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Client: Cumberland Council

Project: Millom Iron Line

Report: Draft Landscape and Ecological Management Plan

QUALITY ASSURANCE

Issue/Revision:	Draft	Final
Date:	July 2025	[Date]
Comments:		
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File Reference:	551959lt17May24DV01_LEMP	

CONTENTS

1.0	EXECUTIVE SUMMARY	1
2.0	INTRODUCTION	3
2.1	PROPOSED DEVELOPMENT	3
2.2	AIMS AND OBJECTIVES	5
2.3	SITE LOCATION AND DESCRIPTION	6
2.4	DESIGNATIONS	6
3.0	ECOLOGICAL BACKGROUND	14
3.1	BASELINE CONDITIONS	14
3.2	BIODIVERSITY ACTION PLANS (BAP)	16
3.3	COMPETENCIES	21
3.4	CONSTRAINTS	21
4.0	CONSTRUCTION MITIGATION STRATEGIES	22
4.1	GENERAL BEST PRACTICE	22
4.2	DESIGNATED SITES	28
4.3	NOTABLE HABITATS AND PLANTS	29
4.4	BREEDING BIRDS	35
4.5	WINTERING BIRDS	38
4.6	AMPHIBIAN AND REPTILES	39
4.7	INVERTEBRATES	44
4.8	BATS	45
4.9	OTHER PROTECTED AND NOTABLE SPECIES	45
5.0	OPERATIONAL MITIGATION STRATEGIES	48
5.1	GENERAL HORTICULTURAL BEST PRACTICE	48
5.2	DESIGNATED SITES	48
5.3	NOTABLE HABITATS AND PLANTS	49
5.4	BREEDING BIRDS	53
5.5	WINTERING BIRDS	56
5.6	AMPHIBIAN AND REPTILES	57
5.7	INVERTEBRATES	57
5.8	BATS	58
5.9	OTHER PROTECTED AND NOTABLE SPECIES	58
6.0	HABITAT CREATION AND MANAGEMENT	59

6.1	BIODIVERSITY NET GAIN	59
6.2	HABITAT CREATION	59
6.3	HABITAT ENHANCEMENT	60
6.4	HABITAT MANAGEMENT	60
7.0	ECOLOGICAL ENHANCEMENTS	62
7.1	OVERVIEW	62
7.2	INVERTEBRATES	62
7.3	BAT FEATURES	63
7.4	PUBLIC ENGAGEMENT	63
8.0	MANAGEMENT AND MONITORING	65
8.1	MONITORING	65
8.2	ECOLOGICAL CONSTRAINTS TO MANAGEMENT	66
8.3	TIMESCALES	67
8.4	RESPONSIBILITY	67
8.5	MANAGEMENT PLAN	67
9.0	SUMMARY AND CONCLUSIONS	73
APPENDIX A LANDSCAPE PLANS		
APPENDIX B LEGISLATION AND POLICY		
APPENDIX C CONDITION ASSESSMENTS		
REFERENCES		

Tables

Table 2.1	Qualifying species at Morecambe Bay and Duddon Estuary	7
Table 2.2	Annex 2 Migratory species at Morecambe Bay and Duddon Estuary	8
Table 3.1	Receptors of note	14
Table 3.2	Qualifying Species and Habitats and Cumbria BAP Key Habitats and Species of Relevance to this Site	18
Table 4.1	Noise and vibration management	24
Table 4.2	Materials and waste management	
Table C.1	Mixed Scrub Condition Assessment	
Table C.2	Woodland Condition Assessment	
Table C.3	Medium & High Distinctiveness Grassland Condition Assessment	

Figures

Figure 4.1 200m Biodiversity Protection Zone from Annex I Fixed coastal dunes with herbaceous vegetation ("grey dunes") habitat	33
Figure 4.2 The BOAT along the sea wall. The darker areas show vegetated habitats of importance which	34
Figure 4.3 Distance between vegetated habitats along the BOAT at the closest points as measured on QGIS	34
Figure 4.4 Example of hibernacula from the GCN mitigation guidelines which is also considered suitable for reptiles and other amphibians .	41
Figure 4.5 Example of underground hibernacula	42
Figure 4.6 10m Biodiversity Protection Zones from Natterjack toad habitat	44
Figure 7.1 Example sightings board	

1.0 EXECUTIVE SUMMARY

Greengage Environmental Ltd (Greengage) was commissioned by Cumberland Council to produce a Draft Landscape and Ecological Management Plan (LEMP) to cover a period of 30 years for 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 land proposed for the Visitor Centre and car park, as shown in Appendix A, Figure A.1.

The planning application (planning reference: 4/25/2198/0F1) for the site 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.*” For the purpose of this report the 'planning application boundary' refers to the nature reserve and land proposed for the land proposed for the Visitor Centre and car park excluding the Hodbarrow lagoon, as shown in Appendix A Figure A.1

The Hodbarrow Nature Reserve hereafter referred to as 'the nature reserve' including Hodbarrow lagoon is part of the Morecambe Bay and Duddon Estuary Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar site and the Duddon Estuary Site of Special Scientific Interest (SSSI). The SPA, SAC, Ramsar and SSSI are designated for the presence of internationally important coastal habitats (Annex I habitats including fixed coastal dunes with herbaceous vegetation and coastal lagoons) which in turn support internationally and nationally important assemblages of breeding, over-wintering and migratory birds. Other species present include great crested newts *Triturus cristatus*, natterjack toads *Epidalea calamita*, rare and nationally scarce invertebrate species and at least one nationally scarce plant (unspecified on the citation). The Hodbarrow Nature reserve includes four habitat parcels (units) of the Duddon Estuary SSSI ranging from unfavourable to favourable condition, one unit concerns the former Iron Mill, another relates to the Hodbarrow Nature Reserve itself and the remaining two units includes Hodbarrow Lagoon.

The nature reserve extends to 105 hectares (ha) in total and comprises lagoons, grasslands and scrubland across a former iron mine which has been owned and managed by the Royal Society for the Protection of Birds (RSPB) since 1986. The site to which this Draft LEMP applies does not include the Hodbarrow lagoon but does however include an area to the north extending to approximately 2.1 ha comprising hardstanding dense scrub, lowland meadow and calcareous grassland, where the proposed Visitor Centre and car park will be situated. Overall, the site extent to which this Draft LEMP applies is 57.69 ha.

This Draft LEMP has been produced to enable an informed judgement and decision-making. It is intended that an updated, finalised LEMP will be prepared based on upon planning approval and could be secured by condition.

The location of the site, within the Cumberland District, and highly sensitive baseline value (as described in the suite of ecological reports produced to support the planning application), means that

there are numerous ecological receptors to consider as part of the construction and operational stages of the development. Furthermore, there are opportunities to provide biodiversity enhancements that will provide overall benefits for local wildlife.

The purpose of this Draft LEMP is to detail the bespoke mitigation strategies for ecological receptors as well as providing the specifications for created/restored habitats such as lowland meadow and calcareous grasslands. It also details ecological enhancement features such as creation of natterjack toad habitat and bat boxes, to be incorporated into the scheme. The Draft LEMP associated with the proposed development covers at least 30 years of management for the site and its implementation will positively contribute to enhancing the ecological and wildlife value of the site. The proposed development will adhere to bespoke mitigation strategies so there are no likely significant effects on the qualifying features of the SPA/SAC/Ramsar/SSSI. Additionally, the proposed development will intend to meet objectives of planning permission conditions once provided and complement local and regional Biodiversity Action Plans (BAPs).

In addition to habitat mitigation and creation proposals, this Draft LEMP also provides appropriate measures to be taken during the construction process to avoid impacts (direct and indirect) to the ecological receptors highlighted. Works described will be carried out at specific times throughout the construction stage, supervised by an Ecological Clerk of Works (ECoW). Enhancements are targeted at specific ecological receptors of note (natterjack toads, reptiles, invertebrates, *hedgehogs* *Erinaceus europaeus* and bats), known to be in the area, reflecting contemporary best practice and objectives of local conservation groups, BAPs and planning policy.

In accordance with the above aims, the purpose of this Draft LEMP is to provide the contractors with clear instructions for habitat and species protection, habitat creation and the incorporation of enhancement features that will optimise the biodiversity value. In addition, this Draft LEMP includes management actions for the successful establishment and long-term management and monitoring of protected and notable habitats and species.

It is recommended that this Draft LEMP should be read in conjunction with the Visitor Action Management Plan (VAMP)¹ produced by Appletons in April 2025, (Shadow) Habitats Regulations Assessment (sHRA)² and (Shadow) Habitats Regulations Assessment Appropriate Assessment (sAA)³ which has been produced by Greengage in April 2025. The above reports provides the context behind the Draft LEMP.

2.0 INTRODUCTION

Greengage Environmental Ltd (Greengage) was commissioned by Cumberland Council to produce a Draft Landscape and Ecological Management Plan (LEMP) to cover a period of 30 years for 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 land proposed for the Visitor Centre and car park, as shown in Appendix A, Figure A.1.

The Hodbarrow Nature Reserve (hereafter referred to as 'the nature reserve') extends to 105 hectares (ha) in total and comprises lagoons, grasslands and scrubland across a former iron mine which has been owned and managed by the Royal Society for the Protection of Birds (RSPB) since 1986. The site to which this Draft LEMP applies does not include the Hodbarrow lagoon but does however include an area to the north extending to approximately 2.1 ha comprising hardstanding dense scrub, lowland meadow and calcareous grassland, where the proposed Visitor Centre and car park will be situated. Overall, the site extent to which this Draft LEMP applies is 57.69 ha.

2.1 PROPOSED DEVELOPMENT

This Draft LEMP has been produced to inform a 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.*” For the purpose of this report the 'planning application boundary' refers to the nature reserve and land proposed for the land proposed for the Visitor Centre and car park excluding the Hodbarrow lagoon, as shown in Appendix A Figure A.1

The aspirations for the scheme are that visitor numbers will increase from 40,000 to between 80,000 and 90,000 annually. Whilst the scheme will increase the number of visitors, given the size of the site, the numbers of visitors will still be spread out and it unlikely that there will not be a sudden increase in large crowds gathering that could disturb the Qualifying features.

Consideration of the proposals has been separated into:

- Development of a Visitor Centre and car park, which will involve:
 - Clearance of 0.29 ha of dense scrub habitat and 0.02 ha (of a total 7.83 ha) lowland calcareous grassland habitat to facilitate the proposed development;
 - Temporary translocation of approximately 0.0025 ha of lowland calcareous grassland;
 - Retention and protection of the 0.0546 ha of existing lowland meadow;
 - Retention, protection and enhancement of the remaining 0.5778 ha of lowland calcareous grassland;

- Development of the land proposed for the Visitor Centre and car park which will comprise a two-story building, the ground floor will include a café, a shop, toilets, staff room and a total of 63 car parking spaces; and
- 0.0358 ha of existing hardstanding will be broken up and removed to create other neutral grassland which will be seeded with 'green hay' from the adjacent lowland calcareous grassland and lowland meadow habitats.
- Improvements across the nature reserve (with exception to the description in Section 2.4), which include:
 - restricting of vehicular access along the Byway Open to All Traffic (BOAT) to emergency and maintenance vehicles only which should decrease the opportunities from disturbance to wildlife and degradation to habitats from anti-social driving of vehicles along the BOAT;
 - Some desire lines to be formalised with sensitive substrate/materials and fencing in some areas to restrict disturbance from footfall;
 - Maintenance and repairs to Towsey Hole Windmill;
 - Installation of art and education features across the site to engage visitors in wildlife and promote behavioural change;
 - Reinforcement of bunding along sea wall to restrict unauthorised access; and
 - The building of three hides, one overlooking the 'hidden lagoon' one overlooking the old quarry lagoon and the third on the old sea wall.

Design Process

Greengage have liaised with the design team on a weekly basis and engaged with the Council, Natural England and RSPB throughout the design process to support an earlier planning application. Greengage have communicated the ecological constraints and opportunities to the design team which has been informed by the Phase II survey results⁴ and Phase II survey addendum⁵. The designs have been adapted throughout the process as and when any new relevant ecological constraints were identified. The proposals for the updated planning application have followed the same principals as an earlier planning application and RSPB and Natural England have been kept up to date. The development process has sought to follow the mitigation hierarchy throughout the design stage.

The proposed development design has been adapted throughout the process and have followed the mitigation hierarchy throughout the design stage:

- Avoidance - Seek options that avoid harm to ecological features (for example, by locating on an alternative site).
- Mitigation - Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation.

- Compensation - Where there are significant residual negative ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.
- Enhancement - Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

2.2 AIMS AND OBJECTIVES

This Draft LEMP aims to collate the bespoke mitigation strategies for ecological receptors, the site-wide ecological design concepts and the future monitoring and management regime at the site.

The location of the site, within the Cumberland District, and highly sensitive baseline value as described in the suite of ecological reports produced to support the planning application, means that there are numerous ecological receptors to consider as well as opportunities to provide biodiversity enhancements that will provide overall benefits for local wildlife.

The purpose of this Draft LEMP is to detail the bespoke mitigation strategies for ecological receptors as well as the specifications for enhanced habitats such as calcareous grasslands and created other neutral grassland and mixed scrub. It will also detail ecological enhancement features such as creation of natterjack toad habitat and bat boxes, to be incorporated into the scheme. The Draft LEMP associated with the proposed development will cover at least 30 years of management for the site and positively contribute to enhancing the ecological and wildlife value of the site. The proposed development will adhere to bespoke mitigation strategies so there are no likely significant effects on the qualifying features of the Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar (designated under the Convention on the Wetlands of International Importance especially as Waterfowl Habitat 1971 – the Ramsar Convention) and Site of Special Scientific Interest (SSSI). Additionally, the proposed development will intend to meet objectives of planning permission conditions once provided and complement local and regional Biodiversity Action Plans (BAPs).

In addition to habitat mitigation and creation proposals, this Draft LEMP also provides appropriate measures to be taken during the construction process to avoid impact (direct and indirect) to the ecological receptors highlighted. Works described will be carried out at specific times throughout the installation process, supervised by an Ecological Clerk of Works (ECoW). Enhancements are targeted at specific ecological receptors of note (natterjack toads *Epidalea calamita*, reptiles, invertebrates, hedgehogs *Erinaceus europaeus* and bats), known to be in the area, reflecting contemporary best practice and objectives of local conservation groups, BAPs and planning policy.

Where works/construction has the potential to impact wildlife/sensitive ecological receptors, suitable timings have been recommended and the supervision of a suitably qualified ecologist.

Enhancements are targeted at specific ecological receptors of note, known to be on site, reflecting contemporary best practice and objectives of local conservation groups, BAPs and planning policy.

In accordance with the above aims, the purpose of this specification is to provide the contractors with clear instructions for habitat and species protection, habitat creation and the incorporation of enhancement features that will optimise the biodiversity value. In addition, this specification includes a

management plan for the successful establishment and long-term management and monitoring of protected and notable habitats and species.

2.3 SITE LOCATION AND DESCRIPTION

The planning application boundary extends to 57.91 ha is located on the edge of the Duddon Estuary in south-west Cumbria and encompasses the Hodbarrow Nature Reserve (excluding Hodbarrow Lagoon) and land proposed for the development of a Visitor centre and car park, and is centred on National Grid Reference SD 17718 78724, OS Co-ordinates 317718, 478724.

The Hodbarrow Nature Reserve hereafter referred to as 'the nature reserve' including Hodbarrow lagoon extends to 105 ha in total. The nature reserve is part of a popular 3-mile circular walk with paths through dense willow and bramble scrub, calcareous grasslands, sand dunes and along the sea wall looking out over Hodbarrow lagoon to the north and the Irish sea to the south. The nature reserve is a former iron mine which opened in the early 1860's and closed in 1968. The majority of buildings associated with the mine have been removed however the nature reserve is scattered with remnant structures from the mine in the form of old stone walls, quarries, lighthouses, beacons and the partial remains of an old sea wall. In 1905 a new sea wall, comprising large tidal breakwater, was built to further protect the ironworks from the sea and still stands today. The new sea wall loops across to a caravan park 0.3km east of Haverigg. Following the mines' closure the area behind the new sea wall was flooded and formed a, now freshwater, lagoon which supports large populations of breeding and wintering wildfowl and waders. The Royal Society for the Protection of Birds (RSPB) purchased the site in 1986 and their management practices include scrub management and the creation of limestone slag islands within the lagoon which have successfully encouraged and sustained breeding populations of little terns *Sternula albifrons*, common terns *Sterna hirundo* and sandwich terns *Thalasseus sandvicensis*. The populations of breeding terns and wintering wildfowl contribute to the wider designation of Duddon Estuary and Morecambe Bay SPA and Duddon Estuary Ramsar Site.

The nature reserve mosaic of habitats on-site also support rich and diverse plant communities and assemblages of invertebrates. The nature reserve currently attracts over 40,000 visitors a year, 10,000 of which are not local.

Land immediately to the north of the nature reserve, proposed for development as a Visitor Centre and car park, extends to approximately 2.1 ha and comprises dense scrub, calcareous grassland and an access road which leads to a Household Waste Recycling Centre off-site to the north.

2.4 DESIGNATIONS

The nature reserve lies within the Morecambe Bay and Duddon Estuary SPA, Morecambe Bay SAC and Duddon Estuary Ramsar and SSSI. The land proposed for the Visitor Centre and car park lies just outside the boundary of these designations.

Morecombe Bay is a large estuary situated on the northwest English coast in Cumbria and Lancashire. The Bay includes the Duddon Estuary which is formed by the River Duddon and the smaller Kirkby Pool as they open into the Irish Sea at the south-west corner of the Lake District. Morecambe Bay

contains a mosaic of coastal habitats covering a total of 61538.23 hectares and supports breeding and overwintering bird assemblages of international importance as well as nationally important numbers of natterjack toads *Epidalea calamita* and a rich assemblage of wetland plants and invertebrates.

The SPA and SAC sites are European designated sites referred to as National Site Network (NSN) sites (formally Natura 2000) under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019⁶ which aims to:

- Maintain or, where appropriate, restore habitats and species listed in Annexes I and II of the Habitats Directive⁷ to a favourable conservation status (FCS); and,
- Contribute to ensuring, in their area of distribution, the survival and reproduction of wild birds and securing compliance with the overarching aims of the Wild Birds Directive⁸.

Ramsar sites do not form part of the NSN however the Duddon Estuary Ramsar overlaps the SACs and SPA designations and all Ramsar sites remain protected in the same way as SACs and SPAs. Legislation and Policy of relevance to receptors and sites described in this report are outlined in Appendix B. The reasons for each designation are described below.

It is recommended that this Draft LEMP should be read in conjunction with the Visitor Action Management Plan (VAMP)⁹ produced by Appletons in April 2025, (Shadow) Habitats Regulations Assessment (sHRA)¹⁰ and (Shadow) Habitats Regulations Assessment Appropriate Assessment (sAA)¹¹ which have been produced by Greengage in April 2025. The above reports provide the context behind the Draft LEMP.

Morecambe Bay and Duddon Estuary Special Protection Area¹²

Qualifying species

The Morecambe Bay and Duddon Estuary SPA qualifies under Article 4.1 of the Directive (2009/147/EC) as it is used regularly by 1% or more of the Great Britain (GB) populations of the following species listed in Annex I in any season:

Table 2.1 Qualifying species at Morecambe Bay and Duddon Estuary

Species	Season	% of population
Whooper swan <i>Cygnus Cygnus</i>	Non-breeding	1.0% of GB population
Little egret <i>Egretta garzetta</i>	Non-breeding	3.0% of GB population
European golden plover <i>Pluvialis apricaria</i>	Non-breeding	1.0% of GB population (1991)
Bar-tailed Godwit <i>Limosa lapponica</i>	Non-breeding	8.0% of GB population
Ruff <i>Calidris pugnax</i>	Non-breeding	1.0% of GB population
Mediterranean gull <i>Larus melancephalus</i>	Non-breeding	1.0% of GB population

Species	Season	% of population
Little tern <i>Sternula albifrons</i>	Breeding	2.2% of GB population
Sandwich tern <i>Sterna sandvicensis</i>	Breeding	5.7% of GB population (1992)
Common tern <i>Sterna hirundo</i>	Breeding	2.0% of GB population (1991)

The Morecambe Bay and Duddon Estuary SPA qualifies under Article 4.2 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season:

Table 2.2 Annex 2 Migratory species at Morecambe Bay and Duddon Estuary

Species	Season	% of population
Pink-footed goose <i>Anser brachyrhynchus</i>	Non-breeding	4.5% of biogeographic population
Common shelduck <i>Tadorna tadorna</i>	Non-breeding	2.0% of biogeographic population
Northern pintail <i>Anas acuta</i>	Non-breeding	4.2% of biogeographic population
Eurasian oystercatcher <i>Haematopus ostralegus</i>	Non-breeding	6.8% of biogeographic population
Grey plover <i>Pluvialis squatarola</i>	Non-breeding	1.0% of biogeographic population (1991)
Common ringed plover <i>Charadrius hiaticula</i>	Non-breeding	1.4% of biogeographic population
Eurasian curlew <i>Numenius arquata</i>	Non-breeding	1.5% of biogeographic population
Black-tailed godwit <i>Limosa limosa</i>	Non-breeding	4.0% of biogeographic population
Ruddy turnstone <i>Arenaria interpres</i>	Non-breeding	1.0% of biogeographic population
Red knot <i>Calidris canutus</i>	Non-breeding	7.3% of biogeographic population
Sanderling <i>Calidris alba</i>	Non-breeding	3.0% of biogeographic population (1991)
Dunlin <i>Calidris alpina alpina</i>	Non-breeding	2.0% of biogeographic population
Common redshank <i>Tringa totanus</i>	Non-breeding	4.6% of biogeographic population

Species	Season	% of population
Lesser black-backed gull <i>Larus fuscus</i>	Non-breeding	1.7% of biogeographic population
Lesser black-backed gull <i>Larus fuscus graellsii</i>	Breeding	2.7% of biogeographic population
European herring gull <i>Larus argentatus argenteus</i>	Breeding	1.0% of biogeographic population (1991)

Assemblage qualification

The Morecambe Bay and Duddon Estuary SPA qualifies under Article 4.2 of the Directive (2009/147/EC) as it is used regularly by over 20,000 seabirds in any season.

At time of the 1997 citation of Morecambe Bay SPA, the area supported 40,672 individual seabirds including: herring gulls *Larus argentatus argenteus*, lesser black-backed gulls *Larus fuscus graellsii*, Sandwich terns, common terns and little terns.

The site qualifies under Article 4.2 of the Directive (2009/147/EC) as it is used regularly by over 20,000 waterbirds in any season. During the period 2009/10 – 2013/14, the site held a five year peak mean value of 266,751 individual birds. The main components of the assemblage include all of the qualifying features listed above, as well as an additional 19 species present in numbers exceeding 1% of the GB total and / or exceeding 2,000 individuals: great white egret *Ardea alba*, Eurasian spoonbill *Platalea leucorodia*, light-bellied brent goose *Nearctic origin*, Eurasian wigeon *Mareca penelope*, Eurasian teal *Anas crecca*, green-winged teal *Anas carolinensis*, mallard *Anas platyrhynchos*, ring-necked duck *Aythya collaris*, common eider *Somateria mollissima*, common goldeneye *Bucephala clangula*, red-breasted merganser *Mergus serrator*, great cormorant *Phalacrocorax carbo*, northern lapwing *Vanellus vanellus*, little stint *Calidris minuta*, spotted redshank *Tringa erythropus*, common greenshank *Tringa nebularia*, black-headed gull *Chroicocephalus ridibundus*, common (mew) gull *Larus canus* and herring gull.

Morecambe Bay Special Area of Conservation (SAC)¹³

The site qualifies under Article 6 of the habitats directive (92/43/EEC). The primary reason for its international designation includes the following Annex I habitats and Annex II species:

- Annex I Habitats
 - Estuaries
 - Mudflats and sandflats not covered by seawater at low tide
 - Large shallow inlets and bays
 - Perennial vegetation of stony banks
 - Salicornia and other annuals colonizing mud and sand
 - Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
 - Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")

- "Fixed coastal dunes with herbaceous vegetation ("grey dunes")" * Priority feature
- Humid dune slacks
- Annex II Species
 - Great crested newt *Triturus cristatus*
- The Annex I habitats also present but are not a primary reason for selection of the site include:
- Sandbanks which are slightly covered by sea water all the time;
- Coastal lagoons * Priority feature;
- Reefs;
- Embryonic shifting dunes;
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) * Priority feature;
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*).

* Priority natural habitats or species for which UK SACs have been selected are considered to be particular priorities for conservation at a European scale and are subject to special provisions in the Habitats Regulations.

Duddon Estuary Ramsar¹⁴

The Duddon Estuary Ramsar is designated under the Convention on the Wetlands of International Importance especially as Waterfowl Habitat 1971 – the Ramsar Convention. Qualification for Ramsar criteria:

- Supports nationally important numbers of the rare natterjack toad, near the north- western edge of its range (an estimated 18-24% of the British population). Supports a rich assemblage of wetland plants and invertebrates- at least one nationally scarce plant 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*;
- Supports nationally important numbers of waterfowl during spring and autumn passage;
- Internationally important waterfowl assemblage (greater than 20,000 birds); and,
- Over winter the site regularly supports internationally important populations of Knot *Calidris canutus*, Pintail *Anas acuta*, Redshank *Tringa totanus*.

Duddon Estuary Site of Special Scientific Interest¹⁵

The citation includes information expanding on what has been described in relation to NSN designation. Extracts below have been selected from the SSSI citation to provide a broader picture.

"The Duddon Estuary is of international and national importance for wintering wildfowl and waders and provides a vital link in the chain of west coast estuaries used by migrating birds, as well as being of particular

importance as one of a series of estuaries on the north-west coast where the majority of the British population of natterjack toads occur."

"The mouth of the estuary forms an extensive flat sand plain, with the sands being very mobile. The mid and upper reaches of the estuary are flanked by saltmarsh and beyond high water are extensive sand dunes on both the north and south sides of the mouth of the estuary. These sand dune systems are particularly important for a diverse range of community types, supporting a number of rare and uncommon plants, as well as a variety of nationally rare and scarce invertebrate species. The past activities of the mining and iron-making industries have created a number of artificial habitats which have become areas of wildlife interest. These include the slag banks of Askham Pier and Borwick Rails, and the largest coastal lagoon in north-west England at Hodbarrow Lagoon."

Natterjack Toad

The natterjack toad is a nationally rare species in Britain and over 95% of the population is associated with 5 estuaries, the Alt, Ribble, Duddon, Esk and Solway. The Duddon Estuary itself is therefore one of the most important areas in Britain for this species and contains between 18–25% of the U.K. population, which in turn is equivalent to 50% of the Cumbrian natterjack toad population. The toads breed in ephemeral pools associated with a range of habitats including dune slacks, marshy grassland, bare sand and slag banks, and hibernate and forage in the surrounding semi-natural vegetation, artificial habitats and semi-improved pastures. Particular concentrations occur at Millom Ironworks, Sandscale Haws and the stretch of coast between Sandside and Dunnerholme, but the species is evenly distributed over the whole estuary.

Invertebrates:

*"As a result of the range of habitats found at North Walney and Sandscale, these two sites are also important for their invertebrate populations, many typical of coastal habitats with a number of rare and nationally scarce species including the digger wasp *Psen littoralis*, the solitary bee *Colletes cunicularis*, water beetles associated with brackish waters *Octhebius marinus* and *O. auriculatus*, and moths including the Shore Wainscot *Mythimna litoralis* and the Portland moth *Ochropleura praecox*."*

Duddon Estuary SSSI

The nature reserve (including Hodbarrow lagoon) has three habitat parcels (units) of the Duddon Estuary SSSI. One unit is the nature reserve itself (unit 026) and two of the units are related to the Hodbarrow Lagoon (unit 027 and 028).

Hodbarrow Lagoon (unit 026) was last assessed in 2023 and awarded favourable condition. Natural England assessment states the unit is dominated by semi-mature woodland growth. The state of the unit *"is mostly of benefit to the invertebrate assemblages, for which the unit is in good condition with heterogeneous habitat for both assemblages. The freshwater lakes in the unit have suffered from fly tipping with substantial types/scrap metal etc thrown in the water. There is a high level of recreation in the unit, but it doesn't appear to be substantially negatively impacting condition."*

Hodbarrow Lagoon (unit 027) was last assessed in 2024 and awarded favourable condition. Natural England assessment states the unit is dominated by the lagoon, with a Sandwich tern breeding colony on the island. The assessment also notes that this unit is critically important for many of the designated bird species. It highlights that recreational disturbance is limited due to the difficult access, however, is of concern from the neighbouring caravan park. It notes that non-breeding bird feature were favourable (with exception to pintail which is unfavourable) but these species have all declined and further investigation is recommended.

Hodbarrow Lagoon (unit 028) was last assessed in 2024 and awarded unfavourable-no change condition. The SSSI unit is dominated by a caravan park, with unsensitive management for nature where excessing fly tipping and burning of waste occurs on protruding land into the lake in the northwest. Combined with this, there is fly tipping into the lake itself. This unit is under extreme pressure from human activities due to large amounts of recreational pressure on the water and land.

Hodbarrow Nature Reserve

Whilst the above designations give an understanding of the importance of the site combined with the surrounding area, it is important to recognise the individual significance of Hodbarrow Nature Reserve.

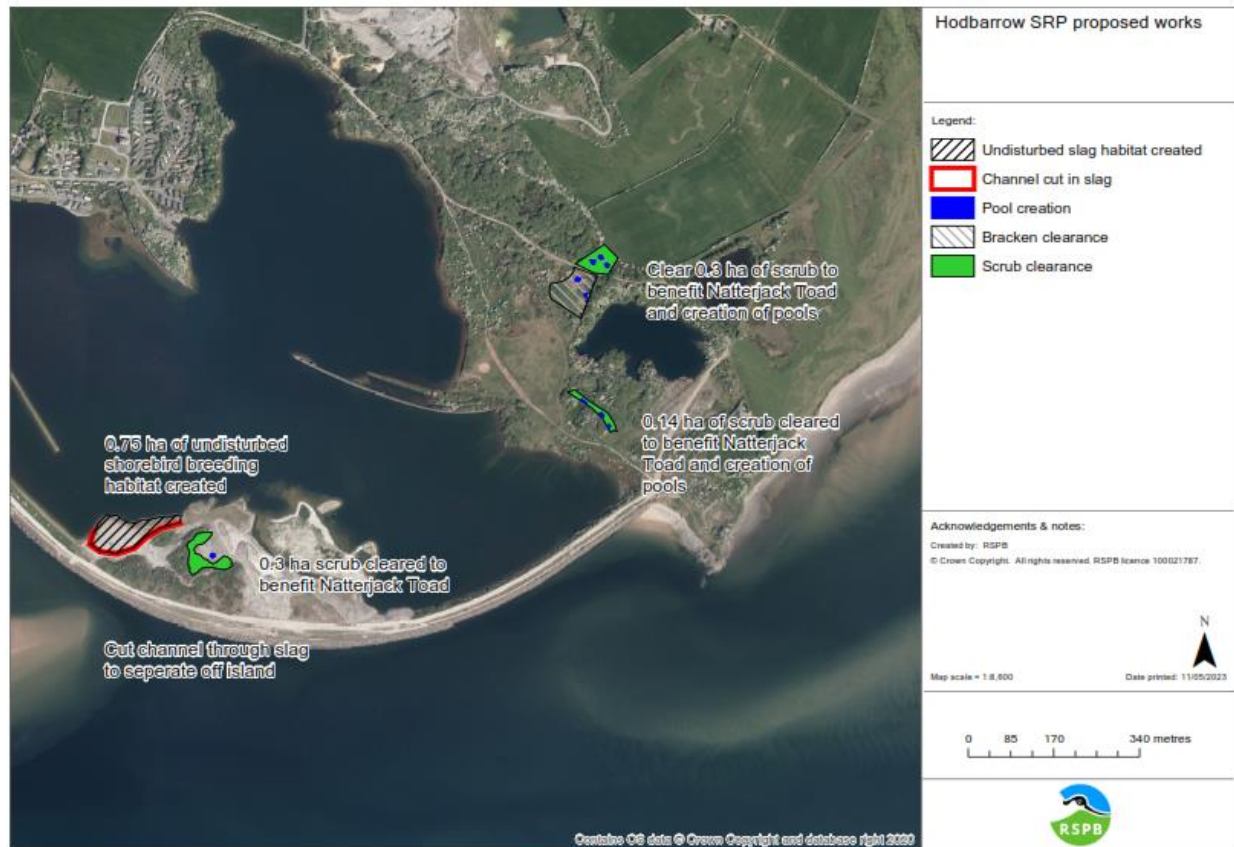
The site is managed by the RSPB and a principal aim is to encourage and sustain breeding, overwintering and migratory bird assemblages which make integral contributions towards the wider designations. A successful management intervention was the creation of an island made from slag moved from elsewhere on the reserve to the Hodbarrow lagoon which now supports breeding numbers of little terns, common terns and Sandwich terns, eider, black-headed gulls and occasionally Mediterranean gulls. The slag is considered a stronghold for terns in the UK, with at least four species recorded breeding; at its peak it hosted 15% of the UK population of Sandwich terns. The site also supports a number of wintering/passage waders which contribute towards the SSSI designation and include overwintering redshank, knot and passage black tailed godwit.

A review of the RSPB Hodbarrow Management Plan¹⁶ has also identified important plant species associated with the calcareous grassland on site which include dark red helleborine *Epipactis atrorubens*, bee orchid *Ophrys apifera*, pillwort *Pilularia globulifera*, hound's-tongue *Cynoglossum officinale*, common cudweed *Filago vulgaris*, marsh helleborine *Epipactis palustris* lesser thyme-leaved sandwort *Arenaria leptoclados*, sea spleenwort *Asplenium marinum*, houndstongue *Cynoglossum officinale*, early marsh-orchid *Dactylorhiza incarnata*, *Desmazeria marina*, ploughman's-spikenard *Inula conyza*, wild lettuce *Lactuca virosa*.

The scrub, ponds, grassland mosaic on the site also have records of supporting natterjack toads, otter, dark green fritillary *Speyeria aglaja*, grayling *Hipparchia semele*, wall *Lasiommata megera*, dingy skipper *Erynnis tages*, Small pearl-bordered fritillary *Boloria selene*, broad groove-head spider *Monocephalus castaneipes*, diving beetles *Ilybius subaeneus*, *Dytiscus circumflexus*, a whirligig beetle *Gyrinus caspius*, a water beetle *Laccobius atrocephalus*, a moss beetle *Ochthebius punctatus*, weevils *Trachyploeus aristatus*, *Sitona lineellus*, *Alophus triguttatus*, *Centorhynchus rapae*, *Anthonomus bituberculatus*, a robber fly *Philonicus albiceps*, common pillwoodlouse *Armadillidium vulgare*.

RSPB have undertaken some habitat creation work comprising scrub clearance and creation of waterbodies in the winter of 2023 on the nature reserve in order to improve the suitability for the site to support natterjack toads. Please see Plate 2.1 Species Recovery Trust map provided by RSPB.

Plate 2.1 Species Recovery Trust map



As part of these habitat creation works, RSPB have undertaken monitoring to identify whether natterjacks have moved back onto site. The monitoring by RSPB is ongoing to determine success of these features. To date (22nd July 2025) there has been no records of natterjack toads using these enhancements but for the purposes of this Draft LEMP it has been assumed that these features will be successful and therefore these enhancements have been considered within the report.

3.0 ECOLOGICAL BACKGROUND

3.1 BASELINE CONDITIONS

An updated Preliminary Ecological Appraisal (PEA) was carried out by Greengage on 25th March 2025¹⁷ and a National Vegetation Classification (NVC) survey was undertaken by Styles Ecology on 3rd and 4th May 2025 which both confirmed that habitats remain largely unchanged since previous surveys undertaken between May and August 2021¹⁸ and January 2022¹⁹. Phase II ecology surveys took place in 2021 and 2022 and data has been provided by RSPB for overwintering and breeding birds up until 2024 as well as the results from the natterjack toad surveys since the 2023 enhancements. Further detail on the ecological context is summarised below and can be found in the accompanying Phase II report²⁰ and Phase II report addendum²¹.

Following a review of development proposals, historical survey data and the Phase II survey results, the following ecological features have the potential to be affected by the proposals and these are therefore the focus of the Draft LEMP:

Table 3.1 Receptors of note

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 site 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 and updated in May 2025. 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; - The Byway Open to All Traffic BOAT supporting Annex 1 H2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) priority and semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210) 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,

Receptor	Details
	nationally, regionally and locally important plants including Irish dandelion <i>Taraxacum aesculosum</i> and pillwort <i>Pilularia globulifera</i>. The May 2025 survey also identified a reasonable population of heath dog violet <i>Viola canina</i> to the south-west of the nature reserve. The BOAT along the new sea wall supported a nationally significant population of seaside centaury <i>Centaureum littorale</i> alongside regionally significant populations of heath dog violet and variegated horsetail <i>Equisetum variegatum</i>.
Invasive species	There have been a number of invasive species identified on site, including cotoneaster <i>Cotoneaster</i> spp, variegated yellow archangel <i>Lamiastrum galeobdolon</i> subsp. <i>argentatum</i>, montbretia <i>Crocsmia 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 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). Data returned from the RSPB natterjack toad monitoring indicated the continued likely absence of natterjack toads on the site during 2024. However, in keeping with the previous amphibian survey results, natterjack toad calls were recorded 20m off-site to the east in April (approximately 8 males) and August 2024 (approximately 4-5 males) as shown in Appendix A. 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

Receptor	Details
	frog <i>Rana temporaria</i> . The waterbodies on site identified approximately 5000 tadpoles recorded on site, as shown in Appendix A, assumed to be common toad.
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>Ceruella 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 Dejean</i> , 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.

The following ecological receptors are also considered within this Draft LEMP.

- Otter *Lutra lutra*;
- Bats;
- Badger *Meles meles*; and
- Hedgehog *Erinaceus europaeus*.

3.2 BIODIVERSITY ACTION PLANS (BAP)

In accordance with the aims and objectives of this document a review of the relevant citations for designations, biodiversity action plans and local conservation targets was undertaken. This review, along with the results of the Phase II surveys, is then able to form the context for ecological enhancement at the site.

UK Biodiversity Action Plans (BAPs) have been developed which set priorities for nationally important habitats and species. To support the BAPs, Species/Habitat Statements (otherwise known as Species/Habitat Action Plans) were produced that provide an overview of the status of the species and

set out the broad policies that can be developed to conserve them. A list of priority species of conservation importance was also developed.

The UK BAP was succeeded in 2012 by the UK-Post 2012 Biodiversity Framework which informed the creation of the Biodiversity 2020 strategy; England's contribution towards the UK's commitments under the United Nations Convention of Biological Diversity. Subsequently, this has been replaced by the Kunming-Montreal Global Biodiversity Framework²² to 2030.

Despite this, the UK BAP priority species lists and conservation objectives still remain valid through integration with local BAPs (which remain valid), and in the form of the Habitats and Species of Principle Importance list (as required under section 41 of the Natural Environment and Rural Communities (NERC) Act).

Local Biodiversity Action Plans (LBAPs) ensure that national action plans (the UK BAP/Biodiversity 2020) are translated into effective action at the local level, and establish targets and actions for locally characteristic species and habitats.

The site is subject to the Cumbria BAP which define key habitats and taxa/species of regional and local conservation interest. Receptors of relevance to this strategy which have accordingly be considered within the scheme design are summarised in Table 3.2.

Table 3.2 Qualifying Species and Habitats and Cumbria BAP Key Habitats and Species of Relevance to this Site

Priority habitats/species	Objectives for this strategy
Terns	- Set out a strategy to mitigate construction and operational impacts on the tern colonies; - Increase awareness of the tern colonies through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site; - Set out monitoring plan for the tern populations; and - Set out remedial actions to consider if required.
Gulls	- Set out a strategy to mitigate construction and operational impacts on the gull colony; - Increase awareness of the gull colonies through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site; - Set out monitoring plan for the gull populations; and - Set out remedial actions to consider if required.
Overwintering birds	- Set out a strategy to mitigate construction and operational impacts on the overwintering bird populations; - Increase awareness of the overwintering bird populations through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site; and - Set out monitoring plan for the overwintering bird populations.
Annex I and priority habitats	- Set out a strategy to mitigate construction and operational impacts on Annex I and priority habitats; - Increase awareness of the habitats and plants through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site; - Through the reconfiguration of paths, visitors will be directed away from sensitive habitats; - Set out monitoring and management plan for the habitats and plants; - Through annual scrub clearance of the land proposed for the Visitor Centre and car park, the grassland will be at less risk of succeeding into scrub habitat;

Priority habitats/species	Objectives for this strategy
	- The scheme will ensure invasive species associated with the the land proposed for the Visitor Centre and car park are removed annually; and - Set out remedial actions to consider if required.
Natterjack toads	- Set out a precautionary strategy to mitigate construction and operational impacts on any natterjack toads; - Increase awareness of the natterjack toads through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site; and - Set out enhancements for this site to increase suitability for natterjacks onto site.
Pink Waxcap <i>Hygrocybe calyptraeformis</i> and Date-coloured Waxcap <i>Hygrocybe spadicea</i>	- Set out a strategy to mitigate construction and operational impacts on waxcap grassland; - Increase awareness of the waxcap through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site; - Through the reconfiguration of paths, visitors will be directed away from sensitive habitats.
Pillwort <i>Pilularia globulifera</i>	- Pilwort is known to be across the site; - No construction and operational impacts are predicated;
Dingy Skipper <i>Erynnis tages</i>	Set out management plan for the land proposed for the Visitor Centre and car park which seeks to control scrub encroachment and retain the open, grassland habitats to benefit dingy skipper.
Common Toad <i>Bufo bufo</i>	- Set out an amphibian and reptile strategy to mitigate construction and operational impacts on any common toads; - Increase awareness of common toads through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site; - Set out monitoring plan for amphibian populations; and - Set out enhancements such as incorporation of refugia and hibernacula.
Viviparous (common) lizard <i>Zootoca vivipara</i>	Set out an amphibian and reptile strategy to mitigate construction and operational impacts on any common toads;

Priority habitats/species	Objectives for this strategy
	• Increase awareness of common lizards through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site; • Set out monitoring plan for reptile populations; and • Set out enhancements such as incorporation of refugia and hibernacula.
Slow-worm <i>Anguis fragilis</i>	• Objectives the same as common lizard above.
Black-throated Diver <i>Gavia arctica</i>	• Objectives the same as the overwintering bird section above.
Barn Owl <i>Tyto alba</i>	• Set out a strategy to mitigate construction and operational impacts on the nesting barn owl; • Increase awareness of the barn owl through education opportunities at the land proposed for the Visitor Centre and car park and through signage across the site

3.3 COMPETENCIES

Laura Thomas has an undergraduate degree in Biology (BSc Hons) and a Master's degree in Evolutionary and Behavioural Ecology, holds a Natural England Bat Survey Level 1 Class Licence and is a Qualifying member of CIEEM. Laura has over seven years' experience in the commercial sector.

Faye Durkin, Head of Nature (North), has a first class BSc (Hons) in Environmental Science and MSc in Environmental Management and Sustainable Development. She is a full member of CIEEM and an Associate member of IEMA. She co-chairs the IEMA Biodiversity and Natural Capital Steering Group and is a member of the IEMA Policy and Practice Committee. She has over 16 years of ecological consultancy experience and is licenced to survey bats and GCN in England and Wales. She has held mitigation licences for bats and GCN and holds a CL31 water vole displacement licence.

Helen Bradshaw, who has reviewed this report, has a degree in Geography (BSc Hons) and 17 year's experience as an ecologist. She spent over a decade as a Local Authority Ecologist and holds class survey licences for both bats and GCN. She has held bat mitigation licences and worked on monitoring schemes for both bats and GCN. She has worked extensively on badger surveying and monitoring as well as delivering badger vaccination for eight years.

This report was written by Laura Thomas and reviewed verified by Faye Durkin and Helen Bradshaw who confirms in writing (see the QA sheet at the front of this report) that the report is in line with the following:

- Represents sound industry practice;
- Reports and recommends correctly, truthfully and objectively;
- Is appropriate given the local site conditions and scope of works proposed; and
- Avoids invalid, biased and exaggerated statements.

3.4 CONSTRAINTS

This report has been prepared to aid determination of planning permission to give confidence to the Statutory Consultee Natural England that the qualifying features of the designated sites will be considered in perpetuity through the scheme. However, as planning permission has yet to be granted, procurement has not been secured and therefore details relating to chosen contractors, machinery used, roles and responsibilities is not yet known. This Draft LEMP will be iterative and updated as and when details are formalised.

4.0 CONSTRUCTION MITIGATION STRATEGIES

As described within Section 3.4, procurement has not yet been secured and therefore details relating to contractors, machinery used, roles and responsibilities is not yet known. The following general best practice measures have been set out and any contractors on the scheme will follow. This will be reviewed and updated where necessary to provide bespoke advice for the machinery and method of works once known.

4.1 GENERAL BEST PRACTICE

Pre-commencement

Site Walkover

Ahead of any works starting on site an ecological site walkover will be undertaken by a Suitably Qualified Ecologist (SQE). The SQE will provide an update to this Draft LEMP on any ecological changes relevant to the approved planning permission within the three months ahead of arrival of the construction teams on site. They will make note of any mammal holes that may need monitoring, invasive species or other considerations.

Invasive Species Removal

The construction zone does not contain Japanese knotweed *Reynoutria japonica* but this species is located elsewhere on the nature reserve. An updated site walkover (prior to commencement of any works) by an SQE will mark up a plan of invasive species within the construction zones of the development footprint if found to be present and a plan for removal will be produced.

Invasive species previously recorded within the development footprint such as Montbretia sp., Cotoneaster sp. (Including wall Cotoneaster *Cotoneaster horizontalis*, small-leaved cotoneaster *Cotoneaster microphyllus*) variegated yellow archangel *Lamium galeobdolon* and sea buckthorn *Hippophae rhamnoides* will be removed by specialist contractors and disposed of following best practice guidance²³ ahead of any works on site to reduce the likelihood of spreading during the works.

Protective Fences, Exclusion Barriers and Warning Signs

Prior to commencement of development (inclusive of site clearance or de-vegetation works), temporary fencing will be erected around all protected and retained features, including waterbodies, dune habitats and grasslands (hereafter referred to as Biodiversity Protection Zones), to delineate no go areas for workers and machinery. Areas beyond which works are not to take place are to be clearly marked out.

Site Compound

The first stage of the works will be to establish the location of the site compound areas for the different phases of construction. The compounds will be located outside Biodiversity Protection Zones on the existing roads and will be clearly signposted and fenced off. In compliance with industry standard

practices for construction sites, the working area will be secure, and the general public will be separated from the works.

Zones for the stock piling of soil or storage of materials associated with the development will be clearly defined and located on existing areas of hardstanding. Loose materials will be raised off the ground such as on pallets. Fuel, oil and other chemicals will be stored in appropriate containers that are impervious to the material being stored also stored on areas of existing hardstanding with bunding. Leaking and empty containers will be removed from the site immediately.

The site compound and piling zones will be agreed with the SQE in advance of arriving on site.

Ecological Clerk of Works

A SQE will take the role of Ecological Clerk of Works (ECoW) and will be present to oversee works throughout key phases and activities deemed to have highest risk for ecological receptors.

The ECoW will be the appropriate person to determine which activities will require their presence. It is the contractor's responsibility to fully inform the ECoW with enough notice about the programme of works and what machinery and work will be involved so the ECoW can make this decision.

On days not deemed necessary for ECoW presence, an SQE will be on call and available to answer questions from contractors.

ECoW roles specific to each ecological receptor is detailed within their respective sections below.

Toolbox talk

Prior to commencement of construction on site, all personnel involved in the construction works will be briefed on ecological mitigation and relevant wildlife legislation. This will be delivered in the form of a toolbox talk will be provided to the site team by the ECoW. The toolbox talk will cover:

- A summary of survey findings and overview of the ecological receptors, their ecology, habitat requirements and conservation status;
- Maps of the sensitive areas and ecological receptor's locations and buffer zones that will be kept throughout the construction. Contractors will be informed that no equipment will be stored and no activities are to be undertaken within the buffer zones and habitats;
- The legal protection afforded to the ecological receptors;
- The role of the ECoW and the contractors responsibilities;
- A description of the mitigation measures that need to be implemented and followed at all times; and
- Species to look out for during construction and what to do in the event that an ecological receptor is found.

A record of this talk will be kept and all attendees will be asked to sign that they have understood the measures discussed. A subsequent toolbox talk will be provided to any new site members and at the start of a new work phase.

Precautionary Method of Works Statement

Ahead of each phase of activities on site a Precautionary Method of Works Statement (PMWS) to outline the legislative considerations for habitats and species on site and within the surrounding area and detail how the works will be carried out to ensure compliance. This will be signed by the site operatives and remain on site for the duration of the SI works around the proposed visitor centre.

Construction Ecological Management Plan (CEcMP)

Roles and Responsibilities

Story Contracting Ltd will likely be the contractor. As per their Construction Environment Management Plan²⁴. They will nominate an internal Environmental Manager. This person will be responsible for day-to-day implementation of this CEcMP and shall liaise directly with the ECoW. They will commission and arrange for ECoW input and site attendance in advance, as required.

Should management on the site change, the new personnel will be made aware of and action this CEcMP.

To protect habitats on site, the following good practice mitigation measures in line with Best Practicable Means (as set out in BS 5228:2009) will be followed throughout the construction phase. To ensure best practice is implemented during the construction phase and existing retained habitats on site and ecological receptors are protected, this will specifically include, but may not be limited to:

Noise and Vibration

identifies the control measures to be implemented which are detailed with the CEMP²⁴. The CEMP is a live document and includes but is not limited to the following control measures.

Table 4.1 outlines noise and vibration issues requiring attention and identifies the control measures to be implemented which are detailed with the CEMP²⁴. The CEMP is a live document and includes but is not limited to the following control measures.

Table 4.1 Noise and vibration management

Noise and Vibration	Control Measure
Site set-up and operating hours	Normal working hours will be 8.00am - 6.00pm Monday to Friday, and 9.00am - 1.00pm Saturday.
Construction traffic (delivery vehicles, site personnel etc.)	All goods, equipment, plant and materials will be transported by existing roads. Deliveries times will be planned to minimise potential disturbance to birds using the lagoon, the delivery location will be out of view of the lagoon.

Noise and Vibration	Control Measure
Construction plant and equipment	- Site compounds to be sited on existing areas of hardstanding and at least 30m away from sensitive areas, with fencing / barriers to prevent encroachment on the 30m BPZ. Any static plant is to be sited within the fenced off compound. - Site compounds will be chosen to be as far from the lagoon as reasonably possible. - Plant and equipment to be switched off when not in use. - Plant and equipment to be maintained and operated in accordance with operators instruction and to ensure that excessive noise levels are not generated - Regular integrity checks of noise mitigation measures fitted to items of plant - Acoustics screens or enclosures for stationary or semi-stationary plant (e.g. generators) will be considered by the contractors - Best practicable means will be included to control construction noise in the form of low noise emission plant, as specified in BS5228-1. - Timing of works to avoid sensitive periods in order to reduce impacts on wildlife.

Materials and Waste

Table 4.2 outlines the materials and waste issues requiring and identifies the control measures to be implemented which are detailed with the CEMP²⁴. The CEMP is a live document and includes but is not limited to the following control measures.

Table 4.2 Materials and waste management

Materials and waste issue	Control measure
Storage, handling and management of materials and waste	- Materials and waste to be stored in a commercial skip sited within the works compound before removal from site. - Potentially polluting substances will be stored on impermeable surfaces. - All temporary drainage and drainage arrangements intended to be used during the construction period will be fully detailed in the site surface water management plan will be confirmed during the design phase and will form a part of the CEMP. This will control drainage away from notable habitats, storm water sewers, watercourses and ditches, or adequate measures will be taken to protect against pollution; - Waste containers to be securely covered to ensure wastes cannot be blown or washed away.

Materials and waste issue	Control measure
	- Any oils, fuels and liquids used will be appropriately labelled and securely stored within the site compound (storage to include bunding and tamper proof and lockable valves, as appropriate). - All hazardous substances on site will be controlled in accordance with Control of Substances Hazardous to Health (COSHH) Regulations. The storage compound will be fenced off and locked when not in use to prevent theft and vandalism. - Refuelling of plant and machinery will take place with appropriate spillage controls. Vehicles will not be left unattended during refuelling. - Fuel storage tanks will be locked when not in use to prevent unauthorised access and reduce the risk of vandalism. - Spill kits to be located near to the works areas and within storage compounds, with personnel being trained in their use. - Any wheel washing will be undertaken in a designated area. Water from wheel washing facilities and wash down areas will be recycled or fully contained and disposed of via a tanker. - Daily walkover will be undertaken to collect other material.
Waste disposal strategy	- Domestic waste shall be taken off-site and disposed of daily. - Site foul drainage will be removed from site, in accordance with relevant permissions obtained from the sewerage or statutory authority. - Leaking or empty oil drums will be removed from site immediately and disposed of via an appropriately licensed waste disposal contractor. - Recyclable waste shall be taken for disposal at the available recycling facilities; any metalwork for example will seek to be recycled through the local scrapyards or reused.

Air quality and dust emissions

and identifies the control measures to be implemented which are detailed with the CEMP²⁴. The CEMP is a live document and includes but is not limited to the following control measures.

Table 4.3 outlines the air quality, dust and emissions requiring attention and identifies the control measures to be implemented which are detailed with the CEMP²⁴. The CEMP is a live document and includes but is not limited to the following control measures.

Table 4.3 Air Quality, Dust and Emissions management

Air Quality, Dust and Emission Management	Control Measure
Site set-up and operation	Toolbox talk on dust and air quality management

Air Quality, Dust and Emission Management	Control Measure
Air quality and emissions	• Vehicles, plant and equipment on site to be well maintained and regularly serviced. • Fleet is largely Electric Vehicles (EV) or Hybrids. • Vehicles, plant and equipment to be switched off when not in use. • Where reasonably practicable, fixed items of construction plant will be electrically powered in preference to diesel or petrol driven.
Dust/debris	• Site roads will be periodically swept to prevent a build up of materials. In periods of dry weather, dampening down will be undertaken to prevent dust blow off. • Any dust generating materials transported to and from site to be securely covered. • Any dust generating materials stored on site to be located out of the wind, screened or covered. • Any dust generating activities such as cutting of blocks, bricks, roof tiles will be controlled via dust dampening techniques. Control measures will be detailed in task specific Risk Assessment Method Statement (RAMS) in addition to the CEMP.
Monitoring	• Regular visual checks for dust, debris and emissions arising will be undertaken across the site and log of results maintained.

Invasive Species

Good practice measures such as responsible sourcing of imported materials, regular washing of vehicles entering site and control of materials leaving site (following the waste management plan) will ensure that no invasive species are brought onto the site.

Several species listed on Schedule 9 species as per the Wildlife and Countryside Act 1981 (as amended) have been identified on site including Montbretia sp., Japanese knotweed, Cotoneaster sp. Including wall Cotoneaster, small-leaved cotoneaster, variegated yellow archangel and sea buckthorn. Whilst sea buckthorn is not an invasive species as per Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), it is considered to be an invasive species in the northwest of England. This was found across the site despite efforts from RSPB to eradicate. Additionally, the former reserves manager confirmed the presence of New Zealand pigmyweed *Crassula helmsii* in ponds within the site during 2018-2020.

In accordance with the CEMP²⁴, Story Contracting will arrange a for a survey of the full works area to identify any existing / potential non-native invasive species which will be mapped following the survey. A toolbox talk will be provided to the contractors with which species to look out for and protocols to follow.

Biosecurity protocols such as thorough wheel washes and invasive species Work Exclusion Zone (WEZ) enforced by protective barriers and signage (3m zones for all invasive species present on site except for Japanese Knotweed, which has 10m WEZ) to be followed to prevent non-native/invasive species from spreading.

Should the ECoW suspect that invasive species are present on site, then the area will be cordoned off and left undisturbed until a suitable biohazard waste contractor has been contacted and removed the invasive species and any soil that may have plant material within it.

Lighting

It is understood that construction works will be undertaken during daylight hours. Should any artificial lighting be required this will follow the Bat Conservation Trust (BCT) and Institute of Lighting Professionals (ILP) guidelines²⁵. The lighting will be installed so as to not cause unnecessary light spill onto surrounding habitats. This will be achieved through directional lighting and the use of hoods. There will be no uncontrolled lighting and the lighting will be switched off when not in use.

Additional Actions

All site operative staff will remain vigilant throughout the duration of the works and notify the ECoW if any natterjack toads, reptiles, bird nests, mammal holes, or other ecological constraints are found.

During the proposed works any deep trenches and holes will be covered at the end of each working day, or include a ramp e.g. scaffold board at suitably shallow gradient as a means of escape for any animals falling in.

Where possible, incomplete pipework will be temporarily / capped closed overnight to avoid animals entering. If this is not possible, before working on any pipework, the pipework will be inspected by the Environmental Manager for presence of any wildlife before works continue.

All trenches and pipework will be checked by the Environmental Manager prior to backfilling.

Site operatives will check under wheels of machinery/vehicles each morning for any animals before works commencing.

4.2 DESIGNATED SITES

Visitor Centre and car park

In accordance with the EcIA¹⁷ and the sHRA² and sAA³, the construction works associated with the land proposed for the Visitor Centre and car park are not anticipated given the distance from qualifying features.

Nature reserve

Receptors of greatest note described in the citation text and relevant to this site include:

- General wildfowl, seabird and wader assemblages (breeding and overwintering);

- 'Fixed coastal dunes with herbaceous vegetation (grey dunes)';
- Notable plants;
- Natterjack toad populations;
- Invertebrate populations;

These receptors considered in depth under the relevant headings below.

To mitigate construction impacts on notable plants and protected and priority habitats, the measures set out within the 4.1 will be followed. Further habitat-specific and species-specific protection measures are discussed in the following sections.

4.3 NOTABLE HABITATS AND PLANTS

Visitor Centre and car park

Construction impacts of the development include pollution events, trampling from footfall and machinery and spreading of invasive species. However, following the adoption of industry best practice such as the measures set out in Section 4.1. Biosecurity and dust deposition during the construction will be controlled to a level that would not result in a significant effect on adjacent habitats.

Temporary translocation of Annex I semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210)

There will be a new service water drainage pipe built between the coach parking to the Household Waste Recycling Centre which will require the temporary relocation of approximately 0.0025 ha (25m²) of Annex I calcareous grassland semi-natural dry grasslands and scrubland facies on calcareous substrates (H6210) to facilitate short-term works. The grassland turves will be removed and reinstated within 24 hours, with procedures in place for emergencies should reinstatement be delayed. The temporary translocation requires bespoke mitigation and compensation.

Site Assessment and Preparation

The ECoW and contractors will identify the exact translocation footprint, anticipated to be approximately 0.0025 ha (25m²). The ECoW will record species composition and rare or notable plant species and photograph the area and note microtopography and patch structure (e.g. bare ground, moss patches).

The 25m² will be marked out into 25 1m² turves, which will be labelled with a number and directional orientation (e.g North) to aid with reassembling accurately.

A designated translocation zone on hardstanding adjacent to the grassland will be identified, that should be shaded and flat. A clean breathable geotextile or hessian sheet will be laid on the ground to prevent soil contamination. This area will be protected from vehicle access and trampling.

Timing

The translocation will take place during the dormant season with the optimal timing being the early Autumn²⁶. The works will avoid wet weather or freezing temperatures to reduce likelihood of compaction and damage.

Translocation

Once the donor site has been prepared, the 1m² of turves and the underlying soil profile. Using turf cutters to extract the turves to a depth of at least 20cm²⁶, preserving root systems and topsoil microbial layers.

The turves must maintain orientation and sequence using labels and drawings where necessary. The turves will be kept intact and placed directly onto the prepared storage area, grassy side up.

If hot or dry, throughout the 24 hours the turves must be lightly misted with water and covered with damp hessian to prevent desiccation.

Re-instatement

Any spoil or compacted material must be removed and the substrate should be slightly roughened to improve root contact. Re-lay turves in their original position and orientation. Firm by foot to ensure contact without compressing soil and finally lightly water if visibly dry.

Emergency procedures

If for some reason the re-instatement gets delayed past 24 hours up to 72 hours continue to lightly mist daily (but avoid overwatering) and continue to protective covering with hessian.

If re-instatement gets delayed beyond 72 hours the lead ecologist will be contacted for further advice. Consider removing some of the surrounding scrub to ground level under the presence of ECoW (considering other ecological constraints such as nesting birds, reptiles, amphibians) and re-laying of turves on clean calcareous soil where the scrub had been to "hold" the habitat in-situ. The turves will be monitored daily for signs of turf stress (wilting, drying, discolouration).

Monitoring

The ECoW will undertake an initial inspection seven days post reinstatement followed by monthly inspections during the botanical season (April to September) and a full botanical survey will be conducted to assess recovery.

Remedial actions

The Environmental Champion will be responsible for spot-watering during drought.

Following the inspections and botanical survey, there may be recommendations for removal of invasive species (see Section 3.0) or hand removal of nuisance species. Additionally, plug planting may be required of notable plant species. Given the average low survival rate success of translocations, it is recommended that seeds are taken from the surrounding lowland calcareous grassland when available. All seeds of notable plants will be harvested after flowering and stored in a seed bank until required. A

suitable seed bank will be organised in advance of harvesting. Remedial actions can involve reseeded the turves in spring or autumn with the surrounding seed mix.

Creation of Other Neutral Grassland

Through the breaking up of some of the existing hardstanding currently a layby on the access road to the Household Waste Recycling Centre an additional 0.0358 ha can be used to create other neutral grassland and compensate for the loss of other neutral grassland.

Once broken up the hardstanding material will be removed from the site. The soil can be sown with the surrounding seed mix. Given the close proximity of the retained lowland meadow and calcareous grassland it is realistically achievable as the soils are suitable for grassland creation of a higher species diversity however other neutral grassland has been awarded as a precaution (less than 9 species per m²). With the appropriate management, it is likely that overtime the adjacent habitats, depending on soil pH, will expand into this new area.

Following the creation of the grassland this area will be monitored over a 30-year period. Realistic timeframes for target conditions are considered to be between five and ten years²⁶. The target condition of the habitat will be as described in the Biodiversity Net Gain Assessment (BNGA)²⁷ and conditions set out in Appendix C. The management will involve a late summer hay cut, with arisings removed following one week. Monitoring will recommend remedial actions to remove nuisance and invasive species and managed scrub to be less than 5% and bracken to be less than 20% and maintain bare ground is between 1% and 10%.

Nature reserve

Construction impacts of the development include pollution events, trampling from footfall and machinery and spreading of invasive species if not dealt with appropriately. However, following the adoption of industry best practice such as the measures provided in Section 4.1 dust deposition during the construction will be controlled to a level that would not result in a significant effect on adjacent habitats.

Translocations of Irish Dandelion

The majority of Irish dandelions are along the scrub margins to the south of the access drive to the land proposed for the Visitor Centre and car park. A service trench is required and will have to be built where these specimens currently stand. Options were explored of building the service trench to the north of the road however this falls outside of the ownership of the involved parties and as such was ruled out. However, the southern side of the access road location will ensure the Irish dandelion gets the same level and direction of sunlight as the existing locations and increase chances of success.

Doner site preparation

The scrub habitat immediately south of the Irish dandelions will be cleared and the soil prepared by the stripping of 40cm of any available top and subsoils from the 1.5m x 1.5m quadrates marked-out adjacent to the existing specimens

Timing

The scrub clearance will be cleared in September and October or March (with presence of ECoW).

The translocation will likely take place during the dormant season with the optimal timing being the early Autumn and winter but will avoid wet weather or freezing temperatures to reduce likelihood of compaction and damage.

Translocation

The NVC survey noted the locations of the Irish dandelion to 1m x 1m grid reference point. As the translocation is recommended to take place outside of the flowering season, the turves will include a 0.5m buffer around the grid references and 1.5 x 1.5m turves of the square should be taken as a precaution.

Should the translocation go ahead during the flowering season, due to the difficulty in identifying dandelions, all dandelion rosettes in the area will be treated as important and translocated.

Once the donor site has been prepared, the existing turf and soil to a depth of at least 40cm or deeper will be removed using a turf stripper. Taking turves of the existing area maintains the underlying soil profile and minimizes damage to individual plants and to the grassland community. The turves will be as thick as possible (at least 40cm deep) and placed on the desired area on the same day that they are removed to prevent deterioration of habitat in storage.

A new 10 figure grid reference should be taken to make note of their new location for on-going monitoring purposes.

Monitoring

The year following translocation, the grid reference point should be monitored in spring (April–May) and confirm whether or not the translocation was a success and make note if there is any potential spread. If unsuccessful then remedial action below will be actioned.

Remedial actions

There is one Irish dandelion specimen elsewhere on site (SD 18152 78614) that can be retained. The seeds from this specimen will be harvested (between April to May) and stored in a seed bank until required. A suitable seed bank will be organised in advance of harvesting. These seeds will be used to reseed the donor site should the translocation be unsuccessful.

Irreplaceable habitats

Adjacent to the BOAT and within the scattered vegetated habitats along the BOAT, there is Annex I habitat 'Fixed coastal dunes with herbaceous vegetation (grey dunes)' (see Appendix A) which is a qualifying habitat of the SAC and also meets the definition of priority and irreplaceable habitat Coastal sand dunes. This is also covered by the LBAP category Coastal Sand Dune (including dune grass, heath, scrub and strandline). Additionally, a large number of plant species of very high conservation priority have been identified within the sand dunes and located on the BOAT itself and within adjacent disturbed ground habitats.

There are no works proposed for the *Fixed coastal dunes with herbaceous vegetation* ("grey dunes") adjacent to the BOAT however the works within 200m of this habitat will take between approximately six to 10 weeks. During the works the adoption of industry best practice measures provided in Section 4.1 such as the installation of protective barriers off and dust control measures these habitats will prevent habitat degradation.

Figure 4.1 200m Biodiversity Protection Zone from Annex I Fixed coastal dunes with herbaceous vegetation ("grey dunes") habitat

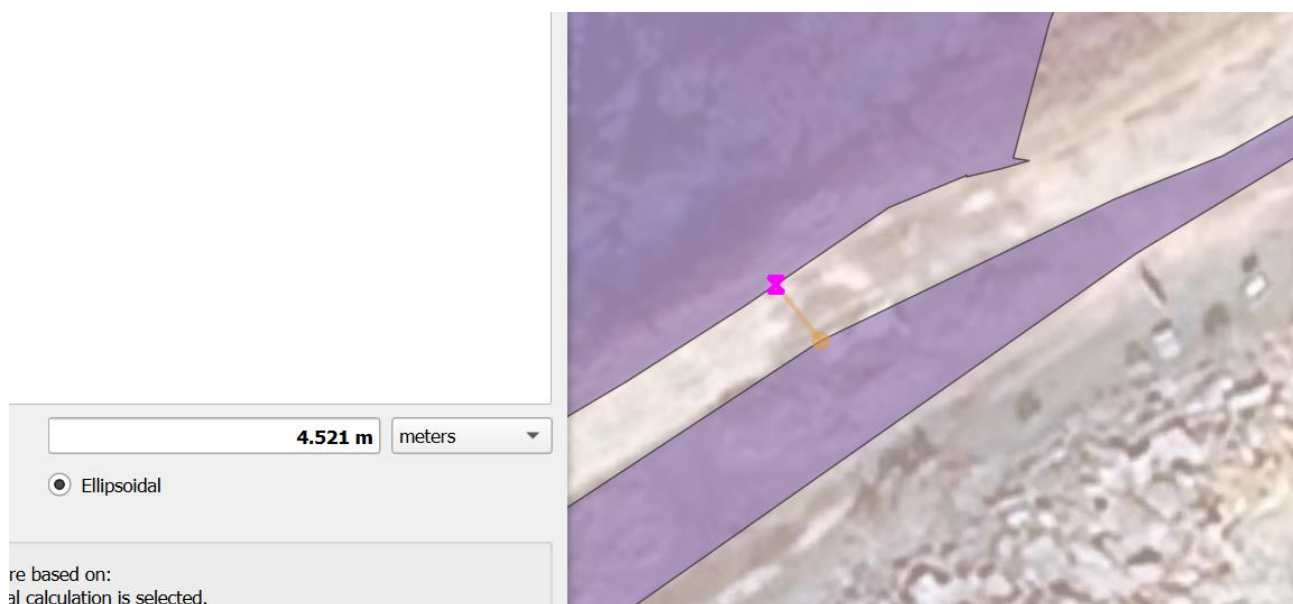


The scattered vegetation along the BOAT comprises a mixture of Annex I Fixed coastal dunes with herbaceous vegetation (grey dunes) and Annex I calcareous grassland semi-natural dry grasslands and scrubland facies on calcareous substrates. At least 3.9 m of the of the BOAT surface will be scarified to provide material for infilling potholes and restoring the surface facilitating access for emergency and maintenance vehicles. The generous width of the BOAT allows for this 3.9m to be made good without having to remove the surrounding vegetation. Additionally, in the long-term the habitats surrounding the 3.9m width of the BOAT will have an opportunity to expand.

Figure 4.2 The BOAT along the sea wall. The darker areas show vegetated habitats of importance which



Figure 4.3 Distance between vegetated habitats along the BOAT at the closest points as measured on QGIS



The works along the BOAT along the new sea wall adjacent to these habitats are anticipated to take approximately four weeks. During the works the adoption of industry best practice measures provided in Section 4.1 such as the installation of protective barriers and dust control measures these habitats will prevent habitat degradation.

During the works, the ECoW will carry out regular checks to ensure that biosecurity protocols are followed.

Monitoring

In the first botanical season following the works a habitat survey and condition assessment will be undertaken to identify any degradation or natural regeneration and advise on remedial actions.

Remedial actions

If required, any areas showing degradation should be sown with the surrounding seed mix.

4.4 BREEDING BIRDS

Visitor Centre and car park

No qualifying species are likely to be impacted during the construction phase of this development.

Small passerine species are likely to nest within the scrub and will require removal to facilitate the development of the Visitor Centre and car park. Habitat removal will take place outside of the nesting bird season, taken to run from March to August inclusive, or after an ECoW has confirmed the absence of nesting.

Any active bird nests recorded by the ECoW would be protected until they are no longer active. The ecologist will cordon off an appropriate area around the nest with barriers or another suitable method of demarcation, within which, no works can take place. The ECoW will monitor the nests and remove the cordon once the nest is no longer active to allow the works to resume.

Nature reserve

As described in the EcIA¹⁷, sHRA¹⁰ and sAA¹¹, changes in bird behaviour and flight abandonment can begin to occur at chronic noise levels of 55-65 decibels (dBA), with sudden irregular noise above 50dBA causing the most disturbance. The studies also showed that ambient construction noise levels should be restricted to below 70dBA as birds will habituate to regular noise below this level.

The exact machinery to be used during the works is yet to be determined however Storys Contracting Ltd have confirmed that the loudest piece of equipment for works associated with the BOAT along the sea wall is predicted to be a typical Bomag 120 sized vibrating roller which operates at 103.4dBA at source and works elsewhere on site could reach up to 115dBA. A review of the machinery that will be used, predicted decibel levels, and length of time for works nearest to the lagoon will be reviewed and the Draft LEMP will be updated accordingly. However, impacts on breeding birds can be avoided through seasonal timing of works.

Avoidance

The development of the hide overlooking Hodbarrow Lagoon and the maintenance of the BOAT along the new sea wall and refurbishment of the existing bird hide are immediately adjacent to the lagoon and have potential to disturb the qualifying breeding tern and gull populations. Schedule 1 bird species are also protected from disturbance and therefore the following mitigation strategies are provided. The scheme will avoid impacts through timing of works.

Works within each receptors buffer zones (see Plate 4.1) will avoid the breeding season (March to August, inclusive). In addition, the works will start furthest from the lagoon and work inwards to give opportunities for habituation to construction noise.

Buffer Zones

Ahead of any construction works taking place during the breeding season, a breeding bird survey by an ornithologist ECoW should be undertaken within 48 hours prior to commencement. The surveyor will reconfirm the buffer zones provided in Plate 4.1 below and also add any additional buffer zones required.

Tern Colony

Of the qualifying species, common tern, sandwich tern and little tern are known to have medium to high susceptibility to human disturbance within the breeding season²⁸ which can lead to colonies abandoning their nests and cause colonies to move and decrease breeding success. Recommended buffer distances for human disturbance during the breeding season is considered to range from 100-400m for tern species²⁹.

As a precaution, the largest buffer zone has been implemented for construction works and no works will take place within this buffer zone between March to September.

Gull Colony

There is limited research on the recommended buffer zones for breeding colonies of Herring gulls and lesser black-backed gull's perhaps due to the fact they are known to nest in heavily urban environments. As a precaution a buffer zone of 150m will be established. The closest works taking place to the gull colonies are those associated with the new hide overlooking the lagoon which are set approximately 111m southeast and separated from the gull island by dense scrub. Other works within 150m of the gull colonies include the narrowing of paths along the central grassland approximately 145m east. All other works fall outside the precautionary 150m buffer zone.

Schedule 1 Bird Species

There are records of schedule 1 bird species nesting on the nature reserve including barn owl and spoonbill. In accordance with buffer zone guidance breeding barn owl will have a buffer zone of approximately 100m. No research on recommended buffer zones for spoonbill could be found so a reasonable precautionary buffer zone is considered to be 500m.

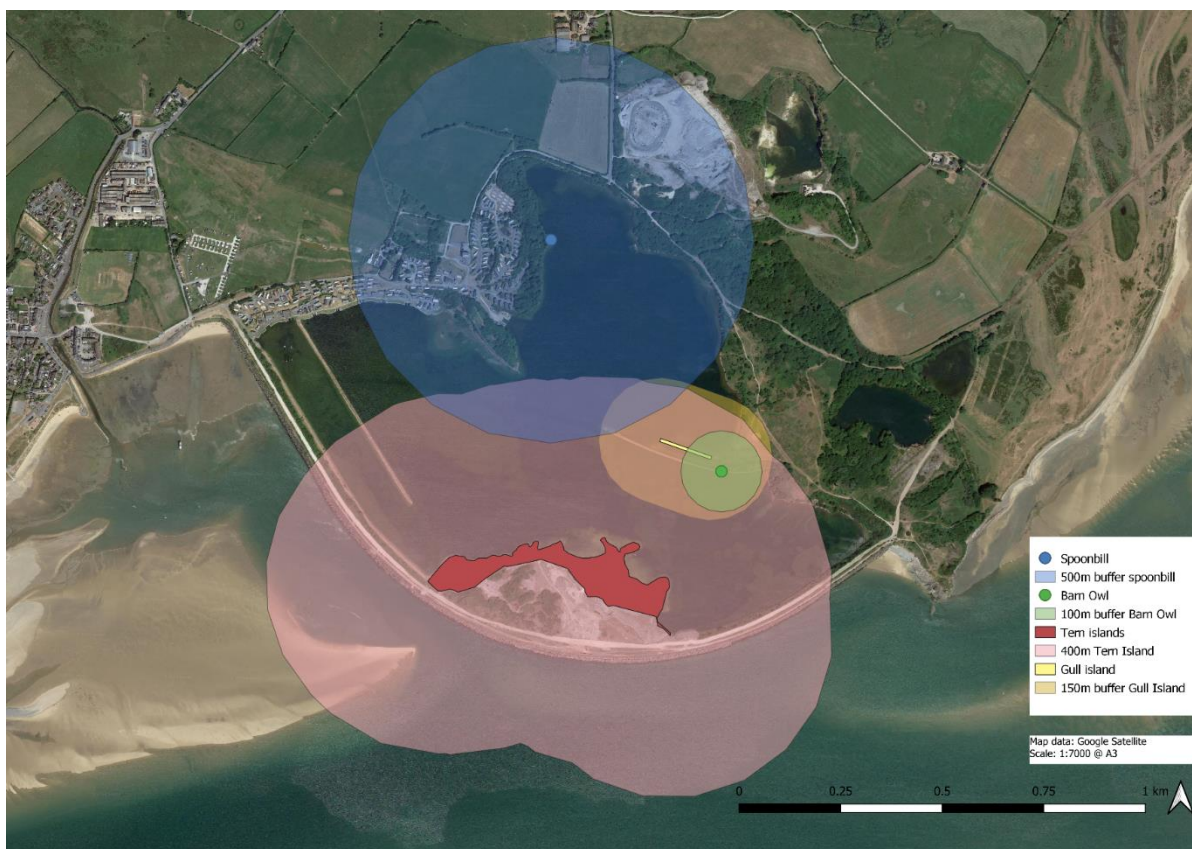
The regular spoonbill nest location (location provided by RSPB in March 2024) is approximately 50m east of the caravan park within woodland on the western edge of the lagoon. It is 120m from the nearest road however in both cases and separated by scrub and hedgerow which would likely buffer noise disturbance. This suggests that they tolerate and are already habituated to some human disturbance. The nearest works that would be taking place would be the narrowing of the existing BOAT approximately 285m east and also separated by scrubby woodland which would buffer any noise taking place. Given the level of existing traffic that would be coming to and from the caravan park each day, the increase in vehicle numbers associated with the construction is not predicted to cause any disturbance.

Greylag goose (*Anser anser*) has been recorded by RSPB. They have a medium sensitivity to disturbance and have a recommended buffer zone of 200-600m²⁸. The exact location of the nest has not been provided and as such a buffer zone cannot be marked out. Ahead of works proposed in the breeding season (March to August inclusive) the ornithologist ECoW can confirm the presence/likely absence of a greylag goose nest and provide 600m buffer zone following the completion of the pre-commencement breeding bird survey.

Summary

Works within each receptors buffer zones (see Plate 4.1) will avoid the breeding season (March to August, inclusive).

Plate 4.1 Recommended breeding bird buffer zones



Ecological Clerk of Works

Works undertaken outside of the buffer zones within the breeding season will be monitored by an ECoW. The ECoW will remain in contact with the RSPB tern wardens and the surveyors will remain vigilant to any changes in bird behaviour whilst the works are going ahead. If any changes in behaviour of the tern and gull colony or Schedule 1 species is noted such as increased vigilance towards the perceived 'threat' (in this case noise or machinery), increase in defensive calls or fleeing then the works will be reviewed by the ECoW. The buffer zone will be extended and those works within the extended buffer zone will be scheduled to continue outside of the breeding bird season.

Works undertaken outside the breeding season within the buffer zone will be preceded by a breeding bird survey to ensure that there is no remaining evidence of nesting.

General Birds

Passerine species are likely to nest within the scrub which will be cleared in areas to facilitate the new bird hides and alternative paths. Habitat removal will take place outside of the nesting bird season, taken to run from March to August inclusive or after an ECoW has confirmed the absence of nesting.

Any active bird nests recorded by the ECoW would be protected until they are no longer active. The ecologist will cordon around the nest with barrier tape or another suitable method of demarcation, within which, no works can take place. The ECoW will monitor the nests and remove the cordon once the nest is no longer active to allow the works to resume.

4.5 WINTERING BIRDS

Visitor Centre and car park

No qualifying species are likely to be impacted during the construction phase of this development.

Nature reserve

In the absence of mitigation, construction associated with the development of the hide overlooking Hodbarrow Lagoon and the maintenance of the BOAT along the new sea wall and refurbishment of the existing bird hide are immediately adjacent to the lagoon has potential to indirectly disturb the Qualifying species through a range of pathways including noise, vibration and pollutant spillage.

Disturbance can have negative physiological costs such as increased heart rate and stress hormones as well as negative energetic costs from the reduced foraging time or flying away from the site of disturbance. As described Section 4.4 chronic noise levels of 55-65 dBA and sudden irregular noise above 50dBA causing the most disturbance can cause changes to bird behaviours. The studies also showed that ambient construction noise levels should be restricted to below 70dBA as birds will habituate to regular noise below this level.

The construction activities within the immediate vicinity of the Hodbarrow Lagoon, such as the maintenance along the BOAT along the new seawall, the restoration of the existing bird hide and the creation of the hide overlooking the lagoon, have the potential to indirectly disturb the qualifying species overwintering birds using the lagoon in the form of increased noise. The works along the BOAT along the new sea wall will take place over approximately four weeks. The works for each of the hides would take approximately eight weeks.

The exact machinery to be used during the works is yet to be determined however Storys Contracting Ltd have confirmed that the loudest piece of equipment is predicted to be a typical Bomag 120 sized vibrating roller which operates at 103.4dBA at source and works elsewhere on site could reach up to 115dBA. Once procurement can take place, a review of the machinery used, predicted decibel levels, and length of time for works nearest to the lagoon will be reviewed and the Draft LEMP will be updated

accordingly. For the most part impacts on overwintering birds can be avoided through seasonal timing of works.

Avoidance

The recommended buffer zones for the qualifying and red list species that have been identified as overwintering as detailed in the EclA varies between 69m (for Sanderling) and <1000 (Black-throated diver) ³⁰. Given the number of different species at Hodbarrow Lagoon, there will be a variance in tolerance to disturbance. To minimise impacts on overwintering birds, a higher effort of works will take place along the old sea wall avoiding the sensitive period for overwintering periods 31st October – 31st March as much as possible. Considering the nesting bird season constraints in the section above, this allows for a higher effort of works along the sea wall taking place between September and October.

Should the work along the sea wall be delayed or anticipated to take longer then temporary acoustic screens will be installed to minimise disturbance onto the lagoon which can minimise noise disturbance by up to 30 decibels (dBA) as well as screen movement of vehicles and workers from the birds. Any works that cannot keep ambient noise below 70dBA may have to cease until the following September/October.

As overwintering birds do not have fixed locations and could be using the lagoon differently from day to day, fixed buffer zones cannot be provided. The highest buffer zone for overwintering bird species was the local BAP species Black-throated Diver the recommended buffer zone for which is <1000m. This species has had a peak count of 1 individual over the past 10 years. The next highest buffer zone was Goldeneye which is a Qualifying species and the recommended buffer zone ranges from 150-800m. Given the wider area of lagoon available, which is at some points 1,200m across, it is likely that any works that are required outside of the September-October window will not cause a significant impact to the overwintering birds.

Ecological Clerk of Works

An ECoW will be present during the works around the lagoon to identify the species using the lagoon and can make an assessment on the distance/sensitivity and advise each day on whether works can continue or should wait until the following window.

4.6 AMPHIBIAN AND REPTILES

Visitor Centre and car park

Ecological Clerk of Works

A toolbox talk will be given by the ECoW to all operatives prior to the commencement of site activities. The toolbox talk will outline legislation pertaining to natterjack toads, other amphibians and reptiles, and actions if any are encountered.

Timing of Works

All vegetation clearance and topsoil stripping should be undertaken between April and mid-October when overnight temperatures are regularly above 5°C and to coincide with the active amphibian and reptile season.

Increasing Carrying Capacity

Approximately 0.29 ha of scrub will be cleared to facilitate the development of the land proposed for the Visitor Centre and car park site. Overall, there will be an increase in 0.0158 ha of grassland habitat that will offer a greater food source to attract invertebrate prey assemblages but a reduction of scrub habitat. Scrub habitat can be used by reptiles and amphibians as refugia and hibernacula. To compensate for the loss of this habitat, the areas of existing hardstanding that will be broken up and removed to create grassland habitat should also include features to provide refugia and hibernacula.

Log piles

Four log piles will be created within the land proposed for the Visitor Centre and car park site. To construct the log refugia piles, logs and branches, including any sections of the off-cuttings from vegetation removal across the site (with the exception of willow species) will be salvaged at a variety of lengths (between 30cm and 1m) and diameters, and will be used to create diverse structures with gaps and crevices for animals to reside. These materials will be piled approximately 2m length x 1m width x 1m height in a pyramidal shape. The piles will be placed across the site in suitable habitat for any reptile and amphibian species. They can be constructed above or below ground and can be incorporated into the landscaping, using vegetation (turf) from the site, as a screening tool if desired.

Any material left from vegetation clearance on site, such as logs and brash cuttings, or materials found during construction, such as bricks, can be used to create these piles. Examples of log/rubble piles can be seen in Plate 4.2.

Plate 4.2 Example of log piles





Hibernacula

At least one hibernaculum will be included in the area that is currently a layby which will be re-vegetated. To construct one hibernacula:

- The hibernaculum will be situated in a shallow trench 50cm deep and a minimum of 1-2m² width and up to 1m high. To reduce the risk of flooding, the trench will be lined with sand or gravel reusing materials found on site.
- Fill with logs, branches, bricks and/or rocks, leaving plenty of gaps in between, materials that can decompose should be placed on top of heavy items e.g. bricks and rocks. Ensure small gaps are left for reptiles to enter and exit the finished hibernaculum.
- Cover the pile with soil (to about 50cm high) and sow with seeds collected from the adjacent grassland habitats over the mound to increase suitability for pollinators.

Figure 4.4 Example of hibernacula from the GCN mitigation guidelines which is also considered suitable for reptiles and other amphibians .

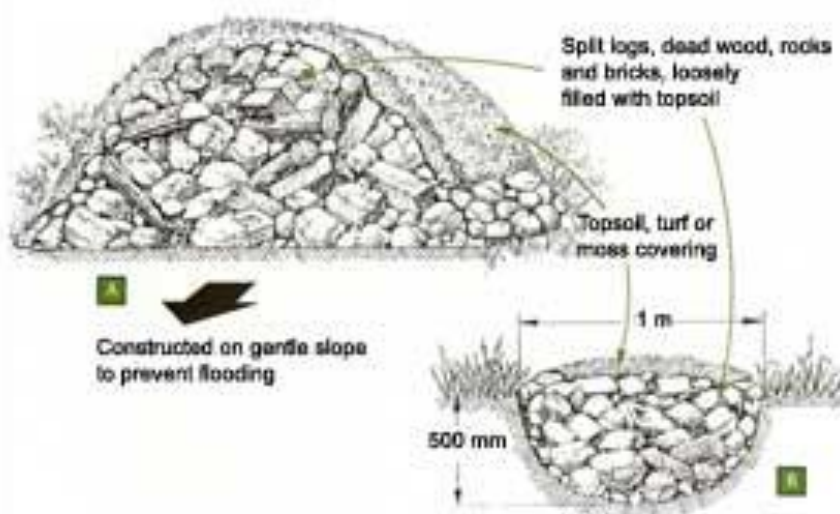
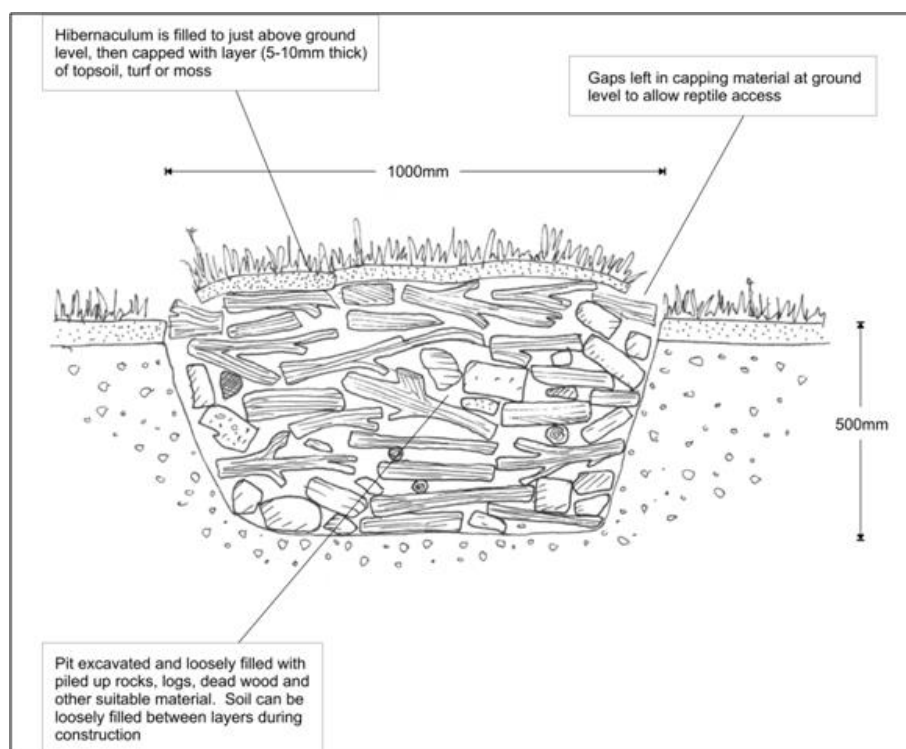


Figure 4.5 Example of underground hibernacula



Precautionary Staged Clearance

A translocation exercise of amphibians and reptiles will not be required as there will be suitable retained habitats within the immediate area. Site clearance of suitable amphibian and reptile habitat will follow reasonable avoidance methods including a two-stage cut and will be supervised by an ECoW to check for and minimise any harm to reptiles and amphibians.

The precautionary staged clearance will be undertaken during the active period for reptiles and amphibians (April and October) and when air temperatures are between 9°C and 20°C to ensure they have the best chances to escape and seeking refuge in suitable habitat. Scrub clearance will ideally take place during September and October when amphibians and reptiles are still active and avoid breeding bird season unless a ECoW has confirmed the absence of nesting during the breeding season.

Firstly, the vegetation should be cut to no lower than 150mm directionally towards neighbouring suitable habitat and left for at least 24 hours.

Secondly, the works area will be subject to fingertip search or raked by hand, under inspection by the ECoW to ensure amphibians and reptiles are not injured or killed, with any animals encountered moved to the receptor area. Once the works area is deemed free of animals, it should be cleared to ground level and kept clear of vegetation to remain unsuitable for reptiles and amphibians.

Any refugia including log, rubble piles should be dismantled by hand under supervision of the ECoW.

Materials and Storage

Where possible all materials will be stored in a raised manner such as on pallets and on areas of existing hardstanding. As material is stored within this area, all material should be compressed and sealed with

the back of a bucket, making the spoil heaps solid and without gaps that amphibians and reptiles could burrow into.

Amphibian gully pot ladders will be installed in all surface drains constructed.

Lighting

Construction works will mostly be undertaken during daylight hours. If any artificial lighting be required, for example during the late autumn, winter, this will follow the Bat Conservation Trust (BCT) and Institute of Lighting Professionals (ILP) guidelines²⁵. The lighting will be installed so as to not cause unnecessary light spill onto surrounding habitats. This will be achieved through directional lighting and the use of cowls/hoods. There will be no uncontrolled lighting and the lighting will be switched off when not in use.

Emergency Measures

There are on-going monitoring surveys for natterjack toads which are yet to confirm presence following the species recovery trust enhancements on the nature reserve. If the surveys find presence of natterjack toads on site ahead of works commencing then a licence application will be submitted and must be granted before works that could impact natterjack toads takes place.

Should any natterjacks be found on site during the surveys or within the proximity of the works or spoil storage area at any point during site preparation or construction works, the natterjack toad will be left in-situ and all works in that area are to be halted immediately. The Environment Champion will contact the ECoW who will provide advice and recommendations for either further survey work or will contact Natural England to start the licencing procedure.

No further works would be able to be undertaken until a Natural England development licence for the site is granted, this may involve further surveys which are seasonal in nature.

Nature reserve

Some of the resurfacing of existing footpath and the maintenance to the BOAT will be undertaken within approximately 10m of some of the existing and newly created natterjack toad ponds habitat. It is estimated that the works within these Biodiversity Protection Zones will take approximately one week.

Figure 4.6 10m Biodiversity Protection Zones from Natterjack toad habitat



Considering the temporary nature and the relatively small scale of works proposed along the existing footpath and the BOAT, it is considered unlikely that any contaminated runoff that may enter the pools during works would significantly impact the likelihood of natterjack toads potentially using these pools. However, as we cannot predict surface water pollution levels in the event of a pollution event during construction, a precautionary approach has been applied. The air quality, dust and emissions management detailed in Table 5.1 and materials and waste management detailed in Table 5.2 will be adhered to.

4.7 INVERTEBRATES

Visitor Centre and car park

The invertebrate report³¹ identified two important factors in maintaining invertebrate interest at the site which are habitat continuity and variation in structure. The construction will not result in any habitat fragmentation and therefore no mitigation is required.

There will be a loss of approximately 0.29 ha of scrub and 0.02 ha of lowland calcareous grassland habitat in order to enable the development, however the site is set within a wider expanse of both these habitats. The proposals will seek to enhance 0.8498 ha of retained scrub habitat, enhance 0.5931 ha of

calcareous grassland habitat and return 0.0358 ha of hardstanding back to nature providing habitat heterogeneity and additional foraging opportunities for invertebrates.

Nature reserve

The majority of habitats lost across the site will be those associated with bare ground and hardstanding in addition to areas currently subject to heavy trampling. There will also be limited pockets of scrub habitat cleared.

4.8 BATS

Visitor Centre and car park

Within the land proposed for the Visitor Centre and car park location, scrub is present but there is a lack of trees of suitable size or features to offer roosting potential for bats.

As a precautionary best practice measure prior to clearance, the scrub and woody vegetation will be checked by the ECoW to confirm that no features have developed that could offer potential bat roosting opportunity. In the unlikelyhood of any features being identified the ECoW will make an assessment with regards to bat roosting potential and where necessary conduct an endoscope survey.

Construction will take place during daylight hours however the CEcMP in Section 4.1 includes measures that will avoid light spill, should artificial lighting be required, during construction onto the retained natural habitats such as the grassland and surrounding scrub.

Nature reserve

The methodology detailed above for scrub clearance will be applied across vegetation removal at the site.

The old lighthouse and beacon were noted to have cracks and crevices with the potential to support roosting bats however the Preliminary Ecological Appraisal³² concluded they were too exposed to offer suitable roosting conditions. As a precautionary best practice measure prior to repair works on these structures, contractors will remain vigilant for bats. If in the unlikely event that a bat is discovered the works will cease and the ECoW will be contacted for further advice.

4.9 OTHER PROTECTED AND NOTABLE SPECIES

Badgers

Visitor Centre and car park

Given the limited evidence of badgers, which was limited to foraging signs and a single push through during the PEA walkover of the land proposed for the Visitor Centre and car park area in January 2022 and no evidence in the March 2025 update, it is unlikely that the removal of dense scrub would reveal presence of an active badger sett. Nonetheless, vegetation clearance works will be done under presence

of a licenced ECoW. In the unlikely event a badger sett is located then works will cease and a monitoring survey will take place to determine appropriate mitigation.

Further to this, any trenches/pits created during the construction process will either be covered over at night or will include a means of escape to prevent animals becoming trapped in them. The Environmental Champion will check excavations each morning before works commence.

Nature reserve

No excavation is taking place during the reconfiguration of the footpaths. The likely badger hole described in the nature reserve PEA undertaken throughout summer 2021 identified is over 30m from any proposed works therefore no mitigation is required. Any clearance of dense scrub will be undertaken under the supervision of a ECoW. If any holes are identified, the works will cease and a monitoring survey will take place to determine appropriate mitigation.

Otter

Visitor Centre and car park

There is only one record of otter 1.5km north of the site and despite suitable habitat, the level of existing human disturbance on site reduces likelihood of otters on site. Nonetheless, any scrub vegetation will be cleared in a phased manner under the supervision of an ECoW. Further to this, any trenches/pits created during the construction process will either be covered over at night or will include a means of escape (scaffold board or similar) to prevent animals becoming trapped in them.

In the unlikely event that the SQE identifies evidence of otter holts during scrub clearance, the works will cease in this area and a European Protected Species licence will be sought.

Nature reserve

Vegetation clearance on the nature reserve is minimal, however the measures set out for the land proposed for the Visitor Centre and car park above should be applied to the nature reserve.

Hedgehog

Proposed Visitor Centre and car park

Any scrub vegetation will be cleared in two phases under the supervision of an ECoW. The first phase will involve scrub height lowered to 150mm. Once at a lower level the scrub and any leaf litter will be preceded by a hand search.

Further to this, any trenches/pits created during the construction process will either be covered over at night or will include a means of escape to prevent animals becoming trapped in them.

In the event that hedgehogs are found, works will cease and ECoW to determine course of action as per with any other species.

Nature reserve

Vegetation clearance on the nature reserve is minimal and localised, however the measures set out for the land proposed for the Visitor Centre and car park above should be applied to the nature reserve.

5.0 OPERATIONAL MITIGATION STRATEGIES

This section describes the mitigation and compensation measures recommended for the operational phase of the development. Ecological receptors where a 'negligible' impact is predicted as set out within the EclA and (Shadow) HRA are not considered within this section. Natterjack toad has been included in the mitigation strategy although it is acknowledged that the species has yet to be confirmed as present on site since habitat enhancement.

The operational mitigation strategy should be read in conjunction with Visitor Access and Management Plan (VAMP)³³.

5.1 GENERAL HORTICULTURAL BEST PRACTICE

During the 30-year management of the site and beyond, horticultural best practice methods will be applied including:

- Biosecurity protocols will be followed;
- Locally sourced plants/mulch and peat-free compost if required;
- Pesticides and herbicides will not be used (only used for removal of invasive species);
- Litter removal; and
- Products should avoid the use of plastics which may degrade and form microplastics.

5.2 DESIGNATED SITES

Visitor Centre and car park

The drainage strategy has been designed to ensure neutral effects on the lagoon. The drainage strategy³⁴ sets out that all surface water drainage from the Visitor Centre and car park will firstly go into attenuation/treatment tanks under the car park area and then will be discharged into the Old Redhills Quarry, off-site to the north, via a drain laid in the existing access road to the Household Waste Recycling Centre. There will therefore be no surface water discharge into the Hodbarrow Lagoon. Additionally, foul water will be pumped from the site to Mainsgate Road via an existing main running in the shared service trench to the south of the access road. As such there will be no surface water pollution or ground water pollution entering the lagoon as a result of the proposals

The permeable construction provides the attenuation for this catchment to allow restriction back to the 1:1 year greenfield runoff rate for all storm up to and including the 1:100 year + climate change event.

The attenuation will be provided below ground (i.e. to not cause flooding) and has climate change allowances of 35% for the 1:30 year and 1:100 year event, based on a 60 year design life. As such during operation no additional surface water that could reduce land available for breeding birds using the lagoon is proposed to enter the lagoon and no removal of water is proposed that would reduce the size of the lagoon habitat.

Visitors

The operational impact associated with the increase in visitors on the designated site is provided in detail for the nature reserve below.

Nature reserve

Drainage

The majority of the new surfaces to be introduced as part of the Iron Line proposals will be permeable self-binding gravel on paths and the BOAT will not be resurfaced (just scraped and filled) and as such it is not expected that surface run-off rates would be significantly increased.

Visitors

In the absence of mitigation, the increase in visitors could result in an increase in disturbance to the Qualifying breeding and wintering bird assemblages. Operational impacts on breeding and over-wintering bird populations are addressed in more detail in their respective chapters below.

Without mitigation, the increase in visitors could result in degradation to Qualifying habitats through activities such as additional footfall, littering, greater presence of dogs and resultant dog faeces as well as spreading of invasive species.

The Annex I habitat Fixed coastal dunes with herbaceous vegetation (grey dunes) is already subject to high levels of trampling from recreational disturbance (see Plate 5.3). It is likely that the removal of the picnic bench will reduce the trampling in this area and access controls/remediation will be put in place with educational interpretation to explain the importance of this habitat, fostering behaviour change from visitors, and enable it to recover.

The improvement of designated paths will reduce any potential introduction/spread of invasive species onto more sensitive habitats from footfall as visitors will be less likely to wander from designated paths. As part of on-going management actions for the site, monitoring of any new occurrences of invasive species will be included and proposals made for removal.

5.3 NOTABLE HABITATS AND PLANTS

General

Signage

The land proposed for the Visitor Centre and car park is currently unmanaged. The nature reserve has existing low levels of management RSPB. Research suggest that signage is an effective way of reducing disturbance caused by visitors at unmanaged wildlife sites³⁵ and can be used to raise awareness of the importance of the site and what species they may see.

Detailed interpretation boards will be installed around the site. The interpretation boards will highlight the habitat features present as well as the species which they may support/attract. The signs will include instructions to keep dogs on leads and also educational messaging about the importance of maintaining

distance from sensitive habitats like the Annex I habitat identified on the site which is Fixed coastal dunes with herbaceous vegetation ("grey dunes"). Signage will inform site visitors during the removal of desire lines to explain the reasons behind the decisions and highlights alternative routes.

Signs will promote the conservation of qualifying and notable habitats and species. Graphics will also play a key role in communicating facts and encouraging further interest. It is recommended that modern graphics are opted for so as to engage a wider audience. These boards will help to raise public awareness and improve the understanding and appreciation of the different species found at site. The signage will remind visitors to pick up dog waste, litter and keep dogs on leads.

Plate 5.1 Examples of interpretation boards



Reconfiguration of the Paths

Paths will be formalised through use of natural and permeable materials on existing routes to increase the site accessibility for all and encourage site visitors to use official paths.

Having more formalised paths will reduce trespass onto sensitive habitats such as the Annex I habitat identified on the site which is Fixed coastal dunes with herbaceous vegetation ("grey dunes"). Signage will also be used to raise awareness about the sensitive habitats and dissuade people from crossing the open grasslands. This is an effective practice often used in ancient woodlands during bluebell season and on other existing RSPB reserves.

Where additional access discouragement is required, a natural barrier in the form of thorny scrub will be in place such as around the new carpark and the as well as cordoning off in areas near around the Annex I fixed coastal dunes with herbaceous vegetation ("grey dunes") habitat. Fencing will guide visitors to remain on the paths which will prevent degradation of habitats through trampling and the spread of invasive species.

Plate 5.2 Examples of pathway formalisation



Visitor Centre and car park

The increase in visitors brings potential for indirect impacts in the form of habitat degradation by visitors trespassing on sensitive areas, littering and nitrogen increase from cars and additional dog faeces.

Proposals seek to formalise paths to direct pedestrians away from sensitive habitats. There is a large expanse of Annex I grassland adjacent to the proposed for the proposed Visitor Centre and car park site. The Iron Line Visitor and Access Management Plan produced by Appletons details the short- and medium-term actions increase the capacity of the site for visitors whilst maintaining the sensitive habitats present within the reserve.

The Visitor Centre café will aim to limit the selling of single use plastic and take-away options to decrease the likelihood of littering as a result of the café.

Degradation of important habitats is also possible via reactive nitrogen deposition from cars using the carparks and an increase dog faeces for example. A buffer of tree and scrub habitat will be retained or planted surrounding areas of new carparks to provide a physical barrier and filter some of the pollutants³⁶. Signs will be installed around the carpark to inform visitors the carparks are an engine idle free zone.

Overall, the development will aid the habitat management for the next 30 years and as a result, the long-term conservation and enhancement of the habitats and species at site through a sustained commitment to management; the absence of which could risk some of the sensitive habitats due to successional habitat change and uncontrolled recreational access impacts.

Provision of bins

There will be additional general waste bin and an additional dog waste bin provided at the Visitor Centre and car park. The operational management team of the Visitor Centre will be responsible for emptying the bins and will increase frequency of emptying during the busiest times of the year.

Remedial actions

Should the monitoring identify that the grassland habitats are threatened by the increase in site visitors trampling over the habitat. The following actions would be considered:

- Installing fencing around the grassland; and
- Increased signage detailing the importance of the habitats.

Nature reserve

Operational impacts would be in the form of habitat degradation from visitors trespassing onto sensitive areas/grasslands, littering, dog waste. The measures detailed in the land proposed for the Visitor Centre and car park section above such as the improvement of designated paths will reduce visitors trespassing, provision of litter and dog waste bins and signage will mitigate impacts onto sensitive habitats.

Proposals seek to formalise existing paths and certain desire lines, directing people away from other desire lines which this will result in an overall increase in area available for habitat recovery.

The restriction of vehicles along the BOAT will prevent cars using the unauthorised car parking spot immediately adjacent to the cited Annex I H2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) habitat. Additionally, should prevent antisocial activity associated with off-road driving across grassland and dune habitats on the site, reduced fly tipping as well as reduced airborne NO_x levels associated with cars.

The increase in visitor numbers and the creation of the Visitor Centre and car park could also reduce antisocial use of the site, such as fly-tipping, camping and people setting campfires/barbeques.

Sensitive areas such as the Annex I 'Fixed coastal dunes with herbaceous vegetation (grey dunes) habitat' is currently subject to heavily trampling (see Plate 5.3). The sensitive habitats will be fenced off and the picnic bench within this area will be moved to allow the habitats to recover. Signage will inform site visitors during the removal of desire lines to explain the reasons behind the decisions and highlights alternative routes.

Plate 5.3 'Fixed coastal dunes with herbaceous vegetation (grey dunes) habitat' subject to existing trampling (Photo taken in February 2023)



5.4 BREEDING BIRDS

Visitor Centre and car park

The presence of a Visitor Centre and car park is predicted to increase the numbers of visitors to the nature reserve. The mitigation measures for this are described in the nature reserve section below.

Nature reserve

Whilst the scheme will increase the number of visitors, given the size of the site, the numbers of visitors will still be spread out and it unlikely that there will not be a sudden increase in large crowds gathering that could disturb the qualifying features.

The proposals seek to fortify and extend the existing bund along the sea wall BOAT as well as restrict vehicular access along the BOAT to emergency and maintenance vehicles only and therefore the unauthorised parking can recover, natural space can expand and provide opportunities for these plants to grow. Despite an increase in visitors the bund will ensure that this increase will be visibly unnoticeable to the terns. Furthermore, the proposals are likely to reduce the occurrences of behaviour likely to disturb the terns such as antisocial driving cars/mopeds/motorbikes along the BOAT and reduce access feasibility to allow for kayakers and paddleboarders to enter the water from the RSBP reserve side.

Plate 5.4 Google satellite image demonstrating existing unauthorised parking on site



In addition, proposals seek to include signage and education boards to raise awareness of the international importance of the tern and gull colonies on site. This will aim to increase the level of respect and understanding of site visitors and is an effective way of reducing disturbance caused by visitors at unmanaged wildlife sites³⁷. Additionally, hides are known to significantly mitigate the frequency of disturbance and level of response of birds³⁸.

The tern and gull species nest on islands which are surrounded by anti-predation fencing which gives them an additional level of protection against dog predation. The site is an RSPB reserve and there will be an existing level of understanding about the sites importance for birds and signage will be surrounding the site to remind visitors to keep dogs on leads. The continued presence of a tern warden during the breeding season will help prevent disturbance to the terns. Visitor numbers and any impacts on terns will be closely monitored by the warden and remedial actions will be undertaken if necessary, such as controlling visitor numbers to the most sensitive areas during the busiest times.

Whilst the following mitigation actions focus on the qualifying species, it will avoid/mitigate impacts on all bird species breeding on the lagoon.

Tern Colonies

The tern and gull nests have existing mitigation as they are on islands which are surrounded by anti-predation fencing which gives them an additional level of protection against dog disturbance (and mammal) predation. The site is an RSPB reserve and there will be an existing level of understanding

about the sites importance for birds and signage will be surrounding the site to remind visitors to keep dogs on leads. The continued presence of a tern warden during the breeding season will help prevent disturbance to the terns. Visitor numbers and any impacts on terns will be closely monitored by the warden and remedial actions will be undertaken if necessary, such as controlling visitor numbers to the most sensitive areas during the busiest times such as those described below and within the VAMP³³.

Strengthening the bund

The scheme will fortify and extend the existing bund along the sea wall BOAT as well as narrow the existing path and access drive along the BOAT. Despite an increase in visitors the bund will ensure that this increase will be visibly unnoticeable to the terns.

Scrub creation

Scrub will enforce the bund and deter humans and dogs from wandering into the terns field of vision. The creation of scrub has been described in Section 6.2.

Tern Wardening

As described above, the increase in visitors will be unnoticeable to the terns following the strengthening of the bund. If the existing wardens within the tern hide during the nesting season notice any sustained changes in behaviour on days when recreational pressure is high such as increased vigilance towards the perceived 'threat', increase in defensive calls or fleeing. This will be reported and remedial actions set out below will be explored and those set out within the VAMP³³.

Sign posting

The scheme will increase signage and education boards to raise awareness of the international importance of the tern colonies on site. This will seek to aid behaviour change and increase the level of respect and understanding of site visitors and is an effective way of reducing disturbance caused by visitors at unmanaged wildlife sites³⁹.

Distancing the path

Currently site visitors walk across the entire width of the BOAT and through formalising both the BOAT and the path, the aspiration is visitors will be directed towards the path, which lies an additional 14m from the edge of the bund and as such further from the tern colonies.

Remedial actions

It is predicted that there should be no impact to the tern colony with the mitigation measures proposed. However, should the tern wardens report sustained or frequent changes in tern behaviour or reduction in colony due to increased disturbance from recreation, the following remedial actions will be considered to mitigate long-term changes. The following actions would be considered:

- Assess where the peak points of disturbance are coming from and restrict access or strengthen the bund during the breeding season;

- Increasing wardening effort to two wardens with one role more public facing to provide educational opportunities and raise awareness;
- Introducing a parking charge during peak times on weekends, bank holidays and school holidays as per the VAMP³³.

Gull Colonies

There is an existing viewpoint of the gull colony island approximately 50m from the island which is considered a sufficient distance for viewing the gulls without human disturbance as they successfully nest each year. Sign posting will also be used to raise awareness of the international importance of the gull colony on site.

The scheme aims direct people towards a new bird hide located a short distance away (80m) which will hopefully reduce the likelihood of disturbance caused by visitors.

Schedule 1 Species of Birds

A barn owl has historically been recorded as nesting in the old sea wall. There is existing anti-social behaviour including people walking and riding bikes along the old sea wall. Operational impacts for this species are unlikely to change.

A spoonbill nesting site is located approximately 180m from the nearest existing viewpoint and impacts to this species are unlikely to change.

5.5 WINTERING BIRDS

Visitor Centre and car park

As there are no operational impacts predicted upon overwintering birds predicted, there are no required mitigation actions.

Nature reserve

Many of the mitigation actions for operational impacts provided in the breeding bird section above apply to the overwintering birds too. The fortification and extension of the bund will protect the birds from visual disturbance by shielding site visitors. The restriction of vehicular access along the BOAT to emergency and maintenance vehicles only and the reduction in lagoon access points will reduce the behaviours such as anti-social driving of cars/mopeds/motorbikes and kayaking that have high disturbance potential.

Notably, proposals also seek to include interpretation and education boards to raise awareness of the international importance of the overwintering bird assemblages and increase the respect and understanding of the "rules" on site.

5.6 AMPHIBIAN AND REPTILES

Visitor Centre and car park

The potential for increased disturbance and harm from people and dogs will be mitigated through the improvement of designated paths which will limit the opportunities for disturbance.

Signage will be used to provide information about their ecology, identification tips and give a deeper understanding of the amphibians and reptiles present. In addition, more refugia will be created existing areas of hardstanding that will be returned to nature areas surrounding the land proposed for the Visitor Centre and car park allowing reptiles and amphibians to shelter and seek refuge.

Nature reserve

The potential for increased disturbance and harm from people and dogs will be mitigated through the improvement of designated paths which will limit the opportunities for disturbance. Signage will be used to provide information about their ecology, identification tips and give a deeper understanding of the amphibians and reptiles present.

Installation of Dog proof Fencing

There were several mitigation ponds created in 2017 however according to the amphibian and reptile Conservation officer these have rapidly become less suitable due to scrub encroachment and no ongoing management. In the winter of 2023 as part of the RSPB winter habitat creation works, more natterjack toad scrapes have been created.

Proposals seek to fence with dog proof fencing of these existing mitigation ponds, where there is currently none or none planned, which will reduce disturbance from humans and dogs and prevent the leaching of dog flea treatments. The fencing will leave enough space to enable access for RSPB maintenance machinery to ensure the scrub can be managed and retain the habitat suitability for natterjacks. The operator will be responsible for checking and maintaining the fencing that has been created as part of the proposals.

5.7 INVERTEBRATES

Visitor Centre and car park

The scheme will increase the amount of habitat of value for invertebrates and the structural diversity for invertebrates. As such, no mitigation or compensation for operation is required.

Nature reserve

The scheme will increase the amount of habitat of value for invertebrates and the structural diversity for invertebrates. As such, no mitigation or compensation for operation is required.

5.8 BATS

Proposed Visitor Centre and car park

Proposals will increase the amount of habitat of value for foraging bats. Indirect impacts would be in the form of additional artificial lighting associated with the land proposed for the Visitor Centre and car park. The land proposed for the Visitor Centre and car park operating hours will close before sunset during the active bat season however it may in some cases be hired out for private functions. Therefore, measures at both the construction and operational phase of the development will include will be designed to avoid light pollution where appropriate, as detailed within Guidance from BCT and Institute of ILP⁴⁰:

- Will avoid use of metal halide and fluorescent light sources;
- Use of screens/hoods to make any external lighting as directional as possible, avoiding light spill on any natural features such as the surrounding grassland and scrub;
- Where possible, external wayfinding will avoid use of 360° bollard lighting;
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, will be used. Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt;
- Lighting controls will be in place to minimise the duration lights are illuminated, this could be for example instated through motion sensor lighting or subject to curfews.
- Lighting for security will be infrared only (part of the CCTV installation, so out of the visible spectrum).
- Measures will be taken in internal light placement to reduce risk of light spill from windows and timeclock operation for internal and external lighting ensuring there is no lighting overnight.

Nature reserve

No additional lighting is proposed around the reserve. As such, no mitigation or compensation is required.

5.9 OTHER PROTECTED AND NOTABLE SPECIES

As there are no operational impacts upon on badgers, otters, hedgehogs predicted for both the land proposed for the Visitor Centre and car park and Nature reserve there are no required mitigation actions.

6.0 HABITAT CREATION AND MANAGEMENT

6.1 BIODIVERSITY NET GAIN

The BNGA aims to quantify the predicted change in biodiversity value of development footprint using the Statutory Biodiversity Metric (SBM) in light of the proposed development to assess compliance against national and local planning policy and against the Biodiversity Net Gain (BNG) mandate set out in the Environment Act 2021, which states that all planning permissions granted in England (with a few exemptions) will have to deliver at least 10% BNG.

The post-development designs the assessment site are predicted to deliver 23.94 HU. This is a net gain of 1.52 HU (equivalent to + 6.79% for HU) (ref: 553023lt30Jun25FV04_BNGA).

To achieve the required 10% BNG, an additional 0.72 HU is necessary. There are areas of retained bramble scrub on site that may be enhanced to provide the required units; however, these areas are located on a steep gradient, and it is currently unclear whether long-term management would be feasible. If on-site enhancement proves unviable, the applicant will secure the necessary 0.72 HU through off-site compensation by purchasing units from a habitat bank, for example the Environment Bank. RSPB have confirmed that their land cannot be used to achieve 10% BNG.

The scheme covers the habitat management associated with the land proposed for a Visitor Centre and car park for a minimum of 30 years and therefore this development will ensure the long-term conservation and enhancement of the habitats and species at site through a sustained commitment to management; the absence of which could risk some of the sensitive habitats due to successional habitat change.

Condition Assessments for habitat types are located in Appendix C.

6.2 HABITAT CREATION

Visitor Centre and car park

Other Neutral Grassland

Through the breaking up of some of the existing hardstanding currently a layby on the access road to the Household Waste Recycling Centre an additional 0.0358 ha can be used to create other neutral grassland and compensate for the loss of other neutral grassland.

Once broken up the hardstanding material will be removed from the site. The creation success can be sped up and managed to targeted condition through the following steps :

- Creation of firm seed beds of bare ground free from perennial weeds;
- Seeds from the neighbouring habitats will be harvested after flowering;
- Seeds will be sown in early Autumn;
- Management of newly sown grassland through cutting and removal of vegetation.

- It will be monitored to ensure that any invasive species are removed immediately.

6.3 HABITAT ENHANCEMENT

Visitor Centre and car park

The proposals will the securement of management of the grassland habitats for at least 30 years. These habitats are currently unmanaged and at risk of habitat succession.

Lowland Calcareous Grassland

The pockets of moderate 'Lowland calcareous grassland' will be enhanced from moderate to good through the annual removal of invasive and nuisance species as well as the reduction of scrub cover to less than 5%.

Scrub

The pockets of 'Mixed scrub' will be enhanced from moderate to good condition through the removal of invasive and nuisance species as well as rotational management to increase age and structural diversity as well as create glades, clearings and rides surrounding the Visitor Centre and car park.

The pocket of 'Bramble scrub' will be enhanced to 'Mixed scrub' through the inclusion of other woody species identified on the site such hawthorn *Crataegus monogyna*, goat willow *Salix caprea*, grey willow *Salix cinerea*, gorse *Ulex sp.*, broom *Cytisus scoparius* and dog rose *Rosa canina*. It should be monitored to ensure the removal of invasive and nuisance species as well as rotationally managed to increase age and structural diversity as well as create glades, clearings and rides.

Nature reserve

There has been no habitat creation or enhancement proposed associated with the nature reserve however, the paths and roads across the site will be formalised which will direct footfall and allow adjacent habitats to recover. This has not been captured within the BNGA.

6.4 HABITAT MANAGEMENT

Scrub Management

Scrub management will be undertaken annually. For manual management of broad habitats of scrub, habitat management should be rotational and so for each scrub pocket 1/3 should be managed each year to create clearings and rides and age diversity. During monitoring invasive species will be noted and removed as per recommendations in the section below.

Habitats where the broad habitat is not heathland and scrub such as the grasslands, the scrub should be kept below 5%. This will involve yearly monitoring and cutting back scrub encroachment.

Invasive and Nuisance Species Management

Several species listed on Schedule 9 species as per the Wildlife and Countryside Act 1981 (as amended) were identified across the site including Montbretia sp., Japanese knotweed, Cotoneaster sp. Including wall Cotoneaster, small-leaved cotoneaster and variegated yellow archangel.

Whilst sea buckthorn is not an invasive species as per Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), it is considered to be an invasive species in the northwest of England. This was found across the site despite efforts from RSPB to eradicate. Additionally, the reserves manager confirmed the presence of Crassula helmsii in ponds within the site during 2018-2020. This was a small infestation removed mechanically and monitoring is ongoing in order to ensure the complete eradication of this species in these ponds.

During the yearly monitoring, during the optimal season for botanical identification, invasive and nuisance species associated with the Visitor Centre and car park will be mapped. Additional species will be noted to be jeopardising other habitat types and their targeted conditions as per the BNGA then these will be noted too.

Specialist contractors will be commissioned to remove and dispose of these species as per best practice guidance⁴¹. Any substantial invasive species growth that could be suitable for nesting birds will be cleared outside of nesting bird season. Where nuisance species are noted and eradication is not a viable option these will be given particular focus on containing the spread whilst reducing the overall area of spread.

7.0 ECOLOGICAL ENHANCEMENTS

7.1 OVERVIEW

The proposed development provides the potential to enhance the biodiversity value of the site. This will primarily be achieved by the introduction of features within the landscaping proposals and actions within the long-term management regime for the site, targeting specific ecological receptors.

The creation of specific habitats and attraction of notable and protected ecological receptors will complement the targets of national and local policy and BAPs.

Specifically, the proposals will seek to enhance the on site habitat for the following species:

- Invertebrates (including targeted Lepidoptera species through the inclusion of larval and nectar plants, and solitary bees and wasps through provision of burrowing habitat);
- Bats; and
- The qualifying species and habitats through educating and raising awareness.

The following enhancements are to be included at the site:

- Provision of invertebrate enhancement features;
- Bat boxes;
- Interpretation boards and signs.

Detail on these features and specifications are provided in the chapter below.

7.2 INVERTEBRATES

Locally sourced felled wood, including any wood collected during the site clearance (with exception to willow species), will be used to create logeries for saprophytic invertebrates within areas more shaded. Log sizes will range from ~10cm up to ~40cm diameter and approximately one third of the log will be buried.

Invertebrate habitat panels and solitary beehives will be included in sunny, south-facing areas within landscaped areas. Panels will use untreated wood products which provide a range of opportunities for sheltering and nesting solitary bees and other invertebrates.

Plate 7.1 Invertebrate features- Bug hotels (left, centre), Butterfly bunds (right)



7.3 BAT FEATURES

Most species of bats will use bat boxes at various times of year but in particular they are favoured by *Pipistrellus* sp, *Leisler's* (*Nyctalus leisleri*), *noctules* (*Nyctalus noctula*) and *Myotis* species. *Pipistrellus* sp were identified within the local environmental records and are known to be in the wider area, therefore, two bat boxes will be affixed to the Visitor Centre, or to free standing poles; the use of these bat boxes will increase roosting opportunities for bats in the area.

Plate 7.2 Summer roosting boxes (left) maternity roosting boxes (right)



7.4 PUBLIC ENGAGEMENT

Interpretation boards

Detailed interpretation boards will be installed around the site. The interpretation boards will highlight the habitat features present across the site as well as species which they may benefit. This is in order to promote the conservation of priority species and habitats. Graphics will also play a key role in communicating facts and encouraging further interest. It is recommended that modern graphics are opted so to engage a wider audience. These boards will help to raise public awareness and improve the understanding and appreciation of the different species found at site.

Plate 7.3 Examples of interpretation boards



Sightings boards

To further encourage engagement and citizen science opportunities, sightings boards will be installed by the land proposed for the Visitor Centre and car park. This can be used by visitors and volunteers to record any notable/interesting wildlife sightings. This could prove to be a useful record and monitoring tool, helping to track changes in species records and abundance over time as this Draft LEMP is actioned.

For the easiest and most practical application of sighting boards it is recommended that chalk boards are used, with the focus of monitoring around invertebrates and birds.

Figure 7.1 Example sightings board



8.0 MANAGEMENT AND MONITORING

This section provides an overview of the relevant management and monitoring features of the ecological enhancements at the site.

The management plan will follow a clearly defined 30-year timetable that will be used as a reference point for site maintenance, monitoring and any future planting and enhancement works that may be necessary.

The proposed habitats are dynamic, and the species composition is anticipated to change over time, due to plant selection resulting from the prevailing climatic conditions, natural colonisation, and succession. As a result, some of the actions within the first 5 years will be dependent upon rate of growth or success of initial planting/sowing and enhancements. In general, where measures have not been stated it is due to a non-intervention policy once the features have been established.

This Plan will also be iterative in the medium to long-term, adapting in a staged process to the changing roof composition and in response to the feedback from monitoring exercises. Suggestions can be made to alter the enhancement measures or supplement the planting regime as necessary. Primarily, the Plan will include actions to maintain the ecological objectives for the habitat strategy, which are:

- Optimise biodiversity measured by the range of wildlife benefiting plant species, lichens, mosses and fungi, and invertebrate and bird species using the landscaped areas, enhancement features;
- Encourage invertebrates through diverse range of floral species and suitable invertebrate niche habitats;
- Encourage species highlighted in the UK and Cumbria BAPs and Red Data Book.

8.1 MONITORING

Just before Practical Completion of the site, a SQE should inspect the ecological enhancements implemented as a result of the recommendations in this strategy.

It is recommended for a SQE to undertake the monitoring programme, observing the success of any translocation areas and use of the grasslands and scrub by bats, birds and invertebrates as key biodiversity indicators.

The monitoring of birds, habitats, invertebrates, amphibians and reptiles in particular will occur annually for the first ten years and biannually following. Monitoring will focus on the diversity and abundance of these species.

Indicators of success will include the successful establishment of a wide variety of plant species, natural colonisation of floral species on the roofs, evidence of invertebrates inhabiting the ecological features, evidence of no changes to or increased bird nesting and overwintering.

Following completion, a SQE will also undertake an annual condition assessment of the habitats on site during the optimal season for botanical identification and recommend remedial actions if not achieving its target condition. Following ten years, the condition assessment will be done every other year if the

target conditions are met otherwise the monitoring will continue annually until target conditions are met.

All records of notable/protected species will be shared with RSPB and also submitted to Cumbria Biodiversity Data Centre.

8.2 ECOLOGICAL CONSTRAINTS TO MANAGEMENT

The features to be implemented will provide potential to support nesting birds and roosting bats. Relevant legislation regarding the protection of nesting birds and bats is located in Appendix B.

Nesting birds

To avoid disturbing, harming or killing any nesting birds or their young, any maintenance and management of scrub or dense vegetation will take place outside of the peak breeding bird season (taken to run from March - August inclusive). If this is not possible an inspection for nesting birds must take place, by an SQE prior to any works taking place.

Bats

To avoid the disturbance of roosting bats, any maintenance and management of bat boxes will only be undertaken by a bat licenced ecologist or after a bat licenced ecologist has confirmed roosting bats to be absent. Works to the bat boxes will be undertaken in either April, September and October which is outside of the maternity season (May to August inclusive) and avoids the winter months (November to March) when bats may be in hibernation.

Reptiles and Amphibians

During scrub encroachment clearance vegetation will be cleared by cutting to 200-300mm in the first instance, followed by clearance to below ankle height a minimum of 24 hours later.

The habitat clearance will be completed during the active reptile and amphibian season (April -October) on dry days when the temperature is over 9°C. The vegetation will be strimmed in one direction only and towards areas of suitable adjacent habitat (such as retained scrub) so that any reptiles and amphibians present can escape to safety without being exposed to predators.

Hedgehogs

In order to minimise the potential for killing or injuring of hedgehogs (and other small to medium sized mammals) management of scrub encroachment will be undertaken in two phases, by cutting to 30cm in the first instance, then to ground level 24-48 hours thereafter. Hedgehog hibernate between November to March, therefore, the ground level clearance will need to take outside of these months when hedgehog are active and can better escape from the path of clearance. Any clearance undertaken between March and August would conflict with the nesting bird season and will be preceded by a nesting bird check by an SQE.

This will be undertaken using hand tools only. If any immobile hedgehogs are found during clearance these will be moved with gloves to an area of retained scrub not subject to clearance.

8.3 TIMESCALES

The management plan will begin as soon as the landscaping of the final phase has been implemented and management will be ongoing for a minimum of 30 years to ensure that the targeted biodiversity net gain condition scores are achieved.

8.4 RESPONSIBILITY

Procurement for management of the site has not taken place at this stage. Whoever takes over the site will be responsible for appointing an SQE to monitor the success of the ecological features and habitat enhancement measures. They will also keep a record of all ecological monitoring undertaken.

RSPB will continue to be responsible for their land.

8.5 MANAGEMENT PLAN

The management actions are summarised in Table 8.1. Creation of habitats as per Section 6.2 will occur in Year 0 following completion of the development with monitoring and management commencing in Year 1 as per Table 8.1. The table outlines the necessary responsibilities and key objectives for the next 30 years with monitoring surveys conducted between May and June, informing any management actions necessary to be undertaken in the autumn.

Table 8.1 Summary of Management Actions for 30 Years

Years	Landscape and Ecological Management Plan
Pre-commencement	Actions
	Seeds harvested from grasslands and sent to a seed bank for storage where required
	Removal of invasive species within the Construction Zones
	Nomination of an Environmental Champion
	Mapping out the site compounds
	Reporting procedure
	- Update of LEMP and production of CEcMP to take on board the recommendations set out in CEcMP of this report - Keeping a record of communications
During Construction	Actions
	ECoW to deliver toolbox talks and be present throughout all sensitive activities
	Following the mitigation strategies
	Translocation of lowland calcareous grassland
	Translocation of Irish dandelion
	Reporting Procedures
	PMWS for each new phase of works
	- ECoW toolbox talk signing sheet - ECoW to keep a log/diary (with photographs) of work or actions undertaken or advice given each day
	Actions
	Post Construction Review (PCR) to confirm implementation of habitat creation and ecological features
	Reporting Procedures

Years	Landscape and Ecological Management Plan
Post Construction	PCR report
	Remedial Actions
	As required by PCR report
Year 1-5 (Spring/Summer)	Monitoring Actions
	Annual monitoring programme to commence for amphibians, reptiles, birds (or review of RSPBs data)
	Check ecological features are intact and inspect for signs of occupancy and other fauna are using the site for foraging, nesting or perching. Check signs and interpretation boards for vandalism or wear and tear
	NVC Survey of the same survey area as the baseline and monitor translocated habitats and Irish dandelion populations
	Note any invasives within the NVC survey area
	Condition assessment of the habitats
Years 1-5 (Autumn/Winter)	Monitoring Actions
	Overwintering bird survey or review of RSPBs data
	Rotational management of the scrub (1/3)
	Cut back scrub encroachment
	Invasive species management
	Litter removal
	Reporting Procedure
	Annual monitoring programme report produced
	Review of the effectiveness and validity of monitoring programme
	Submission of all biological records obtained to RSPB, Cumbria Biodiversity Data Centre and Natural England
	Remedial Actions
	As identified by annual report

Years	Landscape and Ecological Management Plan
	- A review of remedial actions requiring implementation for Qualifying habitats or species - Litter removal - Re-seeding of grasslands, plug planting of scrub if necessary - Removal of invasive species/unwanted weeds prior to setting seed - Scrub management - Any management required for habitats to reach their target conditions - Review opportunities for conservation grazing
Year 7, 9, 11, 13 and 15 Spring/Summer	Monitoring Actions - If target conditions are not achieved the above steps will be repeated annually until target condition is met. - Biennial monitoring programme to commence between May and June if target conditions are achieved - Reduced annual monitoring programme for amphibians only - Check ecological features are intact and inspect for signs of occupancy and other fauna are using the site for foraging, nesting or perching. Check signs and interpretation boards for vandalism or wear and tear - NVC Survey of the same survey area as the baseline and monitor translocated habitats and Irish dandelion populations - Note any invasives within the NVC survey area - Condition assessment of the habitats
Year 7, 9, 11, 13 and 15 Autumn/Winter	Monitoring Actions - Rotational management of the scrub (1/3) - Cut back scrub encroachment - Invasive species management Reporting Procedure - Annual monitoring programme report produced

Years	Landscape and Ecological Management Plan
	- Request records from RSPB - Review of the effectiveness and validity of monitoring programme - Submission of all biological records obtained to RSPB, Cumbria Biodiversity Data Centre and Natural England - Annual monitoring programme report produced
	Remedial Actions
	- As identified by annual report - A review of remedial actions requiring implementation for Qualifying habitats or species - Litter removal - Re-seeding of grasslands, plug planting of scrub if necessary - Removal of invasive species/unwanted weeds prior to setting seed - Scrub management - Any management required for habitats to reach their target conditions - Review opportunities for conservation grazing
	Monitoring Management Actions over Spring/Summer
	NVC including noting of invasive species and Natterjacks
	Monitoring Management Actions over Autumn/Winter
	- A review of remedial actions requiring implementation for Qualifying habitats or species - Litter removal - Re-seeding of grasslands, plug planting of scrub if necessary - Removal of invasive species/unwanted weeds prior to setting seed - Scrub management
Years 16-30	

Years	Landscape and Ecological Management Plan
	• Any management required for habitats to reach their target conditions
	• Review opportunities for conservation grazing

9.0 SUMMARY AND CONCLUSIONS

Greengage was commissioned by Cumberland Council to produce a Draft LEMP to cover a period of 30 years for a site known as Hodbarrow Nature Reserve, Millom on the South-west coast of Cumbria.

This Draft LEMP has been produced in response to Statutory Consultee Natural England initial objection to the planning application who requested further information in the form of a Draft LEMP before they could consider supporting the scheme. An updated LEMP will be updated upon planning approval and could be secured by condition.

The location of the site, within the Cumberland District, and highly sensitive baseline value as described in the suite of ecological reports produced to support the planning application, means that there are numerous ecological receptors to consider as well as opportunities to provide biodiversity enhancements that will provide overall benefits for local wildlife.

The purpose of this report is to detail the bespoke mitigation strategies for ecological receptors as well as the habitat specifications for created habitats such as lowland meadow and calcareous grasslands and provide ecological enhancement features such as creation of natterjack toad habitat and bat boxes, to be incorporated into the scheme. The scheme will cover at least 30 years of management for the site and positively contribute to enhancing the ecological and wildlife value of the site. The scheme will adhere to the bespoke mitigation strategies so there are no likely significant effects on the Qualifying features of the designated sites. Additionally, the scheme will meet objectives of planning permission conditions once provided and complement local and regional Biodiversity Action Plans.

Works described in this report will be carried out at specific times throughout the installation process supervised by an ECoW. Enhancements are targeted at specific ecological receptors of note, known to be in the area, reflecting contemporary best practice and objectives of local conservation groups, BAPs and planning policy.

In accordance with the above aims, the purpose of this specification is to provide the contractors with clear instructions for habitat and species protection, habitat creation and the incorporation of enhancement features that will optimise the biodiversity value. In addition, this specification includes a management plan for the successful establishment and long-term management and monitoring of protected and notable habitats and species.

APPENDIX A LANDSCAPE PLANS

APPENDIX B LEGISLATION AND POLICY

B.1 LEGISLATION

Current key legislation relating to ecology includes the Wildlife and Countryside Act 1981 (as amended)⁴²; The Conservation of Habitats and Species Regulations 2019 ('Habitats & Species Regulations')⁴³, The Countryside and Rights of Way Act 2000 (CRoW Act)⁴⁴, and The Natural Environment and Rural Communities Act, 2006⁴⁵.

The Environment Act, 2021

Under the Environment Act, 2021, as of 12th February 2024 and 2nd April 2024, it is mandatory in England for new developments (with a small number of exceptions) to deliver a minimum 10% biodiversity net gain (BNG), as measured by the Statutory Biodiversity Metric (for the Iron line scheme the 4.0 metric was the relevant metric at the time) or Small Sites Metric (SSM) respectively, secured through planning condition as standard (as per schedule 14 of the Act). Approach to the delivery of BNG must follow the mitigation hierarchy, with avoidance of impact and on-site compensation/gains prioritised, ahead of the use of off-site compensation, or the purchase of statutory credits.

The Act introduces the condition that no development may begin unless a Biodiversity Gain Plan (BGP) has been submitted and approved by the LPA.

The Act also amends requirements of the NERC Act, 2006, adding the need to not just conserve, but enhance biodiversity through planning projects. Furthermore, it introduces the need for the LPA to have regard to relevant local nature recovery strategies and relevant species/protected site conservation strategies, when making their decision.

Under the Act, the enhancements must be maintained for at least 30 years. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

The Conservation of Habitats & Species Regulations replace The Conservation (Natural Habitats, etc.) Regulations 1994 (as amended)⁴⁶, and transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora ('EU Habitats Directive')⁴⁷, and Council Directive 79/409/EEC on the Conservation of Wild Birds ('Birds Directive')⁴⁸ into UK law (in conjunction with the Wildlife and Countryside Act).

Regulation 43 and 47 respectively of the Conservation of Habitats & Species Regulations makes it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2 (European protected species of animals), or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5 (European protected species of plant). Development that would contravene the protection afforded to European protected species requires a derogation (in the form of a licence) from the provisions of the Habitats Directive.

Regulation 63 (1) states: 'A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which –

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects); and

(b) is not directly connected with or necessary to the management of that site;

must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.'

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in Great Britain. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats⁴⁹ (the 'Bern Convention') and the Birds Directive and EU Habitats Directive are implemented in Great Britain.

The Countryside and Rights of Way Act 2000

The Wildlife and Countryside Act has been updated by the CRoW Act. The CRoW Act amends the law relating to nature conservation and protection of wildlife. In relation to threatened species it strengthens the legal protection and adds the word 'reckless' to the offences of damaging, disturbing, or obstructing access to any structure or place a protected species uses for shelter or protection, and disturbing any protected species whilst it is occupying a structure or place it uses for shelter or protection.

The Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities Act 2006 states that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. Biodiversity Action Plans provide a framework for prioritising conservation actions for biodiversity.

Section 41 of the Natural Environment and Rural Communities Act requires the Secretary of State to publish a list of species of flora and fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity. The list, a result of the most comprehensive analysis ever undertaken in the UK, currently contains 1,149 species, including for example, hedgehog (*Erinaceus europaeus*), and 65 habitats that were listed as priorities for conservation action under the now defunct UK Biodiversity Action Plan⁵⁰ (UK BAP). Despite the devolution of the UK BAP and succession of the UK Post-2010 Biodiversity Framework⁵¹ (and Biodiversity 2020 strategy⁵² in England), as a response to the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020⁵³ and EU Biodiversity Strategy (EUBS)⁵⁴, this list (now referred to as the list of Species and Habitats of Principal Importance in England) will be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 41 of the Natural Environment and Rural

Communities Act 2006 'to have regard' to the conservation of biodiversity in England, when carrying out their normal functions.

Biodiversity Action Plans

Non-statutory Biodiversity Action Plans (BAPs) have been prepared on a local and regional scale throughout the UK over the past 15 years. Such plans provide a mechanism for implementing the government's broad strategy for conserving and enhancing the most endangered ('priority') habitats and species in the UK for the next 20 years. As described above the UK BAP was succeeded in England by Biodiversity 2020 although the list of priority habitats and species remains valid as the list of Species of Principal Importance for Nature Conservation.

Regional and local BAPs are still valid however and continue to be updated and produced.

Detail on the relevant BAPs for this site are provided in the main text of this report.

Legislation Relating to Nesting Birds

Nesting birds, with certain exceptions, are protected from intentional killing, destruction of nests and destruction/taking of eggs under the Wildlife and Countryside Act 1981 (as amended) and the CROW Act. Any clearance of dense vegetation should therefore be undertaken outside of the nesting bird season, taken to run conservatively from March to August (inclusive), unless an ecologist confirms the absence of active nests prior to clearance.

Legislation Relating to Bats

All UK bats and their roosts are protected by law. Since the first legislation was introduced in 1981, which gave strong legal protection to all bat species and their roosts in England, Scotland and Wales, additional legislation and amendments have been implemented throughout the UK.

Six of the 18 British species of bat have Biodiversity Action Plans (BAPs) assigned to them, which highlights the importance of specific habitats to species, details of the threats they face and proposes measures to aid in the reduction of population declines.

Although habitats that are important for bats are not legally protected, care should be taken when dealing with the modification or development of an area if aspects of it are deemed important to bats such as flight corridors and foraging areas.

The Wildlife & Countryside Act 1981 (WCA) was the first legislation to provide protection for all bats and their roosts in England, Scotland and Wales (earlier legislation gave protection to horseshoe bats only.)

All eighteen British bat species are listed in Schedule 5 of the Wildlife and Countryside Act, 1981 and under Annex IV of the Habitats Directive, 1992 as a European protected species. They are therefore fully protected under Section 9 of the 1981 Act and under Regulation 43 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which transposes the Habitats Directive into UK law. Consequently, it is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- Intentionally or recklessly obstruct access to a bat roost.

This legislation applies to all bat life stages.

The implications of the above in relation to the proposals are that where it is necessary during construction to remove trees, buildings or structures in which bats roost, it must first be determined that work is compulsory and if so, appropriate licenses must be obtained from Natural England.

Legislation Relating to Reptiles

All species of reptile native to the UK are protected to some degree under national and/or international legislation, which provides mechanisms to protect the species, their habitats and sites occupied by the species.

Sand lizards and smooth snakes are European protected species and are afforded full protection under Section 9 of the Wildlife and Countryside Act 1981 and Regulation 43 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. However, these species are rare and highly localised. Their occurrence is not considered as relevant in this instance, as the ranges and specialist habitats of these species do not occur at this site.

The remaining widespread species of native reptiles (adder, grass snake, slow worm and viviparous lizard) are protected under part of Section 9(1) and all of Section 9(5) of the Wildlife and Countryside Act 1981. They are protected against intentional killing and injury and against sale, transporting for sale etc. The habitat of these species is not protected. However, in terms of development, disturbing or destroying reptile habitat during the course of development activities while reptiles are present is likely to lead to an offence under the Wildlife and Countryside Act 1981. It is therefore important to identify the presence of these species within a potential development site. If any of these species are confirmed, all reasonable measures must then be taken to ensure the species are removed to avoid the threat of injury or death associated with development activities.

Each species of native reptile has specific habitat requirements but general shared features include a structurally diverse habitat that provides for shelter, basking, foraging and hibernating.

All reptiles are BAP species and as such are also of material consideration in the planning process due to the NPPF.

Legislation Relating to Natterjack Toads

Natterjack Toads are a European Protected Species (EPS) listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2019 (EU Exit) (as amended), and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), as well as recognised as a species of national conservation

importance under section 41 (S.41) of the Natural Environment Rural Communities Act 2006 (NERC Act) - England.

Specifically, the existing legal framework makes it illegal to:

- Intentionally or deliberately capture, injure or kill a Natterjack Toad,
- Damage or destroy a breeding or resting place of a Natterjack Toad, or intentionally or recklessly damage or destroy any structure or place used for shelter or protection,
- Intentionally or recklessly disturb a Natterjack Toad in a place used for shelter or protection, or deliberately disturb Natterjack Toad in such a way as to be likely significant to affect (i) the ability of any significant group to survive, breed, rear or nurture their young, or (ii) the local distribution or abundance,
- Intentionally or recklessly obstruct access to a place used for shelter or protection,
- Possess a Natterjack Toad (alive or dead), or any part of a Natterjack Toad.

Legislation Relating to Natura 2000 Sites and Habitats Directive Annex I/II Species

European Commission Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora ('EU Habitats Directive'), and Council Directive 79/409/EEC on the Conservation of Wild Birds ('Birds Directive') form the cornerstones of nature conservation legislation across EU member states. Priority species requiring protection across Europe are listed in the Annexes of these Directives. Regulation 63(1) of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and Offshore Marine Conservation Regulations, 2007 (as amended) transpose these directives into UK law and set the basis for the designations of protected sites (known as Natura 2000 sites; Special Areas of Conservation under the Habitat Directive and Special Areas of Protection under the Birds Directive) that are of importance for habitats, species or assemblages listed on the directive Annexes. In the UK Ramsar sites are also offered the same level of protection as SPAs and SACs however the Qualifying species for the designation may differ; Ramsar sites being designated specifically as important wetland habitats.

Under article 6(3) of the Habitats Directive, where projects stand to have likely significant effect (in accordance with the European Court of Justice ruling of C-127/02 Waddenzee cockle fishing) upon the integrity of conservation objectives (i.e. conservation status of the Qualifying species or habitats) within the designated sites then the Competent Authority must undertake an Appropriate Assessment.

B.2 PLANNING POLICY

National

National Planning Policy Framework

The National Planning Policy Framework (NPPF) 2025⁵⁵ sets out the Government's planning policies for England, including how plans and decisions are expected to apply a presumption in favour of

sustainable development. Chapter 15 of the NPPF focuses on conservation and enhancement of the natural environment, stating plans should ‘identify and pursue opportunities for securing measurable net gains for biodiversity’.

It goes on to state: ‘if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused’. Alongside this, it acknowledges that planning should be refused where irreplaceable habitats such as ancient woodland are lost.

Regional

Copeland Local Plan 2017-2035 (Preferred Options Draft)⁵⁶

Policy DS5PO: Development Principles

In order to achieve sustainable development in the Borough and meet Local Plan objectives, development must, where possible:

Mitigation of and adaption to climate change

- Minimise carbon emissions, maximise energy efficiency and help us to mitigate and adapt to the effects of climate change
- Be located on sites where there is no risk of flooding and where the development does not increase the risk of flooding elsewhere
- Protect, enhance and create new areas of green infrastructure, recognising the important role that the natural environment and healthy ecosystems have to play in the future social and economic, as well as environmental sustainability of Copeland
- Make the most efficient use of land by building at appropriate densities and reusing existing buildings and previously developed land
- Minimise waste, maximise opportunities for recycling and use sustainable construction methods, taking into account circular economy principles
- Be located on sites which minimise the need to travel, with good, safe pedestrian links to services and facilities.

Protection, enhancement and restoration of the Borough’s valued natural and cultural assets

Protect and enhance areas, sites, species and features of biodiversity or geodiversity value, important landscapes and the undeveloped coast including valued landscapes which form a setting to the Lake District National Park and areas of Heritage Coast.

- Conserve and enhance the Borough’s cultural and heritage assets and their settings
- Provide and enhance recreational opportunities for the Borough’s residents and its visitors, protecting existing provision where possible and ensuring that future development meet appropriate standards in terms of quantity and quality

- Protect the Borough's best and most versatile agricultural land from development
- Support the reclamation and redevelopment or restoration of the Borough's vacant or derelict sites, whilst taking account of landscape, biodiversity and historic environment objectives
- Minimise air, ground and water pollution, ensuring that development does not have a negative impact upon water quality (including waterbodies and bathing waters)

Creation and retention of quality places

- Be of high quality in terms of design so that it retains and enhances locally distinctive places and raises aspirations
- Provide or safeguard good levels of residential amenity and security, reducing the fear of crime and minimising the opportunities for crime and anti-social behaviour
- Be supported by the relevant infrastructure, ensuring it can accommodate traffic and access arrangements in ways that make it safe and convenient for pedestrians and cyclists to move around
- Address land contamination with appropriate remediation measures

Healthy Communities

- Adopt dementia-friendly design principles
- Provide opportunities for food growing
- Contribute to the creation of mixed communities, helping to reduce social isolation and create community resilience
- Retain and enhance valuable community facilities (including healthcare, cultural and education facilities)
- Include community energy generation to provide low carbon heat and/or power and address energy poverty
- Enhance local pedestrian links to promote physical activity

Policy DS6PO: Planning Obligation

1. Where it is reasonable, necessary and directly related to the development Copeland Borough Council, through planning obligations (until such time an alternative method is introduced), will

secure:

- a) The enhancement of existing or provision of new infrastructure, facilities and services
- b) Where appropriate future maintenance of car parking provision and sustainable transport solutions will be required in perpetuity;
- c) Future maintenance and/or monitoring of other facilities delivered as a result of development for a period of 15 years or as agreed/identified in a specific Development Plan policy;
- d) Future management and monitoring of biodiversity net gain will be required for a period of 30 years

2. The Council will expect planning obligations to be provided on site unless specific circumstances make off-site contributions more appropriate and;

3. When determining the nature and scale of any planning obligations sought, account will be taken of specific site conditions, the Infrastructure Delivery Plan and other material considerations.

Where an applicant considers that the provision of appropriate infrastructure would make the development unviable a viability assessment must be submitted to, and agreed by the Council, as early as possible within the planning application process.

Policy N1PO Conserving and Enhancing Biodiversity and Geodiversity

Potential harmful impacts of any development upon biodiversity and geodiversity should be identified and considered at the earliest stage

Proposals must demonstrate, to the satisfaction of the Council, that the following sequential steps have been undertaken

Avoidance – Biodiversity and geodiversity must be considered when drafting up proposals and any potential harmful effects on biodiversity and geodiversity must be identified along with appropriate measures that will be taken to avoid these effects

Mitigation – Where harmful effects cannot be avoided, they must be appropriately mitigated in order to overcome or reduce negative impacts.

Compensation – Where mitigation is not possible or viable or in cases where residual harm would remain following mitigation, harmful effects should be compensated for. Where this is in the form of compensatory habitat of an area of equivalent or greater biodiversity value should be provided.

Compensation is a last resort and will only be accepted in exceptional circumstances. Where harm remains to a Natura 2000 site, development will only be approved where it can be demonstrated that there are imperative reasons of overriding public interest. In such cases, compensatory measures must ensure the overall coherence of the network of European sites as a whole is protected.

Planning permission will be refused for any development if significant harm cannot be avoided, mitigated or compensated for.

Sustainable construction methods should be used where possible.

Development proposals where the principal objective is to conserve or enhance biodiversity and geodiversity interests will be supported in principle.

Policy N2PO: Biodiversity Net Gain

All development, with the exception of that listed in paragraph 49.8.10 above, must provide a minimum of 10% biodiversity net gain over and above existing site levels. This is in addition to any compensatory habitat provided under Policy N1PO. Net gain should be delivered on site where possible. Where on site provision is not appropriate, provision must be made elsewhere in order of the following preference:

1. Off site in an area identified as a Local Nature Recovery Network;
2. Off site on an alternative suitable site within the Borough

3. Through the purchase of an appropriate amount of national biodiversity units/credits.

Details must be submitted to, and agreed in writing by the Council, before the development can commence.

Sites where net gain is provided (on or off site) must be managed and monitored by the applicant or an appropriate body funded by the applicant for a minimum period of 30 years. Annual monitoring reports detailing the sites condition post-enhancement must be submitted to the Council each year over this period.

Where there is evidence of deliberate neglect or damage to any of the Boroughs protected habitats and species in order to reduce its biodiversity value their deteriorated condition will not be taken into consideration and previous ecological records of the site and/or the ecological potential of the site will be used to decide the acceptability of any development proposals.

Policy N3PO: Local Nature Recovery Networks

The Council will support the identification and implementation of Local Nature Recovery Networks that extend beyond the Boroughs boundaries and provide important linkages for wildlife within Copeland and beyond.

Development which protects or enhances nature recovery networks will be supported in principle.

Policy N6PO: The Undeveloped Coast

The Council will ensure that the landscape character of the undeveloped coast is maintained by conserving the intrinsic qualities, natural beauty and open character of the undeveloped coast from inappropriate development. Inappropriate development includes that which affects views within or towards/from the St Bees Head Heritage Coast.

The following types of development will however be supported:

- Development which supports the management of the undeveloped coast for biodiversity;
- Development which provides or improves safe access to and interpretation of the undeveloped coast for residents and visitors such as appropriate fencing, signage and interpretation boards;
- Energy generating developments that that require a coastal location along the undeveloped coast, provided that the potential impacts on biodiversity, landscape and heritage assets are carefully assessed against the benefits. Where negative impacts are likely these must be mitigated against and compensated for.

Policy N7PO: Green Wedges

The Local Plan Proposals Map identifies Green Wedges within the Borough. Development will only be permitted within a Green Wedge in the following circumstances unless the economic, environmental or social benefits of the proposal significantly and demonstrably outweigh any harm:

- where the open character of the Green Wedge and separation between settlements is maintained; and

- where the special characteristics and quality of the landscape are conserved and enhanced.

Policy N8PO: Protected Green Spaces

The Local Plan Proposals Map identifies Protected Green spaces which are of a high quality and/or value.

Development proposals that enhance Protected Green Spaces will be supported in principle.

The loss of such Protected Green Spaces will be resisted unless equivalent replacement provision of the same or better quality is provided within the same settlement.

Proposals to develop other green spaces, including play areas and allotments not identified on the

Proposals Map, should also comply with this policy where there is evidence that they are of value to the community.

Policy N9PO: Local Green Spaces

The Local Plan Proposals Map identifies important Local Green Spaces. Development will only be permitted within a Local Green Space in the following circumstances, where the open character of the Space and its community value is not compromised:

- Proposals which improve access to/from and within the LGS, or
- Proposals which provide opportunities for outdoor sport and recreation, or
- Proposals which allow a wider range of uses to take place within the LGS, or
- Proposals which enhance landscapes and visual amenity, or
- Proposals which provide/enhance habitats.

Development on sites adjacent to Local Green Spaces should provide an attractive frontage, natural surveillance and strong pedestrian connections to the LGS.

APPENDIX C CONDITION ASSESSMENTS

Condition Assessments

Mixed Scrub

Table C.1 Mixed Scrub Condition Assessment

Condition Assessment Criteria	
1	Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).
2	There is a good age range - all of the following are present: seedlings, young shrubs and mature shrubs.
3	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and species indicative of sub-optimal condition ¹ make up less than 5% of ground cover.
4	The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat(s).
5	There are clearings, glades or rides present within the scrub, providing sheltered edges.

Condition Assessment Result	Condition Assessment Score
Passes 5 of 5 criteria	Good (3)
Passes 3 or 4 of 5 criteria	Moderate (2)
Passes 0, 1 or 2 of 5 criteria	Poor (1)
Notes	
Footnote 1 - Species indicative of sub-optimal condition for this habitat type include: tree-of-heaven (<i>Alnus altissima</i>), holm oak (<i>Quercus ilex</i>), turkey oak (<i>Quercus cerris</i>), creeping thistle (<i>Cirsium arvense</i>), common nettle (<i>Urtica dioica</i>), cherry laurel (<i>Prunus laurocerasus</i>), snowberry (<i>Symphoricarpos</i> spp.), buddleia (<i>Buddleja</i> spp.), cotoneaster (<i>Cotoneaster</i> spp.), Spanish bluebell (<i>Hyacinthoides hispanica</i>) (or hybrids).	

Wet Woodland

Table C.2 Woodland Condition Assessment

Condition Assessment Criteria				
	Indicator	Good (3 points)	Moderate (2 points)	Poor (1 point)
1	Age distribution of trees ¹	Three age classes present	Two age classes present	One age class present

Condition Assessment Criteria				
2	Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland ²	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland
3	Invasive plant species ³	No invasive species present in woodland	Rhododendron or laurel not present, other invasive species < 10% cover	Rhododendron or laurel present, or other invasive species > 10% cover
4	Number of native tree species	Five or more native tree or shrub species found across woodland parcel	Three to four native tree or shrub species found across woodland parcel	None to two native tree or shrub species across woodland parcel
5	Cover of native tree and shrub species	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native
6	Open space within woodland ⁴	10 – 20% of woodland has areas of temporary open space, unless woodland is <10ha in which case lower threshold of 10% does not apply	21- 40% of woodland has areas of temporary open space	More than 40% of woodland has areas of temporary open space
7	Woodland regeneration ⁵	All three classes present in woodland;	One or two classes only	No classes or coppice regrowth present in woodland

Condition Assessment Criteria				
		trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	present in woodland	
8	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree mortality and or any high risk pest or disease present
9	Vegetation and ground flora	Ancient woodland flora indicators present	Recognisable NVC plant community present	No recognisable NVC community
10	Woodland vertical structure ⁶	Three or more storeys across all survey plots or a complex woodland	Two storeys across all survey plots	One or less storey across all survey plots
11	Veteran trees ⁷	Two or more veteran trees per hectare	One veteran tree per hectare	No veteran trees present in woodland
12	Amount of deadwood	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps
13	Woodland disturbance ⁸	No nutrient enrichment or damaged ground evident	Less than 1 hectare in total of nutrient enrichment	More than 1 hectare of nutrient enrichment and/or more than 20% of woodland area has damaged ground

Condition Assessment Criteria				
			across woodland area and/or less than 20% of woodland area has damaged ground	

Condition Assessment Result	Condition Assessment Score
Total score >32 (33 to 39)	Good (3)
Total score 26 to 32	Moderate (2)
Total score <26 (13 to 25)	Poor (1)
Notes	
All footnotes below refer to the EWBG woodland condition assessment methodology: EWBG (No date). Assessing your Woodland's Condition [online]. Available from: https://woodlandwildlifetoolkit.sylva.org.uk/assess Footnote 1 - See EWBG method INDICATOR 1 for more information. If tree species is not a birch, cherry or Sorbus: 0 – 20 years (Young); 21 – 150 years (Intermediate); and >150 years (Old). A recognisable age class should be a consistent recognisable layer across the woodland or stand being assessed. Presence of a few saplings would not indicate that the woodland has an 'age class' of young trees. Footnote 2 - See EWBG method INDICATOR 2 for more information. Browsing pressure is considered to be significant where >20% of vegetation visible within each survey plot shows damage from any type of browsing pressure listed. Footnote 3 - See EWBG method INDICATOR 3 for more information. Check for presence of the following invasive non-native species: American skunk cabbage <i>Lysichiton americanus</i>; Himalayan balsam <i>Impatiens glandulifera</i>; Japanese knotweed <i>Fallopia japonica</i>; Cherry Laurel <i>Prunus laurocerasus</i>; Shalloon <i>Gaultheria shallon</i>; Snowberry <i>Symphoricarpos albus</i>; Variegated yellow archangel <i>Lamiastrum galeobdolon</i> subsp. <i>argentatum</i>; and Rhododendron <i>Rhododendron ponticum</i>. Footnote 4 - See EWBG method INDICATOR 6 for more information. Open space within woodland in this context is temporary open space in which trees can be expected to regenerate (e.g. glades, rides, footpaths, areas of clear-fell). This differs from permanent open space where tree regeneration is not possible or desirable (e.g. tarmac, buildings, rivers). Area is at least 10m wide with less than 20% covered by shrubs or trees.	

Condition Assessment Result	Condition Assessment Score
Footnote 5 - See EWBG method INDICATOR 8 for more information. This indicator measures regeneration potential of the woodland by considering three classes: seedlings; saplings; and young trees of 4-7 cm DBH. All three classes would fall in the 'young' category of the 'age distribution of trees' indicator, the regeneration indicator is gathers additional information by considering regeneration potential i.e. if seedlings, saplings and young trees are all present that means natural regeneration processes are happening.	
Footnote 6 - See EWBG method INDICATOR 9 for more information and Table 3 for a list of diseases and pests and their risk level.	
Footnote 7 - This indicator is looking at structural diversity and is useful to understand in conjunction with the age of trees in a woodland. Vertical structure is defined as the number of canopy storeys present. Possible storey values are: 1) Upper; 2) Complex: recorded when the stand is composed of multiple tree heights that cannot easily be stratified into broad height bands (such as upper, middle or lower); 3) Middle; 4) Lower; and 5) Shrub layer.	
Footnote 8 - See EWBG method INDICATOR 12 for more information. All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value. Veteran trees can be classified if they have four out of the five following features: 1. Rot sites associated with wounds which are decaying >400 cm²; 2. Holes and water pockets in the trunk and mature crown >5 cm diameter; 3. Dead branches or stems >15 cm diameter; 4. Any hollowing in the trunk or major limbs; 5. Fruit bodies of fungi known to cause wood decay.	
Footnote 9 - See EWBG method INDICATOR 15 for more information. Examples of disturbance are: significant nutrient enrichment; soil compaction from trampling, machinery or animal poaching; litter.	

Medium & High Distinctiveness Grassland – Neutral Grassland

Table C.3 Medium & High Distinctiveness Grassland Condition Assessment

Condition Assessment Criteria	
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type are consistently present.

Condition Assessment Criteria	
	Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.
B	Sward height is varied (at least 20% of the sward is less than 7cm and at least 20% is more than 7cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens ¹ .
D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%
E	Combined cover of species indicative of sub-optimal condition ² and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) are present, this criterion is automatically failed.
F	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.

Condition Assessment Result	Condition Assessment Score
Acid Grassland Types (Result out of 5 criteria)	
Passes 5 criteria	Good (3)
Passes 3 or 4 criteria	Moderate (2)
Passes 2 or fewer criteria	Poor (1)
Non-Acid Grassland Types (Result out of 6 criteria)	
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)
Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)

Footnotes	
Footnote 1	For example, this could include small, scattered areas of bare ground allowing for plant colonisation,

Footnotes	
	or localised patches not exceeding 5% cover.
Footnote 2	Species indicative of sub-optimal condition for this habitat type include: creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> and cow parsley <i>Anthriscus sylvestris</i> . There may be additional relevant species local to the region and or site.
Footnote 3	Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement.
Footnote 4	Wildlife and Countryside Act 1981 (as amended).

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