary Ramsar citation.

Natterjack toads were recorded calling in the same location as previous years, off-site to the east. No natterjack toads were recorded at the Hodbarrow Nature Reserve itself.

The NVC noted an overall trend of decline and loss since the 2021/2022 surveys attributed to an absence of active, positive habitat management through parts of the site, heavy disturbance by vehicular activity and no removal of vegetation clippings, all resulting in a dense thatch and reduction of species richness. However, internationally important Annex I habitats were identified along the BOAT along the sea wall and three additional important species: seaside centaury, heath dog violet, variegated horsetail were identified.

These survey findings have been used to inform the updated EcIA² for the proposed development. This update should be read in conjunction with this report.

APPENDIX A SITE BOUNDARY

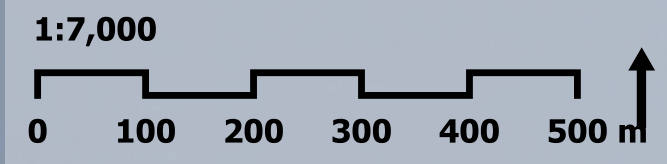
Figure A.1 Site boundary information

IRON LINE

 Planning Application Boundary

Title: Figure A

Sources: Google Satellite



APPENDIX B AMPHIBIAN DATA APRIL 2024

Figure B.1 Amphibian data from RSPB for April 2024



Legend:

-  RSPB Reserves- Public (UK) (polygons)
-  Unidentified tadpoles
-  Calling males

Acknowledgements & notes:

Created by: RSPB

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Map scale = 1:7,167



Date printed: 17/04/2024

0 70 140 280 metres



APPENDIX C AMPHIBIAN DATA AUGUST 2024

Figure C.1 Amphibian data from RSPB for August 2024

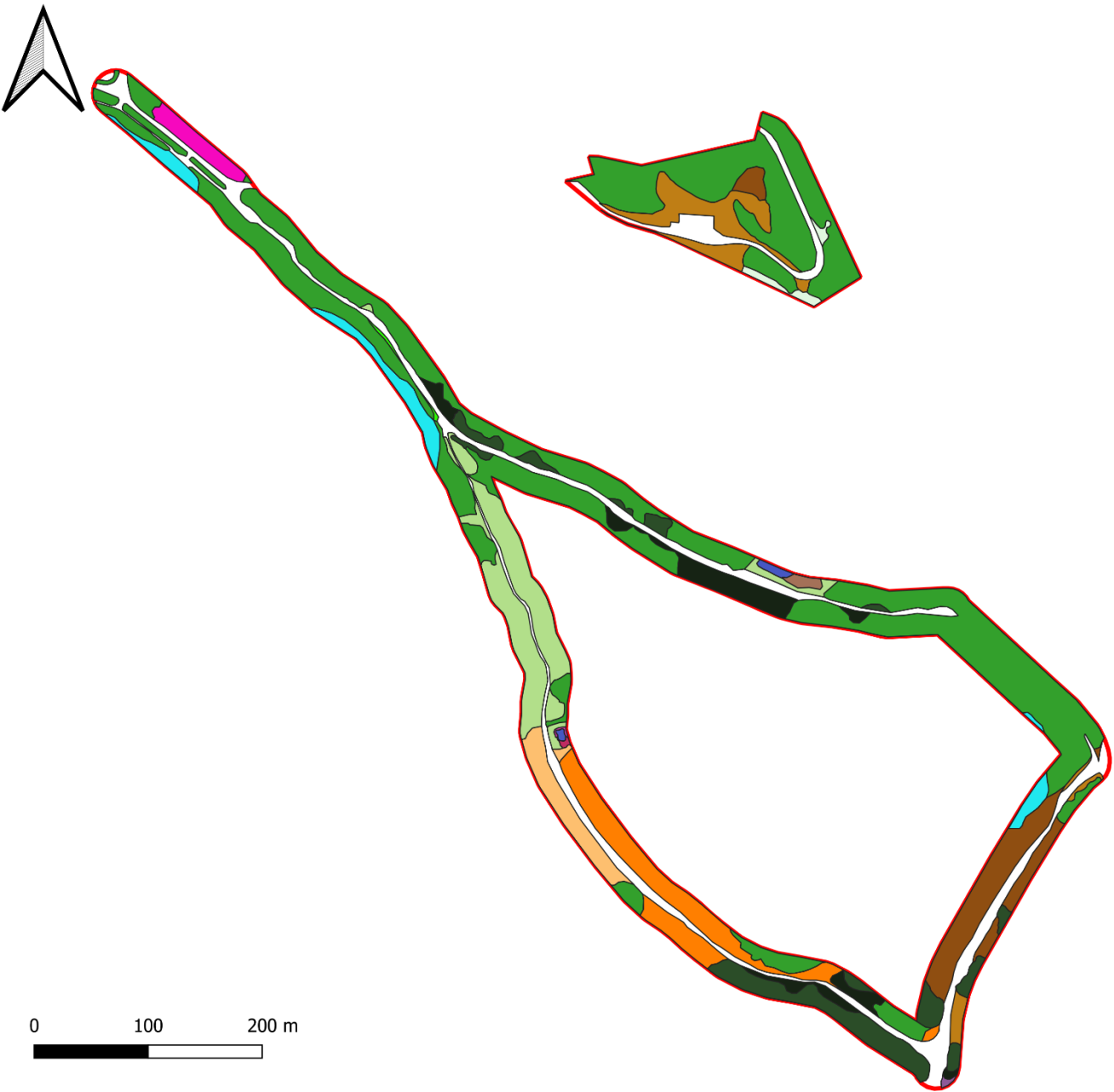
APPENDIX D NATIONAL VEGETATION CLASSIFICATION RESULTS

Figure 4.1 Maps provided by Styles Ecology Ltd



Appendix II: NVC habitat maps

RSPB Hodbarrow: NVC
habitats plan



Legend

- MG1a Arrhenatherum grassland
- MG1e Arrhenatherum grassland
- MG7 Lolium ley
- MG5 CG6 transition
- MG1 CG4 transition
- CG1 Festuca - Carlina grassland
- Briza - Brachypodium grassland
- W23 Ulex - Rubus scrub
- W24 Rubus - Holcus scrub
- W25 Pteridium - Rubus scrub
- S10 Equisetum swamp
- S19 Eleocharis swamp
- M23b Juncus - Galium rush-pasture
- SD7 SD8 sand dune
- SD17 Potentilla - Carex dune slack
- Pond
- Lake
- Survey boundary



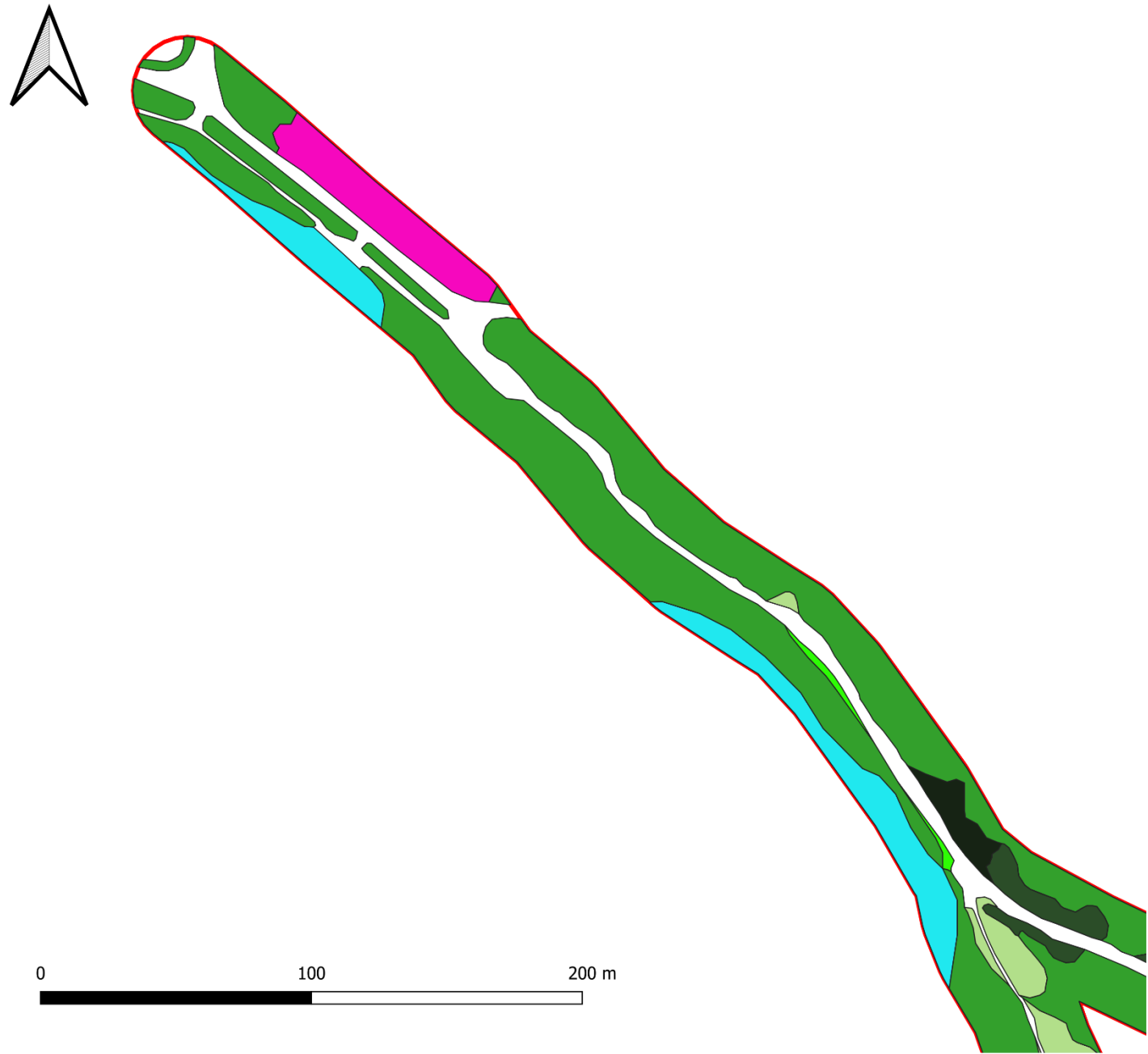
Styles Ecology Ltd is registered in England and Wales under Company Number 15229405 and its registered office is situated at 47 Langshaw Lea, Netherley, Liverpool, L27 4YE.



RSPB Hodbarrow: NVC
habitats plan

Legend

- MG1a Arrhenatherum grassland
- MG7 Lolium ley
- W23 Ulex - Rubus scrub
- W24 Rubus - Holcus scrub
- W25 Pteridium - Rubus scrub
- S10 Equisetum swamp
- Lake
- Survey boundary

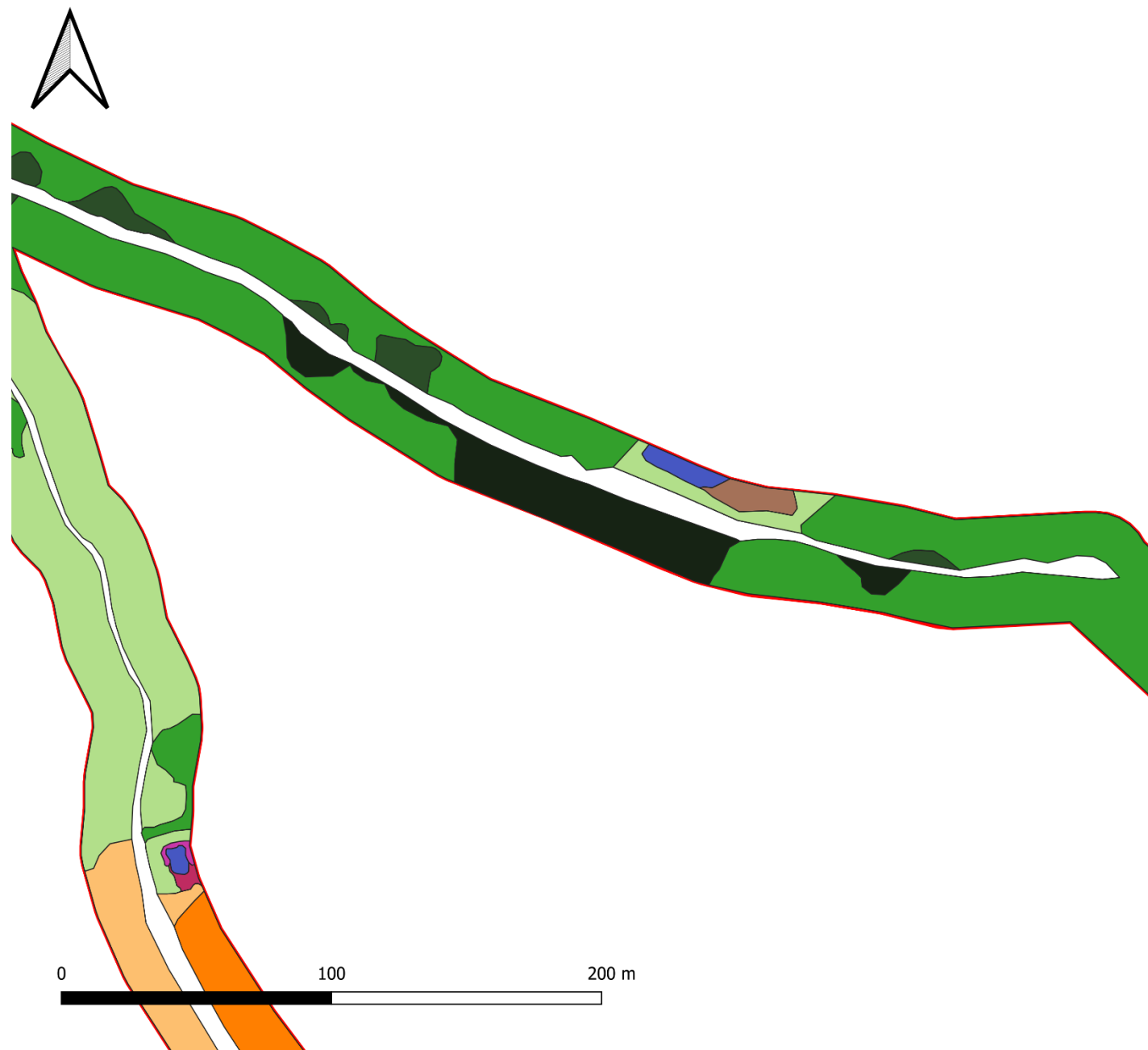


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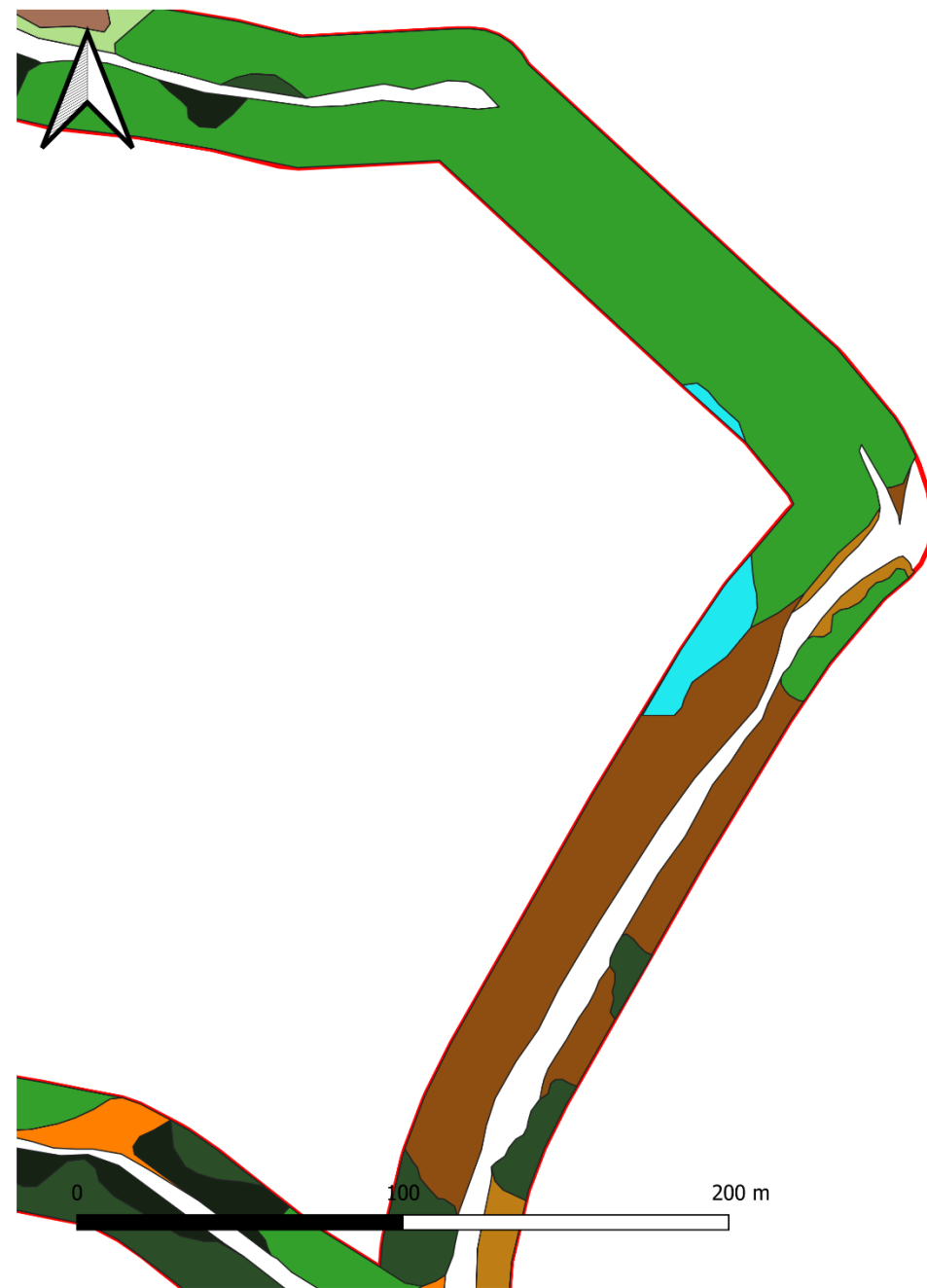
RSPB Hodbarrow: NVC habitats plan

Legend

- MG1a Arrhenatherum grassland
- MG5 CG6 transition
- MG1 CG4 transition
- W23 Ulex - Rubus scrub
- W24 Rubus - Holcus scrub
- W25 Pteridium - Rubus scrub
- S19 Eleocharis swamp
- M23b Juncus - Galium rush-pasture
- SD17 Potentilla - Carex dune slack
- Pond
- Survey boundary



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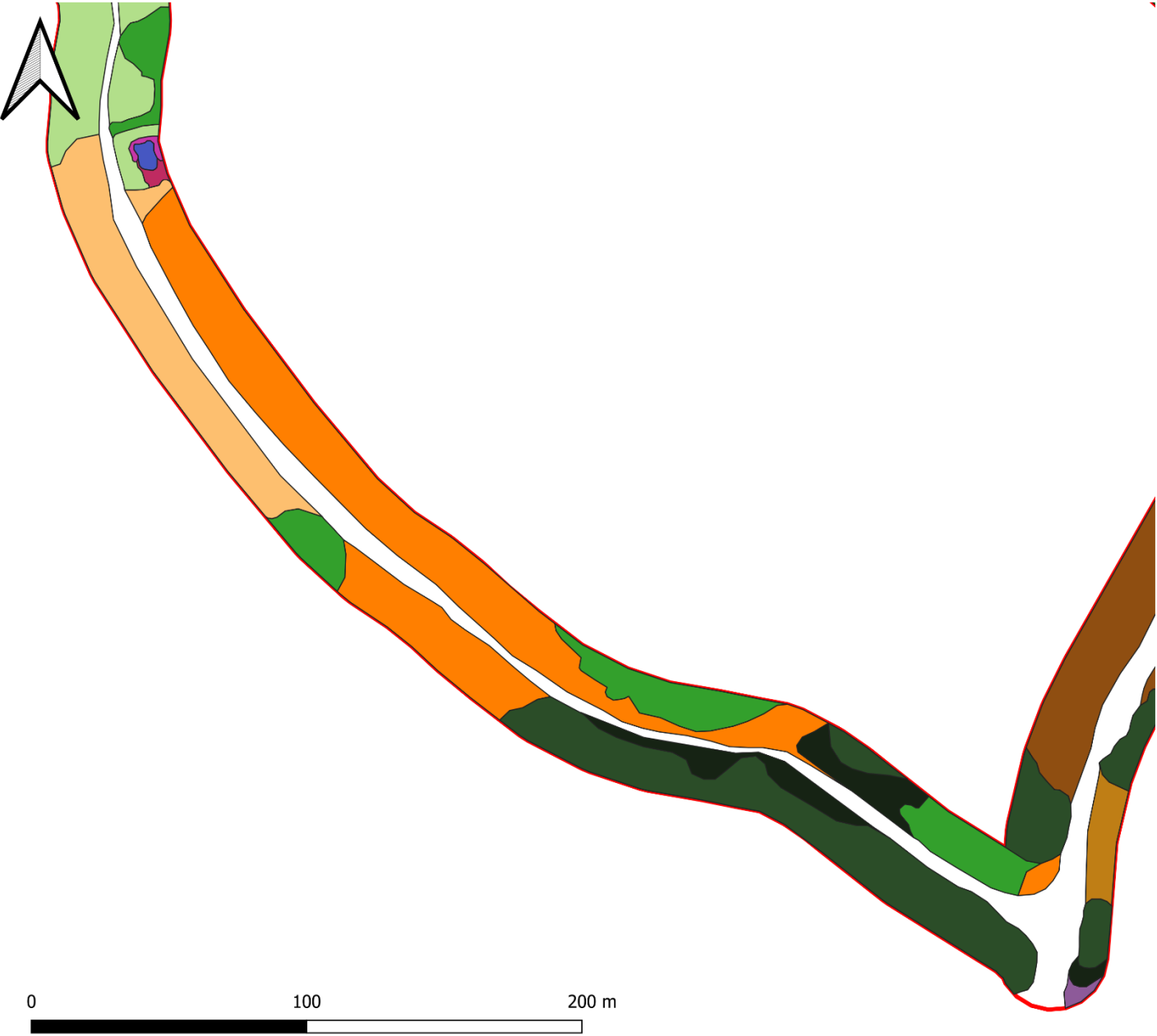
RSPB Hodbarrow: NVC habitats plan

Legend

- MG1a Arrhenatherum grassland
- MG1 CG4 transition
- CG1 Festuca - Carlina grassland
- Briza - Brachypodium grassland
- W23 Ulex - Rubus scrub
- W24 Rubus - Holcus scrub
- W25 Pteridium - Rubus scrub
- M23b Juncus - Galium rush-pasture
- Lake
- Survey boundary



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RSPB Hodbarrow: NVC
habitats plan

- Legend
- MG1a Arrhenatherum grassland
 - MG5 CG6 transition
 - MG1 CG4 transition
 - CG1 Festuca - Carlina grassland
 - Briza - Brachypodium grassland
 - W23 Ulex - Rubus scrub
 - W24 Rubus - Holcus scrub
 - W25 Pteridium - Rubus scrub
 - S19 Eleocharis swamp
 - SD7 SD8 sand dune
 - SD17 Potentilla - Carex dune slack
 - Pond
 - Survey boundary



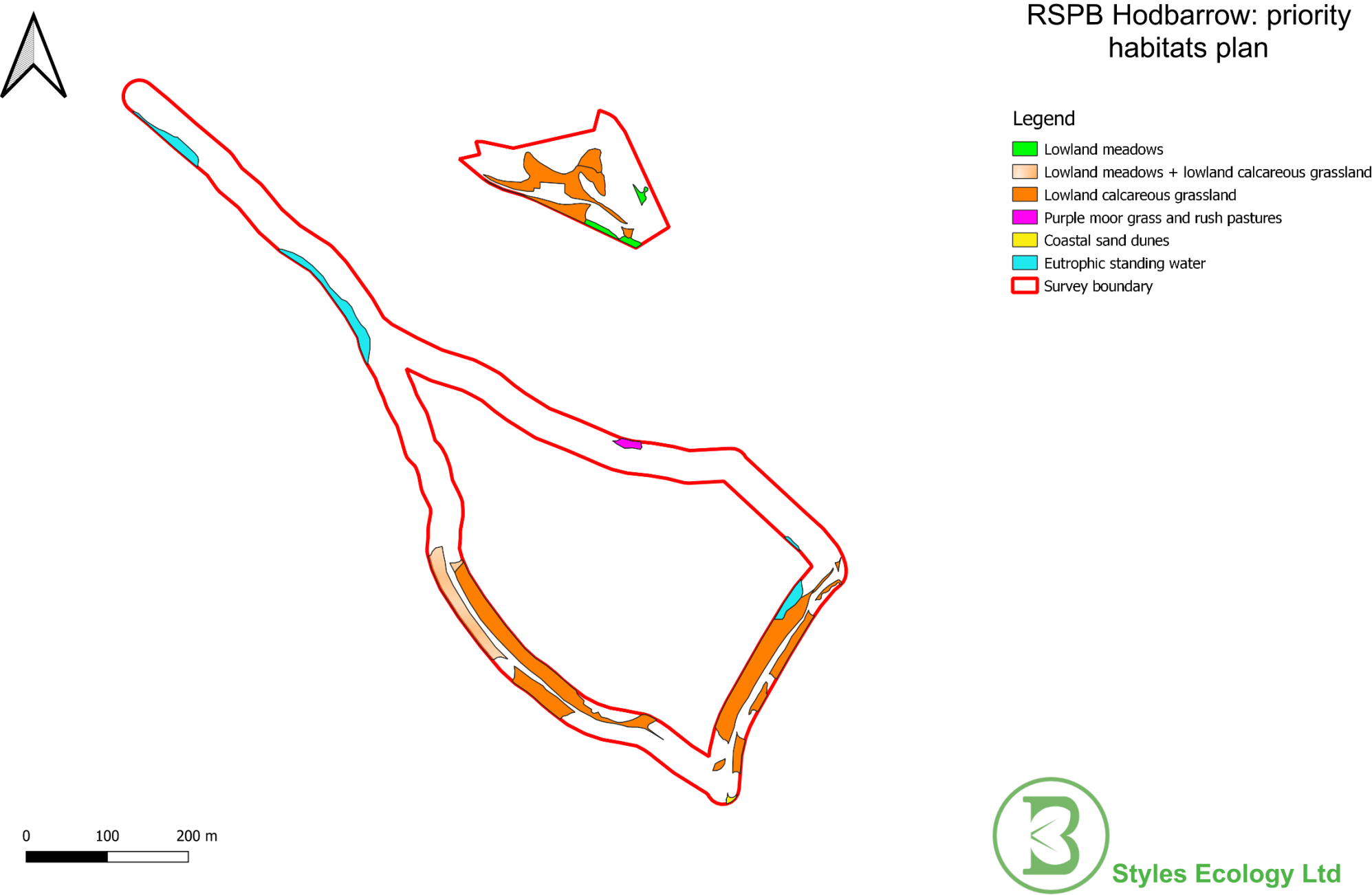
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Appendix III: Updated important plant map

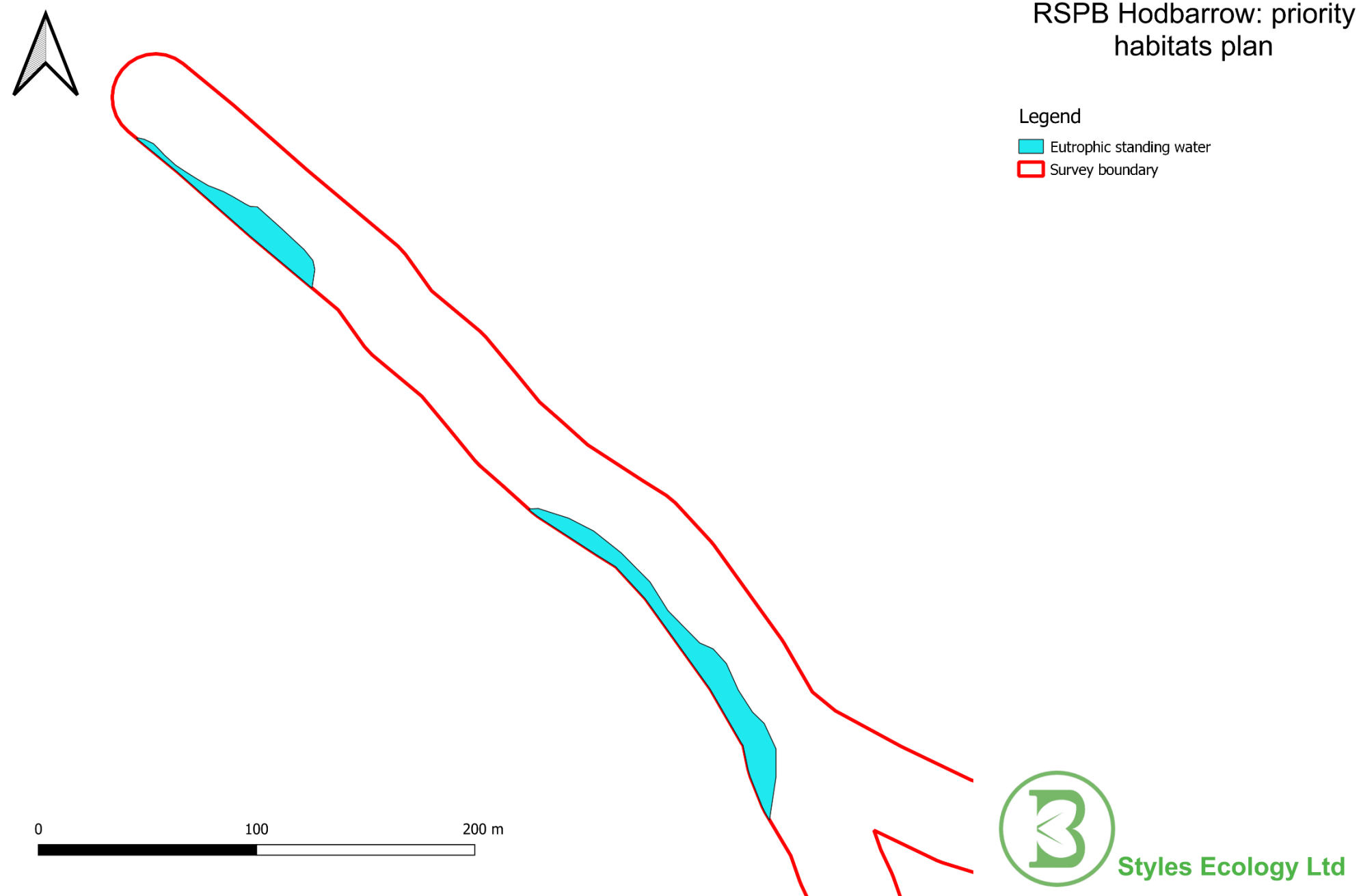


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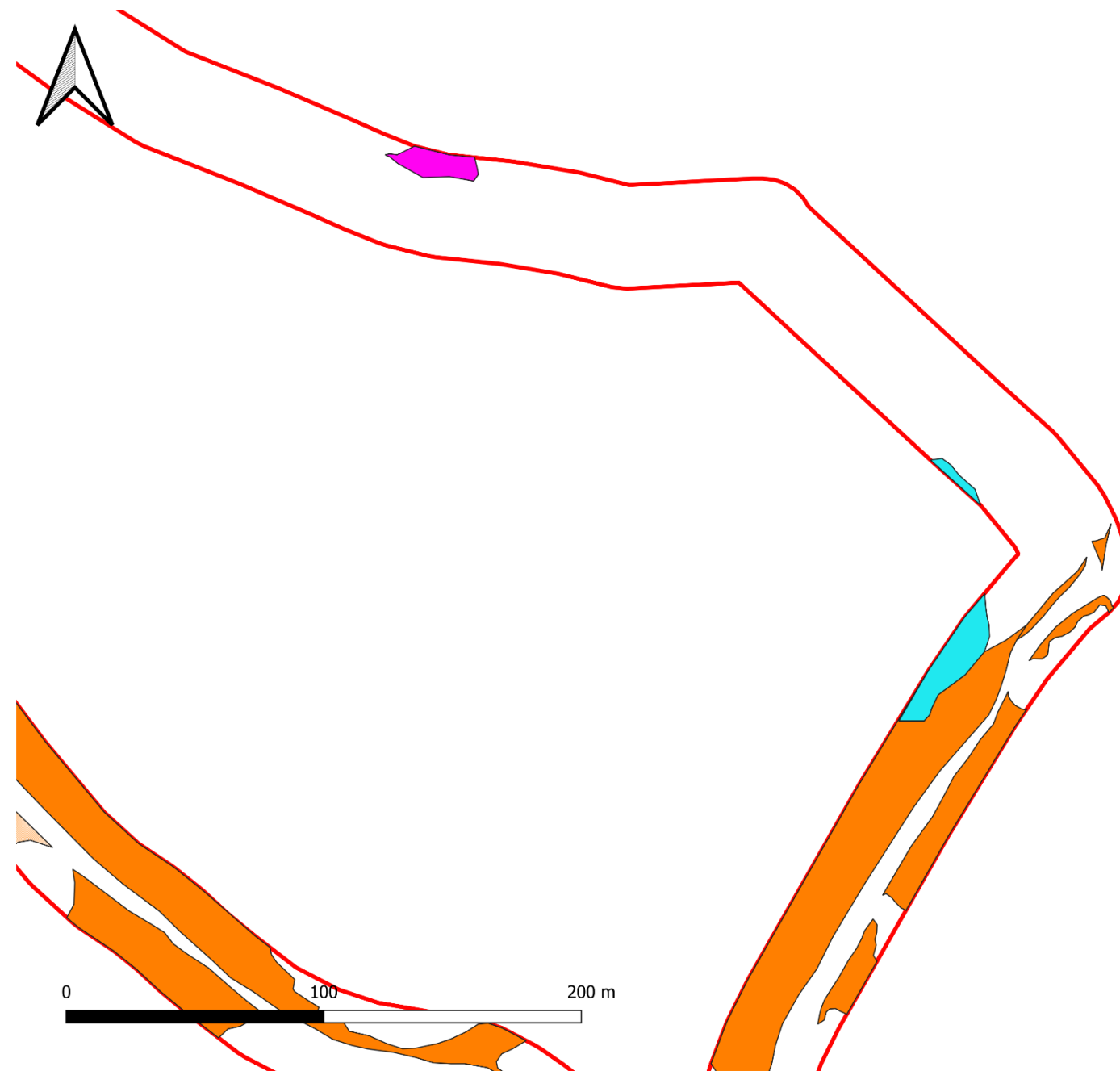
Appendix IV: Priority habitats plan



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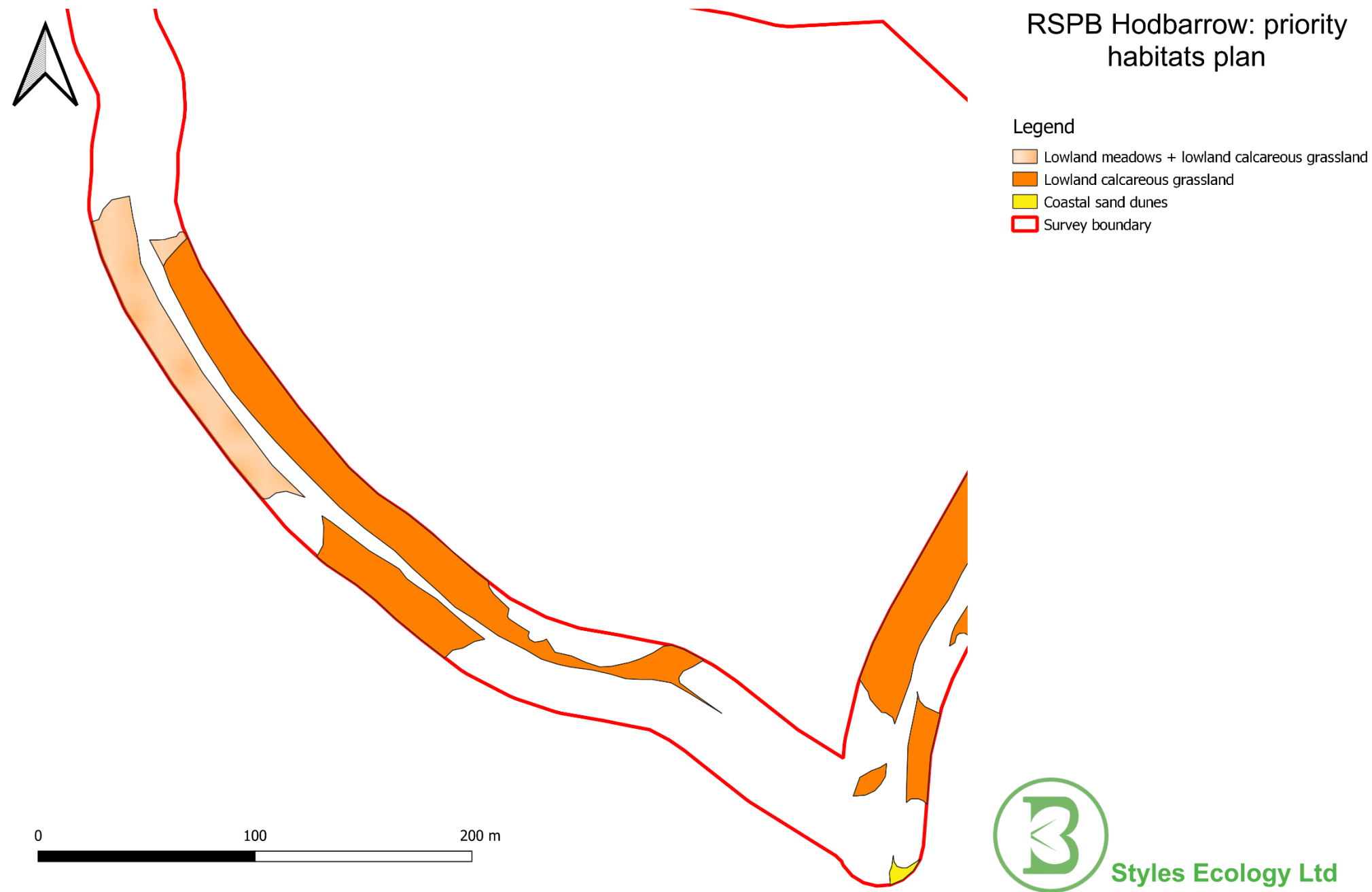
RSPB Hodbarrow: priority habitats plan

Legend

- Lowland meadows + lowland calcareous grassland
- Lowland calcareous grassland
- Purple moor grass and rush pastures
- Eutrophic standing water
- Survey boundary



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APPENDIX E FULL NVC REPORT



Updated Botanical Survey Report

Land at RSPB Hodbarrow, Millom, Cumbria

June 2025



Styles Ecology Ltd



Prepared for: Greengage Environmental Ltd

Survey date: 3rd-4th May 2025

Revision	Purpose	Originator	Authorised	Date
1.0	For issue	Joshua Styles	Joshua Styles	23 rd June 2025

Notice

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This document has been prepared by a botanical specialist and does not purport to provide legal advice.

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1.0 Executive Summary

1.1 In May 2025, Styles Ecology Ltd was commissioned by Greengage Environmental Ltd to conduct an updated botanical survey across an area of land at RSPB Hodbarrow reserve, Millom, Cumbria, henceforth referred to as 'the site' (central OS GR SD 17819 78656). This survey was required to identify important plant taxa and confirm extant vegetation types across the site and whether they correspond to priority, Annex I; and/or irreplaceable habitat categories, and whether these might be impacted by proposals for the site. These proposals are understood to primarily include the formalisation of footpaths, construction of a new visitor centre with car parking and the construction of new hides.

1.2 Previous botanical surveys were undertaken by Joshua Styles between 2021 and 2022 (see **Attachments A1** and **A2**). These surveys identified the presence of two Annex I habitats, including grassland habitats developed overlying limestone and lime-rich clays, alongside coastal dune vegetation overlying in-blown sand. Alongside Annex I habitat types, five priority habitat types were identified, including:

- Lowland Calcareous Grassland;
- Lowland Meadows;
- Ponds;
- Eutrophic Standing Waters; and
- Coastal Sand Dunes.

1.3 In addition to important habitats a total of 30 plant species of conservation importance, ranging from internationally to locally important, were identified. Most notable of these include Irish dandelion (*Taraxacum aesculosum*) and pillwort (*Pilularia globulifera*) which are plants of international and national importance, respectively.

1.4 Botanical survey over 3rd-4th May 2025 identified a total of 18 distinct stand types occupying the site area which includes one new area of M23b purple moor grass and rush pasture in the north which was not present during 2021-2022. However, of the important habitats identified in 2021-2022, the overall trend on site appears to be one of decline. While habitat extent in some areas remains consistent with 2021-2022, much of the important habitat area for MG1e and MG1/CG4 in particular has been replaced by invading scrub. Additionally, habitat deterioration from excessive vehicular disturbance was noted within CG1 grassland in the south-west.

1.5 A total of 25 of the 30 original plants of conservation importance found during 2021-2022 were able to be located, plus an additional important plant in the form of heath dog violet (*Viola canina*) which exists in the south-west within a reasonable population of c.50 individuals.

1.6 Incidentally, a range of internationally to regionally important floristic features were noted along the Byway Open to All Traffic (BOAT) in the south outside the survey area, including irreplaceable, priority and Annex I coastal sand dune, priority and Annex I calcareous grassland, a nationally significant population of seaside centaury (*Centaureum littorale*) alongside regionally significant populations of heath dog violet and variegated horsetail (*Equisetum variegatum*).

1.7 A range of recommendations are provided within **section 7.0**, which includes full retention of vegetated areas of the BOAT alongside recommendations pertaining to existing floristic features within the survey area.



2.0 Introduction and Scope

2.1 Introduction and background

2.1.1 In May 2025, Styles Ecology Ltd was commissioned by Greengage Environmental Ltd to conduct an updated botanical survey across an area of land at RSPB Hodbarrow reserve, Millom, Cumbria, henceforth referred to as 'the site' (central OS GR SD 17819 78656). This survey was required to identify important plant taxa and confirm extant vegetation types across the site and whether they correspond to priority, Annex I; and/or irreplaceable habitat categories, and whether these might be impacted by proposals for the site. These proposals are understood to primarily include the formalisation of footpaths, construction of a new visitor centre with car parking and the construction of new hides.

2.1.2 The survey boundary of the site is provided within **Figure 1.1** below.

2.1.3 The site at RSPB Hodbarrow is a large area which incorporates a range of habitat types, including waterbodies, grasslands, wetland, scrub and other semi-natural habitats which have developed over the site of a former iron mine, whilst the area also sits within the Duddon Estuary Ramsar, Site of Special Scientific Interest (SSSI) and Morecambe Bay Special Area of Conservation (SAC). Furthermore, the reserve hosts the largest coastal lagoon in north-west England, sits within a Site of Invertebrate Importance (SII), partially within a Local Geological Site (LGS) and is adjacent to the globally important Duddon Dunes Important Plant Area (IPA).

2.1.4 Previous botanical surveys were undertaken by Joshua Styles between 2021 and 2022 (see **Attachments A1** and **A2**). These surveys identified the presence of two Annex I habitats, including grassland habitats developed overlying limestone and lime-rich clays, alongside coastal dune vegetation overlying in-blown sand. Alongside Annex I habitat types, five priority habitat types were identified, including:

- Lowland Calcareous Grassland;
- Lowland Meadows;
- Ponds;
- Eutrophic Standing Waters; and
- Coastal Sand Dunes.

2.1.5 In addition to important habitats which were located across the survey area, a total of 30 important plant species were located. Most notable of these included populations of Irish dandelion (*Taraxacum aesculosum*) and pillwort (*Pilularia globulifera*) whose conservation importance was characterised as being at 'international' and 'national' level, respectively.

2.1.6 While former botanical reporting identified priority and Annex I habitats, alongside important plant species, the former scope did not include characterisation of irreplaceable habitats.

2.2 Scope

2.2.1 The aims of this survey and assessment report may be summarised as follows: -

- The provision of an updated NVC habitat survey across all habitats at the site to the standard established throughout the British Plant Communities series¹;
- The analysis of raw field data using Modular Analysis of Vegetation Information System (MAVIS) software and subsequent identification of important habitats, including Habitats of Principal Importance (HPIs) (also known as 'priority habitats')², Annex I³ and irreplaceable habitats⁴;
- The provision of an updated Important Plant Survey, identifying extent and population status of important plant species located at the site;
- A desk study with literature review, including exploration of MAGiC maps⁵, open access data and other relevant literature and resources;
- The discussion and dissemination of results; and
- The provision of recommendations as appropriate.



Figure 1.1: Site survey plan (background aerial map ©Google Hybrid)

¹ Rodwell, J. S., 1991-2000. *British Plant Communities*. Cambridge University Press: Cambridge

² Habitats of Principal Importance as listed under s.41 Natural Environment and Rural Communities Act 2006

³ Habitats which are listed under Annex I Habitats Directive.

⁴ As named within the Biodiversity Gain Requirements (Irreplaceable Habitats) Regulations 2024.

⁵ Available at: <https://magic.defra.gov.uk/magicmap.aspx>

3.0 Methods

3.1 Desk study methods

3.1.1 A review of aerial imagery was undertaken prior to the survey of the site. This review was undertaken in tandem with a review of priority habitat data on MAGIC maps⁵ to appraise the site and surrounding environment for areas which appear across relevant priority habitat inventories.

3.1.2 Botanical Society of Britain and Ireland (BSBI) distributional and other open source data was utilised where appropriate, in accompaniment with British Geological Society data available via Geology Viewer⁶ and a range of other open-source data and available literature.

3.1.3 A review of previous ecological reporting by Joshua Styles was also undertaken (see **Attachments A1 and A2**).

3.2 Field survey methods

3.2.1 NVC habitat survey to the standard of Rodwell (ed.)¹⁷ was undertaken across the totality of the identified survey area over the 3rd-4th May 2025 in favourable weather conditions by Joshua Styles MSc AMRSB MCIEEM FISC Level 6. Times and conditions recorded for NVC surveys are given in **Table 3.1**.

Table 3.1: Conditions observed across survey visits

Date	3 rd May 2025	4 th May 2025
Times of survey	1000 - 1900	0700 - 1200
Visibility	Good visibility throughout survey	Good visibility throughout survey
Rain	No rain	No rain
Cloud cover	20% cloud cover	10% cloud cover
Wind	Calm – no wind	Calm – no wind

3.2.2 Joshua Styles MSc AMRSB MCIEEM FISC Level 6 is Director, Principal Ecologist and Botanical Specialist at Styles Ecology Ltd. Joshua has over 9 years' consultancy experience, and many more years' experience in botanical recording. He is also licensed in England for the specially protected plants floating water-plantain (*Luronium natans*), viper's-grass (*Scorzonera humilis*) and field wormwood (*Artemisia campestris*) and sits on the Chartered Institute of Ecology and Environmental Management (CIEEM) north-west and ecological restoration committees. He is regularly commissioned nationally to survey a range of cryptic and rare habitat types, and has particularly extensive experience in the survey, assessment and restoration of lowland grasslands and ombrogenous mires.

3.2.3 Where large, relatively homogeneous stands existed, a minimum of five targeted quadrat samples (relevés) of an appropriate size for the habitat were deployed wherever possible, excluding scrub communities which are simply described. This included samples which were appropriately sized for the habitat type, as per standing guidance provided by Rodwell (2006)⁷. In circumstances where stand area was limited and/or demonstrated characteristics of one or more communities, these were simply described in the absence of quadrat data.

⁶ Available at: https://geologyviewer.bgs.ac.uk/?_ga=2.138468471.51961822.1695285963-63978984.1695285963

⁷ Rodwell, J. S., 2006. *National Vegetation Classification: User's handbook*. Available at: <https://data.jncc.gov.uk/data/a407ebfc-2859-49cf-9710-1bde9c8e28c7/JNCC-NVC-UsersHandbook-2006.pdf>

3.2.4 Measures for frequency were calculated using the Domin scale (see **Table 3.2**) dependent upon abundance within any given sample. Where five quadrats or more were collected for a stand, a constancy value of I-V was calculated for all species dependent upon the presence of said species through samples.

Table 3.2: Domin scale

Cover	Domin
91-100%	10
76-90%	9
51-75%	8
34-50%	7
26-33%	6
11-25%	5
4-10%	4
<4% (many individuals)	3
<4% (several individuals)	2
<4% (few individuals)	1

3.2.5 Floristic survey data (see **Attachment A3**) was analysed with use of floristic tables and habitat descriptions across the Rodwell series¹ to evidence characterisation. Modular Analysis of Vegetation Information System (MAVIS) was used to add further support to habitat characterisation where quadrat data was obtained. All NVC stands within the survey area were mapped with use of Quantum Geographic Information Systems (QGIS) (see **Appendix II**).

3.2.6 Following the identification of stand types to community and, where possible, sub-community level, NVC types were correlated to relevant priority, Annex I and irreplaceable habitats aligned with published guidance and their relative floristic importance. A broad range of core best-practice guidance was used to support characterisation, which includes the following:

- Joint Nature Conservation Committee (JNCC) UK BAP Priority Habitat descriptions⁸;
- JNCC UK Terrestrial and Freshwater Habitats Descriptions⁹;
- JNCC habitat correspondence spreadsheet¹⁰;
- Guidelines for the Selection of Biological Sites of Special Scientific Interest (SSSIs)¹¹;
- Natural England's definition of favourable conservation status for lowland meadows¹²;
- The Interpretation Manual of European Union Habitats¹³;
- JNCC supplementary advice on UK Annex I habitats¹⁴; and
- Biodiversity Gain Requirements (Irreplaceable Habitats) Regulations 2024¹⁵.

⁸ Available at: <https://jncc.gov.uk/our-work/uk-bap-priority-habitats/#list-of-uk-bap-priority-habitats>

⁹ Available at: <https://hub.jncc.gov.uk/assets/b0b5e833-7300-4234-8ae5-bdbf326e854c>

¹⁰ Available at: <https://hub.jncc.gov.uk/assets/9e70531b-5467-4136-88f6-3b3dd905b56d>

¹¹ Available at: <https://jncc.gov.uk/our-work/guidelines-for-selection-of-sssis/#part-2-habitat-chapters>

¹² Available at: <https://publications.naturalengland.org.uk/publication/5879561481617408#:~:text=Favourable%20conservation%20status%20is%20the,the%20ecology%20of%20lowland%20meadows>.

¹³ European Commission., 2013. *Interpretation Manual of European Union Habitats*. Available at: https://www.mase.gov.it/sites/default/files/archivio/allegati/rete_natura_2000/int_manual_eu28.pdf

¹⁴ Available at: <https://sac.jncc.gov.uk/habitat/>

¹⁵ Available at: <https://www.legislation.gov.uk/ukxi/2024/48/contents/made>



3.2.7 The presence and abundance of important taxa was ascertained through a search of the site survey area. Each important species underwent a population-level assessment and had distributions mapped in QGIS where these differed significantly from the 2021 and 2022 botanical surveys (see **Appendix III**). For clarity, important taxa include those species which are:

- Red-listed in England or Great Britain¹⁶;
- Occurring at fewer than 100 hectad¹⁷ localities at country or GB level (country-scarce / nationally scarce);
- Occurring at fewer than 15 hectad localities at country or GB level (country-rare/nationally rare);
- Endemic;
- Scarce or rare at regional, county or local level¹⁸
- Listed under s.41 National Environment and Rural Communities Act 2006¹⁹; and/or
- Listed under Schedule 5 Conservation of Habitats and Species Regulations 2017 (as amended); and/or
- Listed under Schedule 8 Wildlife & Countryside Act 1981 (as amended).

3.2.8 Nomenclature for higher plants follows Stace (2019)²⁰ and follows the British and Irish BBS checklist for bryophytes²¹.

3.2.9 While survey effort was restricted to the red-line survey boundary as identified within **Figure 1.1**, incidental observations considered relevant were also given as appropriate.

3.3 Assessment and interpretation

3.3.1 Following the identification of sward types and important taxa, the relative importance of these along a geographic frame of reference was characterised. This was done with use of the below framework (**Table 3.3**), adapted from existing guidance including EcIA guidelines²² and the Design Manual for Roads and Bridges, LA 108: Sustainability & Environment Appraisal LA 108 Biodiversity²³.

3.3.2 Recommendations for further survey and/or other interventions were given within **section 7.0** as appropriate.

¹⁶ Following Stroh *et al*, 2014 *A Vascular Plant Red-list for England*. Available at: https://bsbi.org/wp-content/uploads/dlm_uploads/England_Red_List_1.pdf

¹⁷ Hectad records include records within 10x10km squares. Also see www.bsbi.org/maps

¹⁸ This was ascertained through review of BSBI and British Bryological Society mapped plant distributions.

¹⁹ Including species which are a conservation priority within England.

²⁰ Stace, C., 2019. *New Flora of the British Isles*, 4th ed. C & M floristics: Suffolk.

²¹ Blockeel, T.L, Bell, N.E., Hill, M.O., Hodgetts, N.G., Long, D.G., Pilkington, S.L. & Rothero, G.P., 2020. 'A new checklist of the bryophytes of Britain and Ireland.' *Journal of Bryology*.

²² Chartered Institute of Ecology and Environmental Management (CIEEM)., 2022. *Guidelines for Ecological Impact Assessment in the UK and Ireland*. Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf>

²³ Standards for Highways., 2020. Available at: <https://www.standardsforhighways.co.uk/search/af0517ba-14d2-4a52-aa6d-1b21ba05b465>

Table 3.3: Adopted evaluation framework for the assessment of conservation importance

Geographic scale application	Assessment criteria for habitats
International	European designated sites where identified habitats are a listed feature, including SACs and Ramsar sites for example. All habitats listed within Annex I Habitats Directive (Interpretation manual of EU Habitats link: https://www.mase.gov.it/sites/default/files/archivio/allegati/rete_natura_2000/int_manual_eu28.pdf).
National	Nationally designated sites where identified habitats are a listed feature, including SSSIs and NNRs as examples. All habitats which meet relevant criteria for a national designation but do not currently form part of such a designation (SSSI selection guidelines link: https://jncc.gov.uk/our-work/guidelines-for-selection-of-sssis/#part-2-habitat-chapters). All irreplaceable habitats which do not fall under Annex I habitat categories, including some examples of ancient woodland, saltmarsh and lowland fen for example.
Regional	All semi-natural national priority habitats which do not fulfil relevant criteria for a national designation and/or do not fall under defined irreplaceable habitat categories. Habitats which lie within regionally designated sites where those habitats are a listed feature. Habitats which meet published selection criteria for the designation of a regionally designated site.
County	Habitats which lie within county designated sites (e.g. Local Wildlife Sites) where those habitats are a listed feature. Habitats which meet published county designated site criteria.
Local	All habitats which do not meet the above criteria such, excluding habitats of negligible value to wildlife (e.g. hardstanding with no colonising vegetation). This may include widespread habitats, including examples of the UKHab primary habitat types g3c Other neutral grassland, g4 Modified grassland, etc.
Negligible	Habitats which are unvegetated and associated with negligible wildlife interest (i.e. unvegetated hardstanding)



4.0 Limitations

4.1 Botanical surveys were conducted within the optimal period for the surveyed habitat types. However, while surveys were conducted within the broadly optimal period, it is likely that some plant species may have been missed due to later phenologies. Nonetheless, the survey was led by a highly experienced, FISC 6 botanical specialist who is satisfied with the survey effort as it relates to specified survey objectives.

4.2 Many cryptic taxa, namely including apomictic species under the genera *Hieracium*, *Rubus* and *Taraxacum*, could not always be identified to species-level due to seasonal constraints. Plants across these genera are only able to be identified in the presence of all relevant vegetative parts, flowers and/or fruits. Furthermore, most species within these genera may only reliably be identified by country experts, of which there are 3 for *Hieracium*, 6 for *Rubus* and 1 for *Taraxacum*²⁴. It is unrealistic to identify all cryptic taxa on any site which were recorded to aggregate level where appropriate. This limitation has therefore been addressed as far as is reasonably practicable and is not considered by the author to be a significant constraint for the purposes of this survey and assessment.

4.3 The surveyor is not a specialist bryologist and some taxa, particularly those which require microscopic identification, are likely to have been omitted from survey data. However, a reasonable effort was made to identify non-vascular plants wherever possible. This report does not constitute a specialist bryological assessment or an assessment for other visually similar groups, including lichenised or other macro fungi.

4.4 QGIS mapping of habitats was done with use of aerial and other imagery. Although every reasonable effort has been made to be as accurate as possible with regards to habitat boundaries, there is an inevitable margin of error associated with habitat mapping.

²⁴ Rich, T., 2022. *The difficult plant problem*. BSBI News, volume 149, pages 23-29.

5.0 Results

5.1 Desk results

5.1.1 A previous data search, coupled with a search of BSBI Maps²⁵, the Flora of Cumbria²⁶ and the Cumbria Rare Plant Register²⁷ revealed a number of important species were previously identified for the site. Perhaps most notable was the known population of pillwort (*Pilularia globulifera*) around a pond towards the centre of the site area. Other important taxa which were highlighted from a desktop search also included dark-red helleborine (*Epipactis atrorubens*), small-fruited yellow sedge (*Carex oederi*), moonwort (*Botrychium lunaria*), convergent stonewort (*Chara connivens*) and marsh helleborine (*Epipactis palustris*).

5.1.2 Previous botanical survey of the site revealed the presence of a total of two Annex I habitat types, including H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) and H2130 *Fixed coastal dunes with herbaceous vegetation (grey dunes). The former of these corresponds to calcareous grassland communities overlying limestone and other calcareous substrate, while the latter includes dune communities which have developed over coastal in-blown sand.

5.1.3 In addition to Annex I habitats of global biological significance, five semi-natural national priority habitats were identified, including:

- Lowland calcareous grassland: Including calcareous grassland communities developed over limestone and lime-rich soils;
- Lowland meadows: including circumneutral, species-rich grassland communities developed over heavier, clay-rich soils (MG1e and MG5/CG6);
- Ponds: including a pond to the central/western part of the survey area;
- Eutrophic standing waters: including areas of open water on site; and
- Coastal sand dunes: including all plant communities developed over coastal in-blown sand.

5.1.4 Many of the above habitats also corresponded to local Biodiversity Action Plan habitat categories alongside national priority categories, including:

- 'Hay Meadows and Lowland Pastures': including areas of lowland meadow;
- 'Calcareous Grasslands': including areas of lowland calcareous grassland; and
- 'Coastal Sand Dune (inc. dune grass, heath, scrub and strandline)': including areas of coastal sand dune.

5.1.5 The significant habitat interest of the site is further added to by its outstanding diversity of vascular plants, many of which are of conservation priority. During 2021 and 2022 surveys, a total of 30 plants species of conservation importance were located within and immediately adjacent to the survey area by Joshua Styles. A list of these species, along with an assessment of biological importance, was provided within **Table 7.2** of the 2022 botanical survey report (see **Attachment A2**). This table has been transposed within **Table 5.1** below.

²⁵ Available at: <https://bsbi.org/maps>

²⁶ Halliday, G., 1997. *A Flora of Cumbria*. Lancaster: University of Lancaster.

²⁷ Porter, M & Halliday, G., 2014. *The rare plant register of Cumbria*. Cumbria: Trollius Publications.

Table 5.1: Summary of important plants located across RSPB Hodbarrow and adjacent area 2021-2022

Species	Importance
Irish dandelion	High (international) – The first possible native site outside of Ireland and second record outside of Ireland for this globally rare endemic species was located beside an existing access track. This species is soon to be red-listed ‘Critically Endangered’ for England.
Pillwort	High (national) – A nationally scarce, red-listed and priority species in England which is also given within the Cumbria RPR.
Moonwort, small-fruited yellow sedge, slender spike-rush, dyer’s greenweed, fern-grass, thread-leaved water crowfoot, yellow-horned poppy, common cudweed	High (regional) – These species are all rare in Cumbria and more widely across north-west England and are typically recipient to multiple conservation designations.
Wild marjoram, creeping willow, fennel pondweed, spiked water milfoil, blue fleabane, a dandelion (<i>Taraxacum naevosiforme</i>), sand cat’s-tail	High (county) – These species are all rare in Cumbria although generally more widespread elsewhere within the region. These plants are usually recipient to various conservation designations, including recognition within the English red-list.
Carlina thistle, eyebright (<i>Euphrasia</i> sp.), few-flowered spike-rush, flea sedge, harebell, heath speedwell, lesser spearwort, marsh pennywort, northern marsh orchid, matt-grass, tormentil, quaking-grass, wild strawberry	Moderate (local) – These species are all typically widespread in Cumbria, north-west England or more widely, although are recipient to relevant conservation designations. The majority of these species are widespread but red-listed Near-Threatened in England.

5.1.6 Geology of parts of the site alongside its surrounding area is recorded as a mix of sands and gravels, coastal in-blown sand and clays⁶. It is this complex mix of geology, coupled with former land-use, that is likely to have contributed to the rise of such high floristic interest over the long-term.

5.2 Field results

National Vegetation Classification

Overview

5.2.1 Since 2021 and 2022 surveys, the overall trend for habitats of high floristic interest on site appears to be that of decline and loss. Important plant communities appear to have declined in extent on the whole as they have been left largely unmanaged and succession has been allowed to run its course, giving way to scrub. While communities of high floristic interest have declined, scrub communities appear to have increased in extent, particularly in the south and west.

5.2.2 Notwithstanding the apparent habitat deterioration and loss, a large number of habitat types were still identified on site during 2025 surveys. Many of these correspond to priority, Annex I and/or irreplaceable habitat types (see **Table 5.2** below). NVC mapping is available within **Appendix II**.

Table 5.1: NVC communities and corresponding UKHab, priority, Annex I and irreplaceable habitat categories

NVC community	UKHab primary habitat	Priority habitat	Annex I habitat	Irreplaceable habitat
MG1a grassland	g3c Other neutral grassland	-	-	-
MG1e grassland	g3a Lowland meadows	Lowland meadows	-	-
MG7 ley	g4 Modified grassland	-	-	-
MG5 / CG6 transition	g3a Lowland meadows	Lowland meadows	H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>)	-
	g2a Lowland calcareous grassland	Lowland calcareous grassland		
MG1 / CG4 transition	g2a Lowland calcareous grassland	Lowland calcareous grassland	H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>)	-
CG1 grassland	g2a Lowland calcareous grassland	Lowland calcareous grassland	H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>)	-

Briza – Brachypodium grassland	g2a Lowland calcareous grassland	Lowland calcareous grassland	H6210 Semi- natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco- Brometalia</i>)	-
W23 scrub	h3e Gorse scrub	-	-	-
W24 scrub	h3h Mixed scrub	-	-	-
W25 underscrub	g1c Bracken	-	-	-
S10 swamp	f2f Other wetlands	-	-	-
S19 swamp	f2f Other wetlands	-	-	-
M23b rush- pasture	f2b Purple moor grass and rush pasture	Purple moor grass and rush pastures	-	-
SD7 / SD8 dune	s3a Sand dunes	Coastal sand dunes	H2130 *Fixed coastal dunes with herbaceous vegetation (grey dunes)	Coastal sand dunes
SD17 slack	f2f Other wetland	-	-	-
Pond	secondary code 40	Ponds	-	-
Lake	r1a Eutrophic standing waters	Eutrophic standing waters	-	-

5.2.3 Descriptions for NVC communities found across the site are given below. Further detail on qualitative survey data with species lists may be obtained from an overview of floristic tables available within **Attachment A3**.

MG1a *Arrhenatherum elatius* grassland *Festuca rubra* sub-community

5.2.4 The grassland which occupies much of the open areas across central-western portions of the site area best conforms to an MG1 *Arrhenatherum elatius* grassland owing to the overwhelming abundance and dominance of both false oat-grass (*Arrhenatherum elatius*) and/or cock's-foot (*Dactylis glomerata*). While forbs which are typical of higher-quality grasslands, such as common knapweed (*Centaurea nigra*), bulbous buttercup (*Ranunculus bulbosus*) and common bird's-foot trefoil (*Lotus corniculatus*) remain widespread, these remain rare components of the sward which is conspicuously dominated by graminoids.

5.2.5 The impoverished nature of this grassland, coupled with the constancy of red fescue (*Festuca rubra* agg.) and absence of the key forbs common knapweed (*Centaurea nigra*), wild parsnip (*Pastinaca sativa*) and meadowsweet (*Filipendula ulmaria*) as constants, are typical of MG1a A. *elatius* grasslands within the *Festuca rubra* sub-community.

5.2.6 MAVIS analysis attributed the highest confidence interval which is reasonable to MG1a grassland (59.76) which concurs with the assessment of the surveyor.

5.2.7 MG1a grasslands remain to be a widespread community type found throughout lowland Britain where it is, above all, indicative of an absence of regular grazing and/or cutting¹. Although some cutting within areas of MG1 was observed, clippings were not removed, allowing for the development of a thick thatch conducive to lower floristic diversity and the persistence of species-poor MG1a.

5.2.8 The corresponding UKHab primary habitat for areas of MG1a on site is **g3c Other neutral grassland**. This habitat does not conform to any priority, Annex I or irreplaceable habitat type.

MG1e *Arrhenatherum elatius* grassland *Centaurea nigra* sub-community

5.2.9 These mesotrophic grasslands which overly lime-rich clays in the north are somewhat similar in general character to those MG1a grasslands found central-westerly, albeit with greater species richness. While cock's-foot remains as a constant, above-all, this sward is characterised by their greater abundance of forbs and constancy of common knapweed (*Centaurea nigra*). This is typical of grasslands which are affiliated with the MG1e *Centaurea nigra* sub-community.

5.2.10 MAVIS analysis attributed the highest confidence interval which is reasonable to MG1e grassland (54.46) which concurs with the assessment of the surveyor.

5.2.11 MG1e grasslands differ to the commoner and more widespread MG1a in that they are more species-rich and typically descended from higher-quality swards. Given the widespread nature of calcicoles within the community combined with this community's superficial deposits generally including thin, lime-rich clays, it may be likely that these MG1e swards are derived from an MG5b or related community. The lack of management of this community has allowed for losses across its former range due to bramble scrub expansion over this period.

5.2.12 The corresponding UKHab primary habitat for areas of MG1e on site is **g3a Lowland meadows**. This habitat conforms to the national priority habitat **Lowland meadows** and Cumbria BAP habitat **Hay Meadows and Lowland Pastures**.



MG7 *Lolium perenne* ley

5.2.13 Small areas of grassland dominated by perennial rye-grass (*Lolium perenne*) exist beside footpath, likely derived from the substantial and localised enrichment of soils via dog activity. Given the small size of these areas coupled with poor floristic interest, they were not subject to quadrat sampling.

5.2.14 MG7 grasslands are extremely common throughout lowland Britain, particularly in the context of intensive agricultural land where chemical soil modifications with frequent re-sowing allows for the development of these grasslands.

5.2.15 The corresponding UKHab primary habitat for areas of MG1a on site is **g4 Modified grassland**. This habitat does not conform to any priority, Annex I or irreplaceable habitat type.

MG5 / CG6 *Cynosurus cristatus* – *Centaurea nigra* grassland / *Avenula pubescens* grassland transition

5.2.16 Areas overlying lime-rich clays in the centre-southwest of the site are host to this apparently transitional community which appears to be somewhat transitory between a CG6 grassland with abundant and constant downy oat-grass (*Helictotrichon pubescens*) and an MG5 grassland with a constancy of key graminoids forbs including common knapweed, common bird's-foot trefoil, ribwort plantain, red clover (*Trifolium pratense*), selfheal (*Prunella vulgaris*), sweet vernal-grass (*Anthoxanthum odoratum*), common bent (*Agrostis capillaris*) and field wood-rush (*Luzula campestris*).

5.2.17 MG5 grasslands occur on a range of heavy circumneutral soils, including neutral-calcareous sites, while CG6 is preferential on soils which are more mesotrophic, overlying limestone. The latter often occurs in situations where there has been some disturbance, albeit with little to no grazing. The chemical and physical properties of underlying lime-rich clays are likely to be conducive to the development of this transition.

5.2.18 MAVIS analysis attributed a confidence interval which is reasonable to MG5 grassland (56.24) and a reasonable confidence interval (50.80) to CG6 which concurs with the assessment of the surveyor.

5.2.19 MG5 grasslands are rare in Britain, with fewer than 10,000ha estimated to remain¹¹. These occur over circumneutral soils with a pH typically ranging between 5.5-6.5, and with very low extractable phosphorus. Although widespread, most MG5 grasslands have been lost to chemical soil modifications, largely due to changes in agricultural practices. Similarly, CG6 grasslands are rare in Britain with <10,000ha remaining, most stands being lost to arable cultivation¹¹.

5.2.20 The corresponding UKHab primary habitat for areas of transitional MG5 / CG6 grassland is transitory between **g3a Lowland meadows / g2a Lowland calcareous grassland**. In situations where a habitat is transitional, the habitat of higher distinctiveness selected as the primary UKHab habitat (g3a Lowland meadows). This stand type conforms to the Annex I habitat H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*), national priority habitats **Lowland meadows** and **Lowland calcareous grasslands**, and Cumbria BAP habitat **Hay Meadows and Lowland Pastures** and **Calcareous Grasslands**.

MG1 / CG4 *Arrhenatherum elatius* grassland / *Brachypodium pinnatum* grassland transition

5.2.21 While the affinities to an MG1 sward may easily be seen where this stand occurs in central-southwestern portions of the site due to an abundance and constancy of cock's-foot, affinities to a calcareous grassland community are also apparent. False brome (*Brachypodium sylvaticum*), glaucous sedge (*Carex flacca*), sheep's fescue (*Festuca ovina*), common bird's-foot trefoil (*Lotus corniculatus*) and yellow oat-grass (*Trisetum flavescens*) all remain as constants. Although tor-grass (*Brachypodium pinnatum* agg.) remains apparently absent, the glaucous sedge and sheep's fescue are typical constant components of CG4 grasslands, while common bird's-foot trefoil and yellow oat-grass are also regarded as constants in some variants of the community. It is therefore the view of the surveyor that characterisation of this habitat as a transition between MG1 and CG4 is the best representation of the stand.

5.2.22 CG4 grasslands, much like MG1 swards, are typical of situations which are subject to relaxed/no management, albeit on calcareous soils. Additionally, albeit tor-grass appears absent, it may be possible that its niche is being filled by false brome, a closely related species, in this context.

5.2.23 MAVIS analysis attributed a reasonable confidence interval to MG1 grassland (54.22) and a reasonable confidence interval (52.30) to CG6 which concurs with the assessment of the surveyor.

5.2.24 While many variants of MG1 grassland are common throughout lowland Britain, CG4 grasslands are rare in Britain with <10,000ha remaining¹¹.

5.2.25 The corresponding UKHab primary habitat for areas of transitional MG1 / CG4 grassland is best represented as **g2a Lowland calcareous grassland** given the abundance of key calcicoles across the community, despite the presence and constancy of cock's-foot. This stand type conforms to the Annex I habitat H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*), national priority habitat **Lowland calcareous grassland**, and Cumbria BAP habitat **Calcareous Grasslands**.

CG1 *Festuca ovina* – *Carlina vulgaris* grassland

5.2.26 In areas with sparsely vegetated soils derived from limestone in the north and south of the site, this community may be found. It is characterised notably by the constancy of wild thyme (*Thymus drucei*), sheep's fescue (*Festuca ovina* agg.), *Weissia*, mouse-ear hawkweed (*Pilosella officinarum*), common bird's-foot trefoil and glaucous sedge – all typical constant components of this community type. Given the rarity of crested hair-grass (*Koeleria macrantha*) within the community and poor fit with other named sub-communities, this stand type was named to community level only.

5.2.27 MAVIS analysis gives a reasonably poor fit to CG1 grassland (39.61) which may be down to the absence of crested hair-grass and salad burnet (*Poterium sanguisorba*), coupled with its high abundance of hawkweed (*Hieracium* spp.). Professional analysis, however, confirms CG1 as the best fit for this stand type.

5.2.28 CG1 grasslands are rare across the west coast of Britain, confined to shallow soils over limestone or chalk, with less than 10,000ha remaining nationally¹¹.

5.2.29 The corresponding UKHab primary habitat for areas of CG1 grassland is **g2a Lowland calcareous grassland**. This stand type conforms to the Annex I habitat H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*), national priority habitat **Lowland calcareous grassland**, and Cumbria BAP habitat **Calcareous Grasslands**.

Briza media – *Brachypodium sylvaticum* grassland

5.2.30 A calcareous grassland type exists in the north and through a small area of the south-east of the site which is conspicuously dominated by false brome (*Brachypodium sylvaticum*) and quaking-grass (*Briza media*) which remain as constants. These grasslands appear to have likely been derived from a more open sward (CG1), although do not easily conform to any one recognised calcareous grassland NVC community.

5.2.31 Although clearly dominated by false brome and quaking-grass, these grasslands remain species-rich and a range of other forbs occur as constant components, including glaucous sedge, comb-moss (*Ctenidium molluscum*), rough hawkbit, common bird's-foot trefoil, field wood-rush (*Luzula campestris*) and common restharrow (*Ononis repens*). The constant taxa allow for comparison to a number of calcareous grassland communities, CG4 and CG6 as examples, however the overwhelming dominance of quaking-grass and false brome do not allow for good comparison. Therefore, this stand will be referred to in line with previous reporting as '*Briza media* – *Brachypodium sylvaticum* grassland'.

5.2.32 MAVIS analysis gives the highest confidence interval to CG6 grassland which is reasonable (46.29). However, the rarity of downy oat-grass within this community does not allow for good comparison.

5.2.33 The corresponding UKHab primary habitat for areas of *Briza* - *Brachypodium* grassland is **g2a Lowland calcareous grassland**. This stand type conforms to the Annex I habitat H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*), national priority habitat **Lowland calcareous grassland**, and Cumbria BAP habitat **Calcareous Grasslands**.

Scrub communities

5.2.34 A total of three distinct scrub communities remain present across the site, including:

- W23 *Ulex europaeus* – *Rubus fruticosus* scrub;
- W24 *Crataegus monogyna* – *Rubus fruticosus* scrub; and
- W25 *Pteridium aquilinum* – *Rubus fruticosus* underscrub.

5.2.35 These communities remain the same in composition as in 2021 and 2022, however appear to have expanded their range across the site, succeeding from higher-quality grassland communities. Indeed, the prevalence of bramble (*Rubus fruticosus* agg.) within MG1 and MG1/CG4 grasslands in particular is likely to be indicative of the ongoing deleterious change due to an absence of active, positive habitat management through parts of the site.

5.2.36 Corresponding UKHab primary habitats for these communities are given below. They do not conform to any Annex I, priority or irreplaceable habitat types.

- W23: h3e Gorse scrub;
- W24: h2h Mixed scrub; and
- W25: g1c Bracken.

Swamp communities

5.2.37 Two swamp communities are present on site, including S10 *Equisetum fluviatile* swamp and S19 *Eleocharis palustris* swamp. The former occurs over a stretch in the north-west and is most conspicuously dominated by water horsetail (*Equisetum fluviatile*), although scattered reed (*Phragmites australis*) and bulrush (*Typha latifolia*) also occur with a selection of forbs. The brown fen moss *Calliergonella cuspidata* occurs widely in this area where it forms dense mats locally. Albeit this stand remains reasonably species-poor, it is possible that the widespread nature and local abundance of the brown moss *C. cuspidata* could represent a transition of this community from swamp to fen.

5.2.38 A band of common spike-rush (*Eleocharis palustris*) occurs around a pool in the centre-west of the site with few other forbs. While a singular quadrat sample was taken for areas of S10, no samples were taken of this narrow band of S19 *Eleocharis* swamp owing to its limited extent.

5.2.39 Both S10 and S19 are widespread throughout lowland Britain and correspond to the UKHab primary habitat f2f Other wetlands. Currently, S10 and areas of S19 which are not part of the pond itself are not included as priority, irreplaceable or Annex I habitats.

M23b *Juncus effusus*/J. *acutiflorus* – *Galium palustre* rush-pasture J. *effusus* sub-community

5.2.40 An area of former scrub/young woodland has since been removed in the centre-north of the site since 2021 and 2022 surveys, alongside pond creation. In areas outside of the pond, vegetation is overwhelmingly dominated by soft rush (*Juncus effusus*) and occurs with common marsh bedstraw (*Galium palustre*) alongside other herbs which are colonising the stand, notably including marsh willowherb (*Epilobium palustre*) and water figwort (*Scrophularia auriculata*). The constancy of both soft rush and common marsh bedstraw is indicative of an M23b community, while soil enrichment from leaf litter/decaying wood may be the reason for the absence of sharp-flowered rush (*Juncus acutiflorus*) within the community.

5.2.41 A singular representative sample was taken which found the community to be somewhat species-poor with 7 species contained within said sample. However, this is more likely to be reflection of the recent origin of the habitat, rather than underlying environmental context which is a limiting factor in the improvement in species richness.

5.2.42 M23b stands remain widespread, albeit often scattered across Britain, although are often commoner in the north and west. They correspond to the UKHab primary habitat **f2b Purple moor grass and rush pastures**, and the priority habitat **Purple moor grass and rush pastures**.

Sand dune communities

5.2.43 A very small proportion of the site survey area included communities developed over in-blown sand. These occur in the south and remain to include areas of fixed and semi-fixed dune, and include the communities SD7 *Ammophila arenaria* – *Festuca rubra* semi-fixed dune and SD8 *F. rubra* – *Galium verum* fixed dune. A stark transition occurs in the far south where these stands may be located; in seaward portions, SD7 dominated by marram (*Ammophila arenaria*) occur, which give way to shorter and more species-rich turf wherein marram is absent.

5.2.44 These communities were identified during 2021-2022 surveys and continue to be present, although appear to becoming invaded by scrub, notably including sea buckthorn (*Hippophae rhamnoides*), some of which had seemed to be cut down at the time of the survey.

5.2.45 SD7 and SD8 are reasonably widespread, although local communities which may be found around the British coastline over in-blown sand. They both conform to the UKHab primary habitat **s3a Coastal sand dunes**, the Annex I habitat **H2130 Fixed dunes with herbaceous vegetation ('grey dunes')** and priority and irreplaceable habitat **Coastal sand dunes**. They are also covered by the LBAP category **Coastal Sand Dune (inc. dune grass, heath, scrub and strandline)**.

SD17 Potentilla anserina – Carex nigra slack

5.2.46 Although generally part of a coastal sand dune system, this community has developed over heavy clays and is associated with mesotrophic and calcareous swards not part of a sand dune system. It is characterised by a frequency of common sedge (*Carex nigra*), silverweed (*Potentilla anserina*), *Calliergonella cuspidata*, creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*) and creeping bent (*Agrostis stolonifera*).

5.2.47 Due to the limited extent of this habitat type, no quadrat samples were taken. It does appear, however, that an increase in disturbance has occurred since 2021-2022, as vegetation appeared somewhat excessively trampled.

5.2.48 As this community is not part of a dune system, nor is it a swamp or a mire, it best correlates to the UKHab primary habitat f2f Other wetlands and does not appear to correspond to any priority, Annex I or irreplaceable habitat type.

Waterbodies

5.2.49 A total of two ponds and two lakes are included within the survey area, including an apparently new pond in the north and an older pond to the centre-west of the site. Both ponds have been regarded as priority habitat, the latter pool given its large population of s.41 pillwort (*Pilularia globulifera*). Priority ponds are covered in UKHab by the **secondary code 40**.

5.2.50 Both lakes are host to vegetation which is typical of the priority habitat **Eutrophic standing waters**. This includes Hodbarrow lagoon where vegetation typical of A11 *Potamogeton pectinatus* – *Myriophyllum spicatum* community was observed along the shore, consistent with 2021-2022 findings, alongside an additional lagoon in the south-east where charophytes and pondweeds (*Potamogeton* spp.) were observed. These habitats correspond to the UKHab primary habitat **r1a Eutrophic standing waters**.

Important plants

Overview

5.2.51 A total of thirty plant species of international to local conservation importance were identified during 2021-2022 surveys. Of these, 25 were relocated and an additional important plant species located within the survey area in the form of heath dog violet (*Viola canina*).

5.2.52 While many plant species were relocated, some taxa had changed their distribution and/or appeared more or less abundant compared to 2021-2022. Where distributions were substantially different to 2021-2022, these have been mapped within **Appendix III**.

5.2.53 A summary of these species' population statuses and distributions are given below.

1. **Irish dandelion *Taraxacum aesculosum***: One single plant of this distinctive species was identified in 2021-2022 which was confirmed by the BSBI *Taraxacum* referee. However, in 2025, a total of seven plants were identified at the below OSGRs. This is likely to be attributed to survey timing, rather than a reflection of increased abundance and actual distribution on site.
 - SD 17575 78994 (1 plant)
 - SD 1764 78981 (2 plants)
 - SD 17658 78974 (1 plant)
 - SD 17677 78975 (1 plant)
 - SD 17728 78994 (1 plant)
 - SD 18152 78614 (1 plant)
2. **Pillwort *Pilularia globulifera***: An exceptional population of this plant may be found at the centre-western pond in the same location as has previously been found during 2021-2022 botanical surveys. However, this species now forms a considerable proportion of the aquatic marginal vegetation of this pond, and also of the pond outside the survey boundary immediately east. From observation, it appears that this species is now significantly more abundant than previous, perhaps attributable to increased foot disturbance and/or the Spring drought which has suppressed competitors.
3. **Small-fruited yellow sedge (*Carex oederi*)**: This plant grows in the same areas as previously and its population does not appear to have substantially changed since 2021-2022 surveys, having located circa 50 plants during surveys.
4. **Slender spike-rush (*Eleocharis uniglumis*)**: This plant was found in the same position as previous, immediately outside the survey boundary in a large population with *Pilulifera*.
5. **Thread-leaved water-crowfoot (*Ranunculus trichophyllus*)**: This plant was still observed to grow within the pond bound by *Eleocharis* and *Pilularia* within the same area, although appeared somewhat more abundant visually compared to 2021-2022 surveys where this plant covered a sparse area within inundated areas of S19 swamp.
6. **Common cudweed (*Filago germanica*)**: The population of common cudweed was still observed to persist in the same areas as was observed in 2021-2022, although plants appeared notably less vigorous. This, however, may more easily be attributed to the extreme 2025 Spring drought, rather than a shift in habitat quality or other environmental factors.
7. **Dyer's greenweed (*Genista tinctoria*)**: Both plants of dyer's greenweed were located during 2025 surveys. However, the vigour of both appeared notably less compared to 2021-2022, while a substantial thatch has built up, partially burying plants.

8. **Fern-grass (*Catapodium rigidum*):** A large number of plants of fern-grass remain scattered within CG1 and *Briza-Brachypodium* grassland at RSPB Hodbarrow and in the north in the area of the proposed car park and visitor centre.
9. **Wild marjoram (*Origanum vulgare*):** Both areas with wild marjoram were observed, as had been previously observed during 2021-2022. While occupying the same area, plants adjacent to the quarry access road appear to have become more abundant over this period, covering an approximate length of 4m of road verge.
10. **Creeping willow (*Salix repens*):** Creeping willow remained to be found in areas where it was previously recorded during 2021-2022, including CG1, MG5/CG6 and SD17-type communities.
11. **Fennel pondweed (*Stuckenia pectinata*):** This plant remained to occupy Hodbarrow lagoon, where plants washed up at the shore were noted.
12. **Sand cat's-tail (*Phleum arenarium*):** A small number of plants in flower were noted within SD7-type semi-fixed dune, which is consistent with 2021-2022 findings.
13. **Spiked water milfoil (*Myriophyllum spicatum*):** This plant remained to occupy Hodbarrow lagoon, where plants washed up at the shore were noted.
14. **Blue fleabane (*Erigeron acris*):** Scattered plants were located in low abundance within areas of CG1 grassland in the south-east, which concurs with the findings of 2021-2022 survey.
15. **Heath dog violet (*Viola canina*):** A rare plant in Cumbria, occurring in 37 tetrads only and red-listed 'Vulnerable' in England, a small population of approximately 50 plants occurs in an area which has been subject to some gorse management at SD 18158 78304.
16. **Carlina thistle (*Carlina vulgaris*):** A widespread plant of CG1, *Briza-Brachypodium* grassland and MG5/CG6 grassland, concurring with 2021-2022 survey data.
17. **Few-flowered spike-rush (*Eleocharis quinqueflora*):** A small patch was located within SD17-type slack, concurring with 2021-2022 survey data.
18. **Harebell (*Campanula rotundifolia*):** A rare component of CG1 grassland in the south, no additional areas were found with this species, concurring with 2021-2022 survey data.
19. **Heath speedwell (*Veronica officinalis*):** Plants of this species were found scattered at RSPB Hodbarrow, within MG5/CG6 and MG1/CG4-type vegetation, concurring with 2021-2022 survey data.
20. **Lesser spearwort (*Ranunculus flammula*):** A small number of plants were observed around the pond in the central-western portions of the site, concurring with 2021-2022 survey data. The pool to the east with abundant pillwort outside the survey boundary appeared to support a far greater population of this species.
21. **Marsh pennywort (*Hydrocotyle vulgaris*):** This plant remained to be recorded around the central-western pond, concurring with 2021-2022 survey data.
22. **Matt-grass (*Nardus stricta*):** Found within the same area, immediately outside of the survey boundary alongside other calcifuges, matt-grass remained to exist as scattered adjacent to SD17-type vegetation, concurring with 2021-2022 survey data.
23. **Northern marsh-orchid (*Dactylorhiza cf. purpurella*):** Although not in flower, *Dactylorhiza* orchids remained to be present across areas of damper CG1 grassland (rarely) in the south-east of RSPB Hodbarrow, alongside MG5/CG6-type grassland. It is likely that many of these will be northern marsh-orchid.
24. **Tormentil (*Potentilla erecta*):** Tormentil was relocated in very low abundance within SD17-type vegetation, concurring with 2021-2022 survey data.
25. **Quaking-grass (*Briza media*):** A widespread and still-abundant plant found within CG1, MG1/CG4, MG5/CG6 and *Briza-Brachypodium* grassland. While this concurs with 2021-2022

survey data, the extent of calcareous grassland in the south-west in particular appears to have declined due to scrub encroachment.

26. **Wild strawberry (*Fragaria vesca*):** This plant was ubiquitous, although somewhat scattered through virtually all vegetation types on site, concurring with 2021-2022 survey data.

Incidental observations

5.2.54 While well outside of the defined survey boundary, disturbance which has opened up vegetation at the OSGR SD 18074 78320 has allowed for colonisation of early successional substrates by a number of important plant species, including several hundred plants of brookweed (*Samolus valerandi*) and small-fruited yellow sedge (*Carex oederi*), both Species of Conservation Importance within north-west England. In addition, smaller populations of lesser spearwort and bristle club-rush (*Iseolepis setacea*), a Species of Conservation Importance within north-west England have also established.

5.2.55 Away from the defined survey area following the southern embankment and associated habitat of RSPB Hodbarrow lagoon, a large number of plant species of very high conservation priority have been identified which may be impacted by the proposed works. These have been summarised as follows:

- **Seaside centaury (*Centaurium littorale*):** This is species which requires bare, early successional substrates by the coast which is both Nationally Scarce, rare and declining in Cumbria known from 13 sites only (RSPB Hodbarrow being one). An exceptional population of hundreds of plants was located on the BOAT itself and within adjacent disturbed ground habitats within a c.60m radius of the grid references SD 17426 77952.
- **Variegated horsetail (*Equisetum variegatum*):** This is a species of calcareous mires and dune slacks, which is both Nationally Scarce and rare and declining in Cumbria, known from 21 sites only. Scattered individuals were found within a c.40m radius of the grid reference SD 17426 77952.
- **Heath dog violet (*Viola canina*):** This is a rare plant in Cumbria known from 37 sites only, and is red-list 'Vulnerable' in England. Over 100 plants were located at and within a c.40m radius of the grid reference SD 17469 77963.
- **Bloody crane's-bill (*Geranium sanguineum*):** A Species of Conservation Importance within north-west England, a singular plant was located at the OSGR SD 17746 77968.

5.2.56 In addition to important plant species which exist on and immediately adjacent to the BOAT, a combination of sand dune vegetation (priority, Annex I and irreplaceable habitat) with calcareous grassland (priority and Annex I) were identified as scattered along the BOAT. Any loss of vegetated areas along the BOAT would be likely to carry substantial impacts to a range of globally, nationally and regionally important flora and habitats, although survey of this area was not part of the scope of this assessment.

6.0 Interpretation and assessment

6.1 Overview

6.1.1 Although the survey site remains to be host to a range of globally to locally important habitats and flora, there are differences between 2021-2022 data and data obtained during 2025 with the overall trend being one of decline and loss. With regards to habitats, expansion of scrub communities has resulted in the total loss of MG10b grassland (g3c Other neutral grassland), while significant declines in S10a (f2f Other wetland), MG1e (g3a Lowland meadow), MG1a (g3c Other neutral grassland) and MG1/CG4 (g2a Lowland calcareous grassland) have been observed.

6.1.2 In addition to overall decline in extent, areas of CG1 grassland in the south-west were noted at the time to have been subject to incredibly heavy disturbance by vehicular activity, which appears to have deteriorated condition considerably. Furthermore, vegetation management of MG1a and MG1/CG4, including vegetation cutting with clippings all dropped has allowed the development of a dense thatch which appears to have reduced species richness overall since 2021-2022.

6.1.3 Further to the decline in open habitat area, including the area of habitats of global conservation priority, the status of many important plant species appears to have undergone some change. A summary of important plant species located during 2025 is given within **Table 6.1** below. Where changes have been observed which are perceived by the surveyor to be negative, these are indicated by a red infill. Where changes in population status have been observed which are perceived as positive, these are indicated by green, while no obvious explainable change is indicated by an amber infill.

Table 6.1: A summary of important plants and the perceived trends (observation-based) since 2021-2022

Species	Observed change in population status (abundance and/or distribution)	Comments
Irish dandelion		While additional plants were located, this is likely attributable to survey timing.
Pillwort		A large increase in abundance and distribution appears to have taken place over acidophilous pools in the central-western parts of the site since 2021-2022.
Small-fruited yellow sedge		No obvious change within the survey area.
Slender spike-rush		No obvious change within the survey area.
Thread-leaved water-crowfoot		No obvious change within the survey area.
Common cudweed		Although plants appear to be poor in vigour, this is likely explainable by Spring drought.
Dyer's greenweed		Plants appear to have become somewhat buried in dense thatch due to an absence of grazing management.

Moonwort		No plants found. There is considerable disturbance and deterioration of CG1 grassland where this was previously found and the population in this area may be lost.
Yellow horned-poppy		No plants were able to be found despite extensive searches, while significant disturbance and deterioration of habitat quality in this area was observed.
Wild marjoram		Patches were relocated, and it appears on area by the road had extended its range, covering a stretch of c.4m.
Creeping willow		The distribution and abundance of this plant appears the same as 2021-2022.
Fennel pondweed		The distribution and abundance of this plant appears the same as 2021-2022.
Spiked water milfoil		The distribution and abundance of this plant appears the same as 2021-2022.
Heath dog violet		N/A not located in 2021-2022
Dandelion <i>T. naevosiforme</i>		Not located, likely due to small population size of one individual.
Sand cat's-tail		The distribution and abundance of this plant appears the same as 2021-2022.
Carline thistle		The distribution and abundance of this plant appears the same as 2021-2022.
Eyebright		No seedlings/plants were able to be located during 2025, though this may be related to survey timing
Few-flowered spike rush		The distribution and abundance of this plant appears the same as 2021-2022.
Blue fleabane		The distribution and abundance of this plant



		appears the same as 2021-2022.
Flea sedge		No plants were located, likely down to low population within MG5/CG6.
Harebell		The distribution and abundance of this plant appears the same as 2021-2022.
Fern-grass		The distribution and abundance of this plant appears the same as 2021-2022.
Lesser spearwort		The distribution and abundance of this plant appears the same as 2021-2022.
Marsh pennywort		The distribution and abundance of this plant appears the same as 2021-2022.
Matt-grass		The distribution and abundance of this plant appears the same as 2021-2022.
Northern marsh orchid		The distribution and abundance of this plant appears the same as 2021-2022.
Tormentil		The distribution and abundance of this plant appears the same as 2021-2022.
Quaking-grass		The distribution and abundance of this plant appears virtually the same as 2021-2022.
Wild strawberry		The distribution and abundance of this plant appears the same as 2021-2022.

6.1.4 Despite extensive searches, five important taxa were not able to be found during 2025 surveys which may be down to survey timing, ephemeral population/small population status and/or genuine decline following habitat loss and deterioration. These include the following taxa:

- Moonwort (*Botrychium lunaria*);
- Yellow-horned poppy (*Glaucium flavum*);
- a Dandelion (*Taraxacum naevosiforme*);
- Eyebright (*Euphrasia* sp.); and
- Flea sedge (*Carex pulicaris*).

6.1.5 A range of incidental observations were made which were considered relevant in the context of the proposed development. Most notable of these includes the range of important flora and habitats contained on and in close proximity to the BOAT following the southern parameter of RSPB Hodbarrow lagoon. Nationally important populations of seaside centaury were located in this area, alongside regionally important populations of variegated horsetail and heath dog-violet, alongside a locally important population of bloody crane's-bill. In addition, much of the vegetated area along the boat conforms to the UKHab primary habitat s3a Coastal sand dune (priority, Annex I and irreplaceable habitat), and/or g2a Lowland calcareous grassland (priority and Annex I habitat). As areas of coastal sand dune and calcareous grassland qualify as Annex I habitats, they must be considered for the purposes of EclA as internationally important. Any removal or deterioration of these vegetated areas would bring about significant and potentially long-term/permanent deleterious impacts to globally important habitats and flora.

6.2 Assessment of importance

6.2.1 An assessment of conservation importance of habitats and important species along a geographic scale has been broken down within **Table 6.2** below.

Table 6.2: Assessment of importance for floristic features along a geographic frame

Feature	Importance along a geographic scale	Rationale
Habitats		
MG5 / CG6 grassland MG1 / CG4 grassland CG1 grassland <i>Briza – Brachypodium</i> grassland SD7 and SD8 sand dune	International	Qualification as Annex I habitats allows for inclusion of these stands as internationally significant.
MG1e grassland M23b rush-pasture Pond Lake	Regional	Areas of MG1e and M23b, alongside ponds and lake (Eutrophic standing waters) are semi-natural priority habitats, although do not meet current guidelines for SSSI selection.
MG1a grassland MG7 ley W23 scrub W24 scrub W25 underscrub S10 S19 SD17	Local	None of these habitats qualify on their own for SSSI selection, or as priority/Annex I habitats.
Species		
Irish dandelion	International	This is an endemic species and represents one of the only known populations in England where it remains Nationally Rare.
Pillwort	National	This is a nationally scarce species which is also a priority species.
Small-fruited yellow sedge, slender spike-rush, heath dog violet, dyer's greenweed, fern-grass, thread-leaved water crowfoot, common cudweed	Regional	This selection of plants are rare within the region of north-west England and are subject to a range of conservation designations.
Wild marjoram, creeping willow, fennel pondweed, spiked water milfoil, blue fleabane, sand cat's-tail	County	These species are all rare in Cumbria although generally more widespread elsewhere within the region.
Carlisle thistle, few-flowered spike-rush, harebell, heath speedwell, lesser spearwort,	Local	Although subject to conservation designations, all of these plants remain



**marsh pennywort, northern
marsh orchid, matt-grass,
tormentil, quaking-grass, wild
strawberry**

widespread across the region
and/or within Cumbria.

7.0 Recommendations

7.1 A number of recommendations have been provided below:-

- Where present, all areas of irreplaceable coastal sand dune should be retained in full. Although not included within the survey area, coastal sand dune was noted on an incidental basis, alongside a myriad of nationally and regionally important plant species which exist on and immediately adjacent to the BOAT in the south of RSPB Hodbarrow. Any removal of these sparsely vegetated areas could carry long-lasting/permanent deleterious impacts to these irreplaceable and/or otherwise important habitats and/or nationally or regionally important species. Where a smooth surface is required on the BOAT, potholes are recommended to be infilled, without removing any vegetated areas.
- Where present, all Annex I habitats should be retained in full. All habitats included as Annex I are regarded as globally important with respect to their biological value and any deterioration of these may similarly carry long-lasting/permanent deleterious impacts to the persistence of these habitats at the site and the wider habitat network.
- Vehicular disturbance in the south-east has been identified as a driver of habitat quality decline. It is therefore recommended that the area is made inaccessible to vehicles wherever to prevent further deterioration. Where this is undertaken, however, it must be borne in mind that hindering potential management may hasten succession of valuable habitats to scrub.
- The key trend identified by 2025 survey compared with 2021-2022 survey data is one of decline. Notably, important habitat area has declined owing to invasion by scrub. While important habitats remain to persist over much of the site area, these will invariably be lost in the absence of grazing management.
- Where cutting management is employed on site which is less preferable (as this homogenises vegetation and reduces overall floristic and entomological diversity), clippings should be removed. It is apparent that some areas are subject to cutting – however the dropping of clippings appears to be driving declines in species richness in these areas.
- Any vegetation management via cutting should be completed within the window between **September-February** only. Any cutting outside this window may be likely to result in the loss of late-flowering important plants and could be deleterious to important invertebrates which habitats host across the site.
- While the geology of the site generally includes calcareous deposits including limestone, coastal in-blown sand and calcium-rich clays, wetland areas around the central-western pond are notably acidophilous, which is almost certainly indicative of long periods of continuity. In dune systems, it takes 300-400 years for calcium-rich surface deposits to leach to become hospitable to acidophilous vegetation. Any disturbance of these areas would not only remove exceptional habitat and floristic interest, but it may also be likely to cause long-term/permanent removal of acidophilous surface soils. Grazing and cutting in these areas should be promoted over any substantial ground disturbance.
- Any increase in visitor numbers is likely to add to existing site pressures and facilitate further losses and deterioration of important habitats. Visitor pressure in any circumstances should be managed to allow for the avoidance of important habitats – it is not currently clear how proposals will work to manage visitor numbers and disturbance to important habitats.

Appendix I: Site Photographs



Plate 1: Areas of MG5/CG6 grassland



Plate 2: Areas of cut MG1a grassland showing buildup of dense thatch from cut and drop management



Plate 3: MG1a grassland with dense thatch buildup from cut and drop management



Plate 4: MG1a grassland showing substantial invasion by scrub



Plate 5: Areas of MG1/CG4 grassland showing dense thatch buildup from cut and drop management

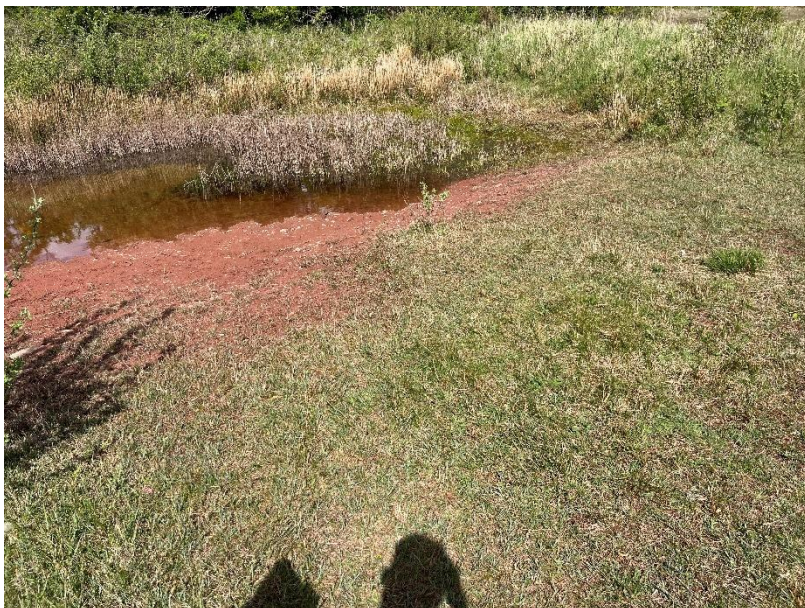


Plate 6: Central-western pond showing suppressed SD17-type vegetation



Plate 7: Extensive and highly abundant pillwort within central-western pond



Plate 8: Exceptional abundance of pillwort within adjacent pool off site to the east



Plate 9: Fennel pondweed with spiked water milfoil washed up on shore of Hodbarrow lagoon



Plate 10: Dyer's greenweed overtaken by rank grass and large layer of thatch



Plate 11: Small-fruited yellow sedge in area subject to disturbance at OSGR SD 18074 78320



Plate 12: Brookweed within area subject to disturbance at OSGR SD 18074 78320



Plate 13: W24-type scrub on site



Plate 14: Heath dog violet in area subject to gorse management



Plate 15: Highly disturbed and degraded CG1 grassland in the south-west with burnt out car in background



Plate 16: South-western lake with charophyte bed visible



Plate 17: New pond with marginal M23b visible



Plate 18: Dense bracken with understorey of English bluebell



Plate 19: Gorse scrub



Plate 20: S10 swamp in the north



Plate 21: Flowering Irish dandelion



Plate 22: MG1e grassland in north



Plate 23: Short CG1 grassland in the north, bound by scrub



Plate 24: *Briza* – *Brachypodium* grassland in the north



Plate 25: Common cudweed plants on gravel



Plate 26: Creeping willow within CG1 grassland in the south-west

Appendix II: NVC habitat maps



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RSPB Hodbarrow: NVC
habitats plan

Legend

- MG1a Arrhenatherum grassland
- MG7 Lolium ley
- W23 Ulex - Rubus scrub
- W24 Rubus - Holcus scrub
- W25 Pteridium - Rubus scrub
- S10 Equisetum swamp
- Lake
- Survey boundary

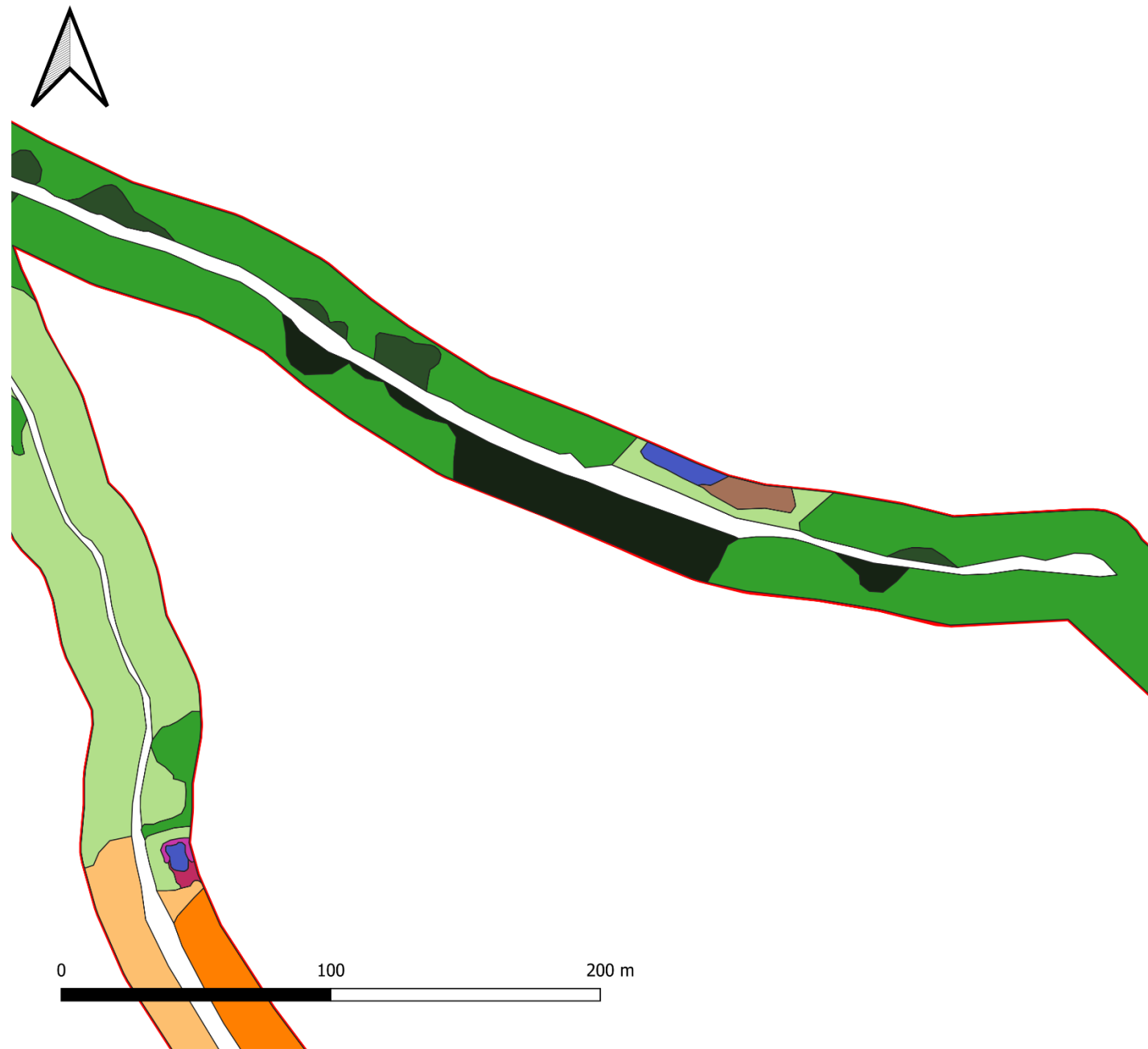


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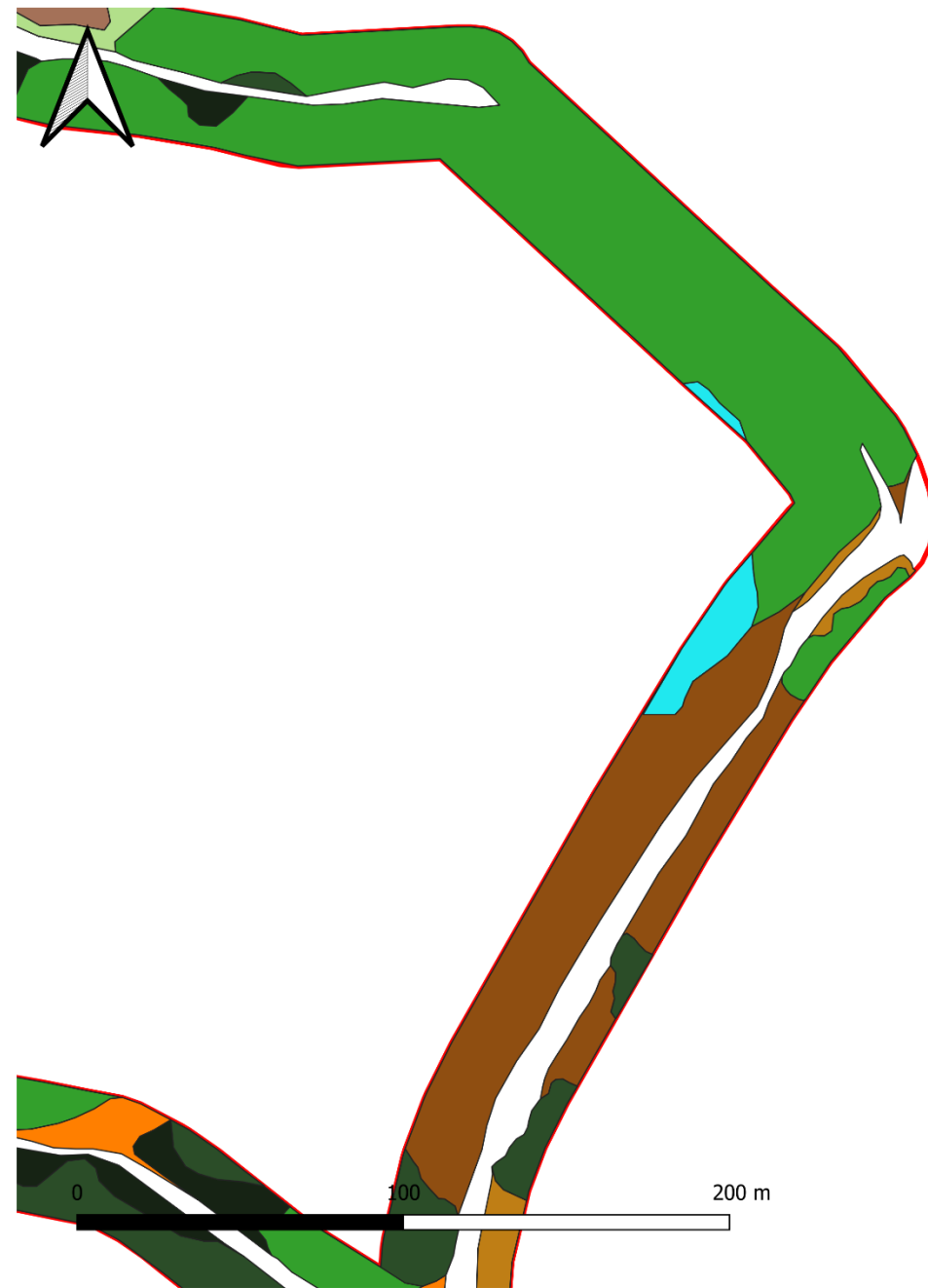
RSPB Hodbarrow: NVC habitats plan

Legend

- MG1a Arrhenatherum grassland
- MG5 CG6 transition
- MG1 CG4 transition
- W23 Ulex - Rubus scrub
- W24 Rubus - Holcus scrub
- W25 Pteridium - Rubus scrub
- S19 Eleocharis swamp
- M23b Juncus - Galium rush-pasture
- SD17 Potentilla - Carex dune slack
- Pond
- Survey boundary



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RSPB Hodbarrow: NVC habitats plan

Legend

- MG1a Arrhenatherum grassland
- MG1 CG4 transition
- CG1 Festuca - Carlina grassland
- Briza - Brachypodium grassland
- W23 Ulex - Rubus scrub
- W24 Rubus - Holcus scrub
- W25 Pteridium - Rubus scrub
- M23b Juncus - Galium rush-pasture
- Lake
- Survey boundary



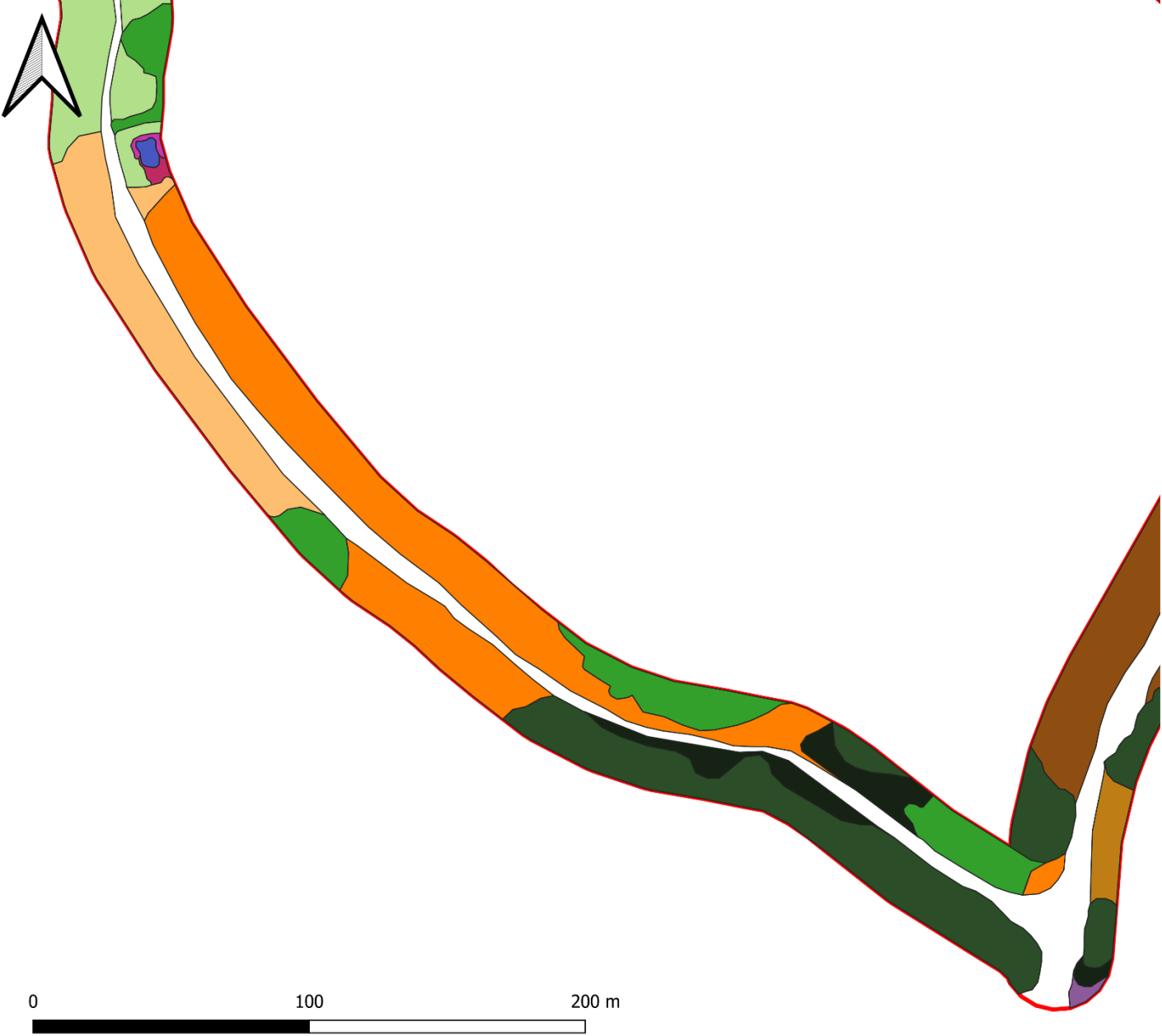
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RSPB Hodbarrow: NVC habitats plan

Legend

- MG1a Arrhenatherum grassland
- MG5 CG6 transition
- MG1 CG4 transition
- CG1 Festuca - Carlina grassland
- Briza - Brachypodium grassland
- W23 Ulex - Rubus scrub
- W24 Rubus - Holcus scrub
- W25 Pteridium - Rubus scrub
- S19 Eleocharis swamp
- SD7 SD8 sand dune
- SD17 Potentilla - Carex dune slack
- Pond
- Survey boundary



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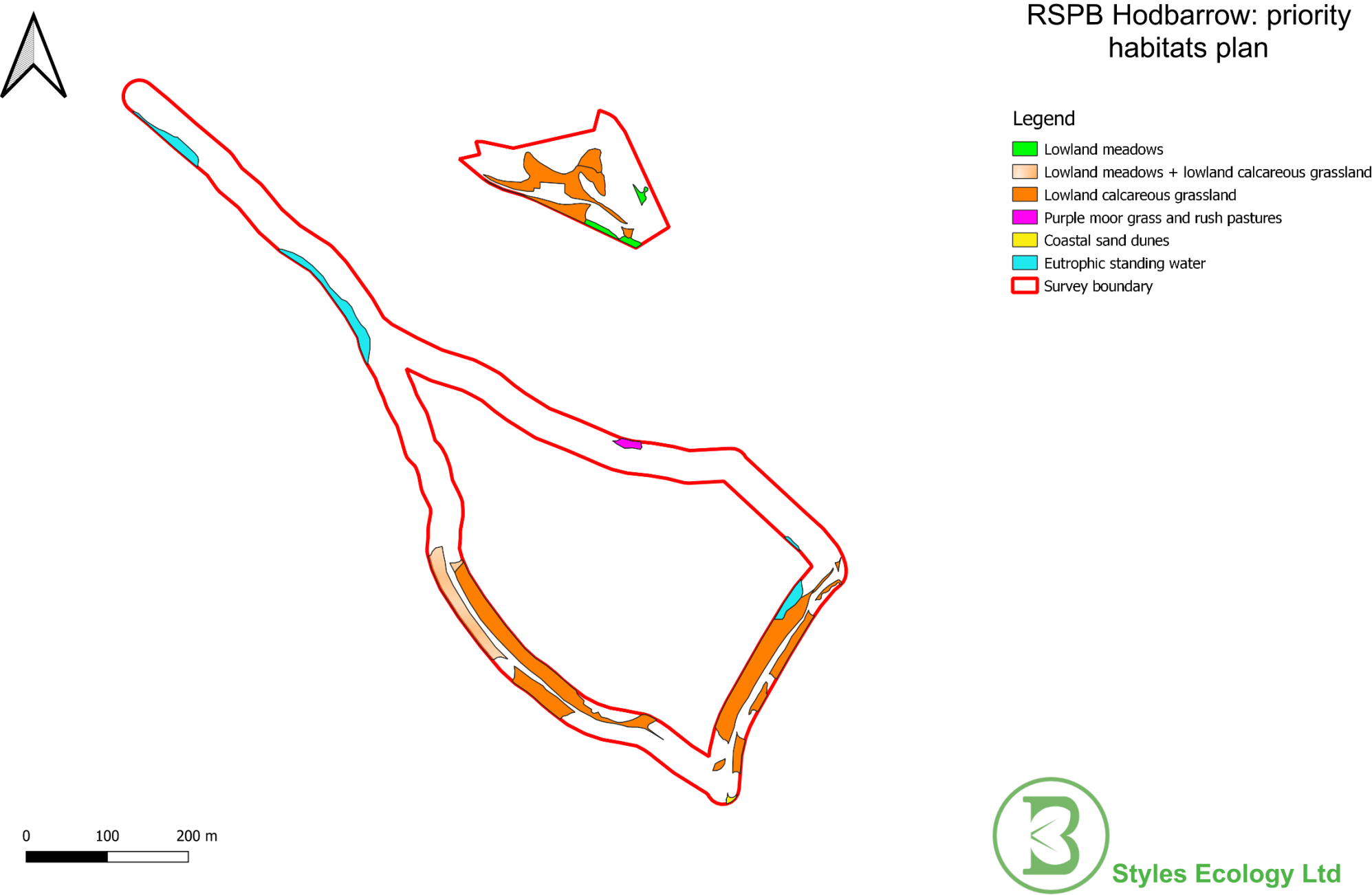
Appendix III: Updated important plant map



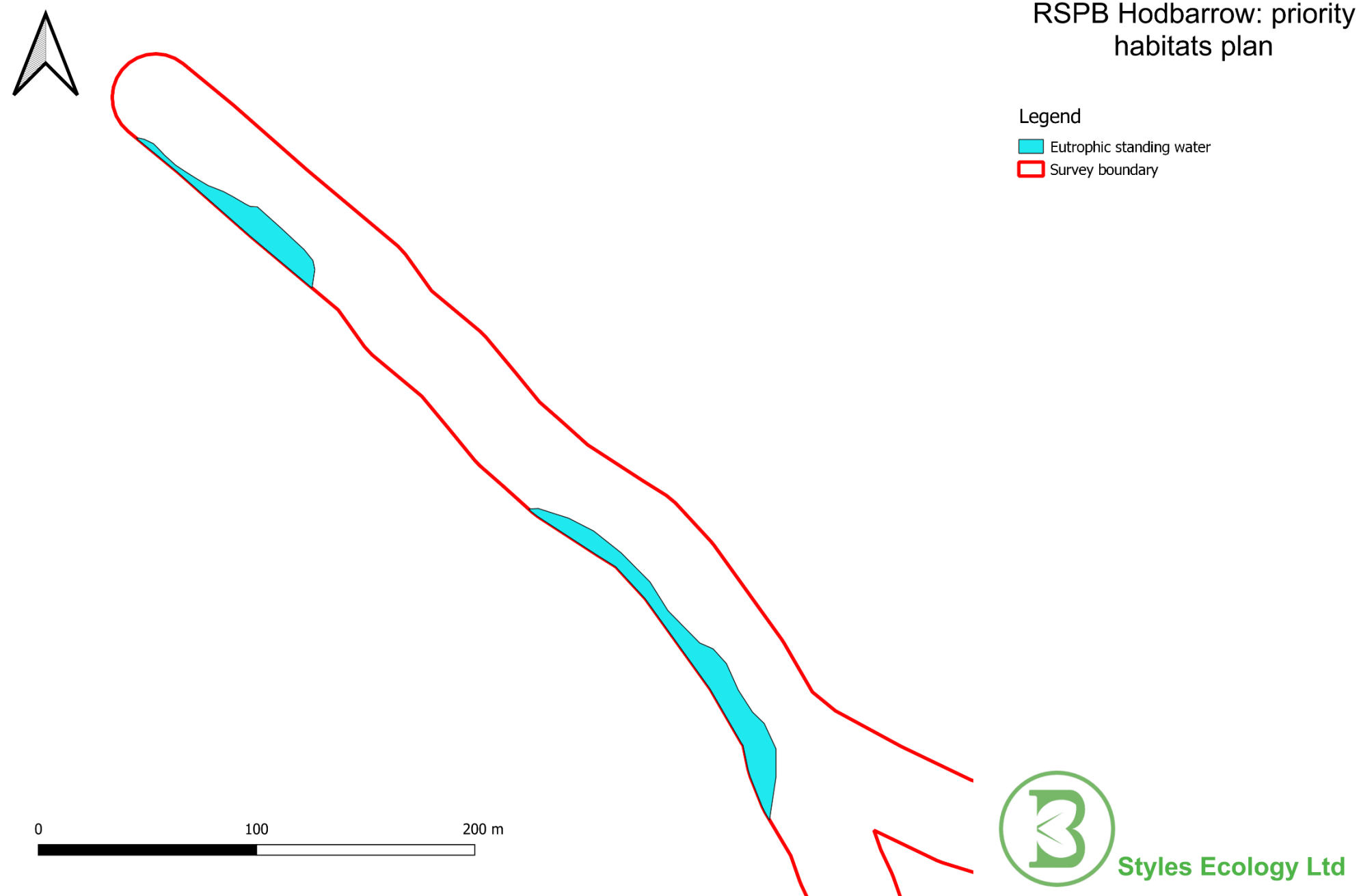
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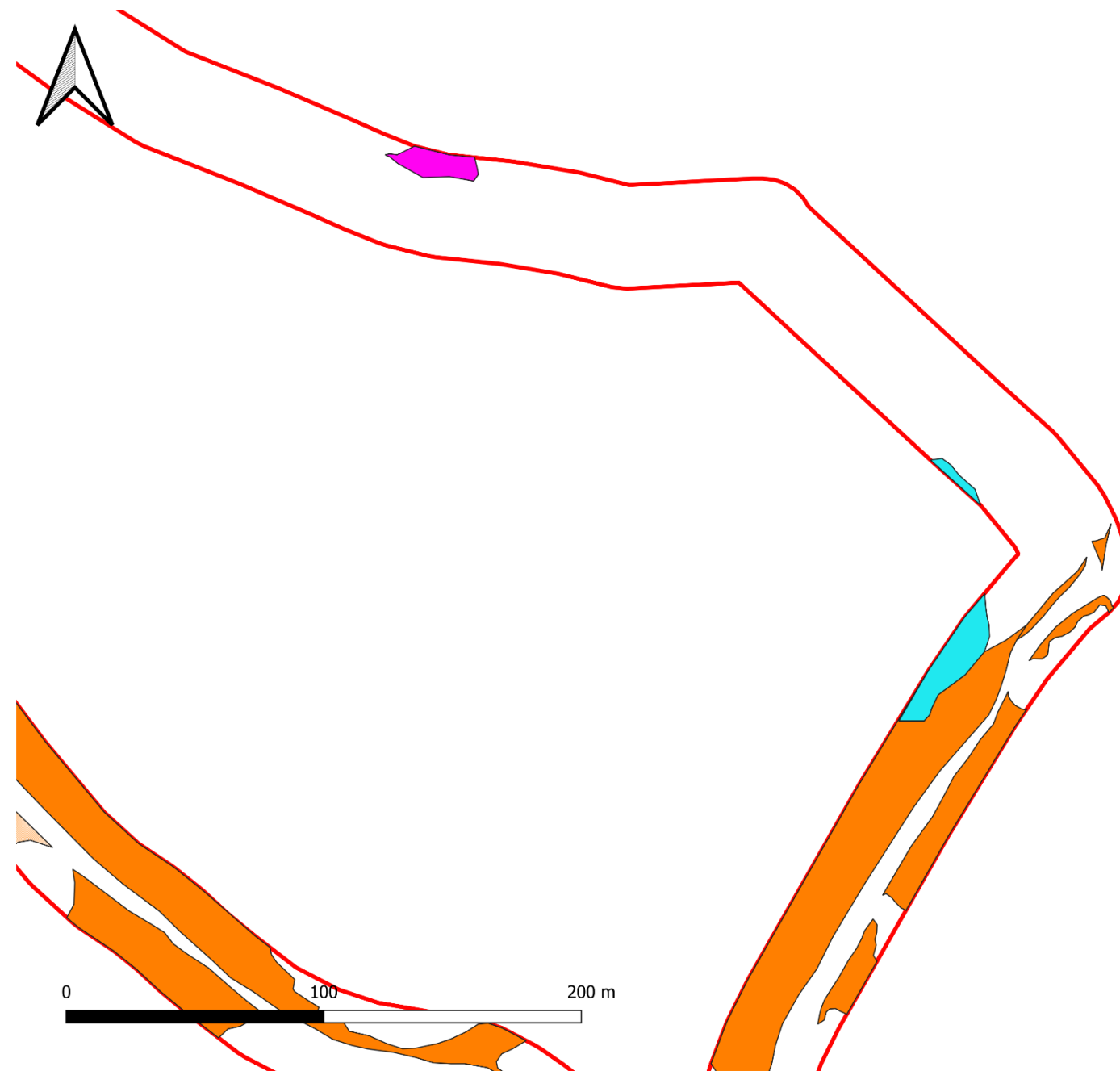
Appendix IV: Priority habitats plan



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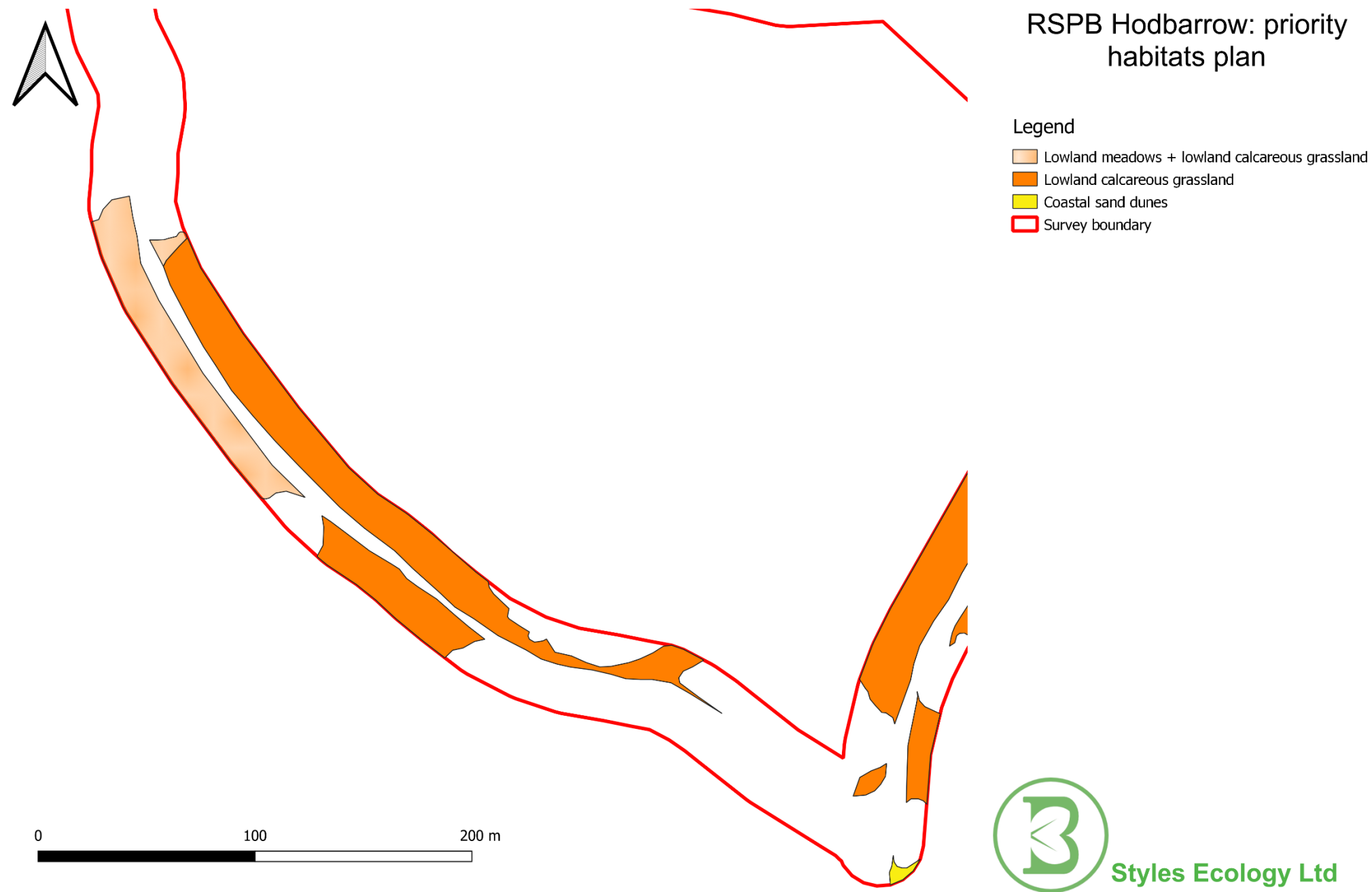
RSPB Hodbarrow: priority habitats plan

Legend

- Lowland meadows + lowland calcareous grassland
- Lowland calcareous grassland
- Purple moor grass and rush pastures
- Eutrophic standing water
- Survey boundary



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[Attachment A1 – RSPB Hodbarrow NVC Report \(2021\)](#)

Appended separately

[Attachment A2 – RSPB Hodbarrow NVC Report \(2022\)](#)

Appended separately

[Attachment A3 – Floristic tables](#)

Appended separately

APPENDIX F REFERENCES

- ¹ Greengage (2023) Phase II Survey Report. Ref. 551959ltJun23FV02_Phase2Surveys, dated May 2023.
- ² Greengage (2025) Ecological Impact Assessment (EclA). Ref. 553023cp09Apr25FV01_EclA
- ³ Styles Ecology Ltd (June 2025) Updated Botanical Survey Report Land at RSPB Hodbarrow, Millom, Cumbria
- ⁴ Yvette Martin, Karen Haysom, Mandy Cartwright and John Buckley (2021) Guidance for monitoring natterjack toad populations in the United Kingdom
- ⁵ Styles Ecology Ltd (July 2021) RSPB Hodbarrow NVC Report Rev 01 final
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- ⁸ Rodwell, J. S., 1991-2000. British Plant Communities. Cambridge University Press: Cambridg
- ⁹ Stroh et al, 2014 A Vascular Plant Red-list for England. Available at:
https://bsbi.org/wpcontent/uploads/dlm_uploads/England_Red_List_1.pdf
- ¹⁰ Hectad records include records within 10x10km squares. Also see www.bsbi.org/maps
- ¹¹ JNCC (2006) Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006: habitats and species of principal importance in England
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- ¹³ Blockeel, T.L., Bell, N.E., Hill, M.O., Hodgetts, N.G., Long, D.G., Pilkington, S.L. & Rothero, G.P., 2020. 'A new checklist of the bryophytes of Britain and Ireland.' Journal of Bryology.
- ¹⁴ Chartered Institute of Ecology and Environmental Management (CIEEM), 2022. Guidelines for Ecological Impact Assessment in the UK and Ireland. Available at: <https://cieem.net/wp-content/uploads/2018/08/EClAGuidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf>
- ¹⁵ Standards for Highways., 2020. Available at: <https://www.standardsforhighways.co.uk/search/af0517ba14d2-4a52-aa6d-1b21ba05b465>
- ¹⁶ Natural England (2020) Template for Method Statement to support application for licence under Regulation 55(2)(e) of The Conservation of Habitats and Species Regulations 2017 (as amended) in respect of great crested newts Triturus cristatus. Form WML-A14-2 (Version April 2020)
- ¹⁷ Cumbria Biodiversity Data Centre Occasional Publication (2021) A List Of The Birds Of Cumbria
- ¹⁸ Greengage (2023) Phase II Survey Report. Ref. 551959ltJun23FV02_Phase2Surveys, dated May 2023.