



# Summary guide to the management of Gait Barrows National Nature Reserve, Silverdale, Lancashire 2020 – 2025



Hawes Water Lake, Gait Barrows NNR

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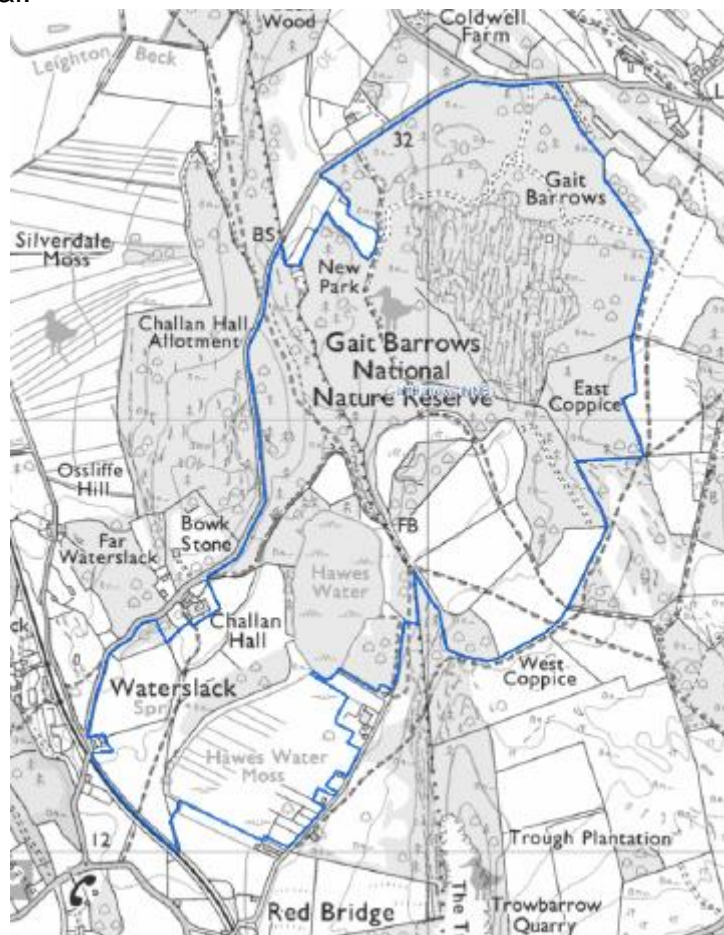
Natural England is the government's adviser for the natural environment in England, helping to protect England's nature and landscapes for people to enjoy and for the services they provide. We are an executive non-departmental public body, within the Department for Environment, Food & Rural Affairs.

We manage a series of National Nature Reserves (NNRs) for their important habitats, species or geology and to provide opportunities for research, education and for visitors to experience nature at first hand.

This document summarises Natural England's management plan 2020 – 2025 for land that we manage at Gait Barrows NNR, near Silverdale, Lancashire.

## Introduction

Gait Barrows NNR sits at the heart of the Arnside and Silverdale Area of Outstanding Natural Beauty (AONB) landscape comprising a diverse mosaic of limestone and peatland habitats. Gait Barrows was dedicated as a National Nature Reserve in 1977 with the addition of Thrang Wood in 1999, Hawes Water in 2002 and Hawes Water Moss in 2005. The reserve is now 122ha in total.



Past management has included woodland coppicing, peat cutting, grazing, arable cropping and quarrying of the water-worn limestone from the pavements. These activities have inevitably left their mark on the reserve such as the drainage ditches still visible across Hawes Water Moss, the broken limestone pavement landscape left behind after quarrying or the 'agriculturally improved' grasslands. Wherever possible, it is Natural England's ambition to restore the natural processes supporting these habitats, creating a rich and diverse ecosystem where habitats blend naturally into one another, providing niches and structure for a broad range of species.

## Understanding Gait Barrows NNR designations

The **Site of Special Scientific Interest** (SSSI) is a British designation for protecting some of the most important sites for biodiversity and geology and can include both public and privately owned land. It means that land managers and public bodies need to consult Natural England over specified operations within SSSIs. Gait Barrows NNR is made up of three separate SSSIs (Gait Barrows, Hawes Water and Thrang Wood) protecting nationally important woodlands, wetlands and geology. (See annex for the list of NNR site features).

**Special Area of Conservation** (SAC) is a Europe-wide designation that recognises the importance of a site in a European context. It does not add any extra requirements for private landowners but does for public bodies. Gait Barrows NNR falls within Morecambe Bay Pavements SAC, designating the limestone woodland, fen, marl lake and limestone pavement as internationally important habitats.

**Geological Conservation Review** (GCR) is a designation that identifies geological sites of national and international importance needed to show all the key scientific elements of the Earth heritage of Britain. The GCR covers the karst features of the limestone pavements at Gait Barrows and the sedimentary records around Hawes Water.

**National Nature Reserves** (NNR) are sites managed to high standards for their wildlife or geology. About two-thirds of NNRs are managed by Natural England, the rest by approved bodies. The majority of Gait Barrows National Nature Reserve falls within the SSSI/SAC boundary, with the exception of some small pasture fields on Moss Lane. The NNR includes land on Gait Barrows pavements and Woods, Thrang Wood, Gait Barrows Pastures, Hawes Water, Hawes Water Moss and Challan Hall Pastures and woods.

## Gait Barrows and climate change

Climate change projections predict an increased chance of warmer and wetter winters; hotter, drier summers; and an increase in the frequency and intensity of extreme weather events. Wetlands with a stable high water table, have a greater resilient to varying conditions.

The peatlands at Hawes Water Moss are made of preserved organic material so are important stores of carbon and active peat-forming habitats can continue to store carbon. Peatlands are vulnerable to climate change due to past drainage. Drained peat gradually decays as it comes into contact with the air, releasing carbon dioxide and methane into the atmosphere. 'Re-wetting' the Moss by bringing the water table nearer to the surface means the peat will keep its carbon store and become more resilient to climate change.

Changing weather patterns are likely to have major impacts on many of the invertebrate species that Gait Barrows is home to, such as the fritillary butterflies and red wood ant, with new species likely to colonise from the south as the climate warms.

## Gait Barrows and history

The peat and marl deposits next to Hawes Water provide a fantastic record of climatic history and glacial growth and retreat. Evidence of human habitation and primitive agriculture has been recorded at the original lake edge in Gait Barrows pastures from 5000-6000 years BP. Although there isn't scheduled archaeology at Gait Barrows, there are several important historic features including the 250 year old 'Summerhouse' associated with Challan Hall, and Colt Park, at nearly 400 years old the first recorded enclosure in the AONB.



The Summerhouse



A section of Colt Park Wall

## Gait Barrows NNR and wildlife

The NNR is home to a range of habitats types including open water, calcareous fen and swamp, peatland, wet and dry woodland, grassland and limestone pavement. The rare limestone lake and tarn (Hawes Water and Little Hawes Water) host aquatic plant species such as **stoneworts** and **bladderwort** that depend on alkaline and low-nutrient conditions. The fringing alkaline fen plant communities are internationally important and are dominated by **saw-sedge** beds, with other uncommon species present such as **black bog-rush** and **blunt-flowered rush**.



Saw-sedge



Black bog-rush



Blunt-flowered rush

The deep peat of Hawes Water Moss (over 3m in places) is currently dominated by tall reed and wet (carr) woodland. Historic peat cutting and drainage for agriculture has reduced the depth of peat and dried the surface layers allowing willow and alder scrub to establish. The tall fen here is home to **marsh harrier**, **water rail** and **reed warbler**.



Hawes Water Moss with reed and scrub



Water rail

The pavements on the NNR are some of the best examples in the country for their geological and biological interest. Nationally rare species such as **angular Solomon's seal**, **bloody cranesbill** and **rigid buckler fern** can be found in the pavement grikes. The very wide range of plant species makes Gait Barrows the most diverse limestone pavement plant community in Britain.



Angular Solomon's seal

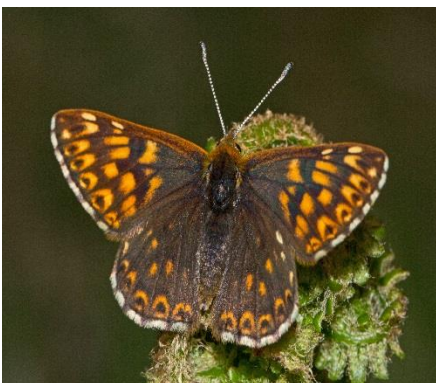


Bloody cranesbill



Rigid buckler fern

The ancient limestone woodland is primarily made up of **ash**, **hazel**, **yew** and **small-leaved lime** with a rich diversity of shrub species including **guelder rose**, **wild privet**, **dogwood**, **purging buckthorn** and **spindle**. Much of the woodland has historically been coppiced, which still continues today for conservation purposes. Coppiced woods create important habitat for butterfly species like **Duke of Burgundy** and **high brown fritillary** whose caterpillars feed on **primroses** and **violets** respectively. Wet woodland on peat at Gait Barrows is dominated by **Willow** and **Alder**.



Duke of Burgundy



Spindle berries



Yew

The reserve supports an incredibly wide range of species, with over 1600 species of fungi recorded, 180 mosses and liverworts, 150 lichen, 460 vascular plants, 15 dragon flies, 850 moths, 38 species of butterfly and 22 mammal species. **Red wood ants** and the rare **mason bee** can be seen around the pavements. **Lizards** are often spotted basking on the rocks and **slow worm** are common. **Red**, **fallow** and **roe deer** are regularly glimpsed through the woods and wetlands. Over 100 species of birds use the NNR annually (around 50 breeding) and visitors may see **woodcock**, **sparrow hawk**, **tawny owl**, **marsh tit**, **hawfinch**, **song thrush**, **bullfinch**, **redwing**, **fieldfare**, **teal**, **kingfisher**, **bittern** and **osprey**.



Red wood ant



Olive earth tongue



Common lizard



Red deer stag



Kingfisher

## What is Natural England's aim for this NNR?

After centuries of human intervention, the reserve has evolved into a diverse group of habitats that often seem artificially compartmentalised by linear boundaries. Our main aims are to:

- restore the natural hydrology of Hawes Water Moss and create a diverse wetland plant community that is actively building peat again and storing carbon.
- restore the natural hydrology of the Little Hawes Water basin to increase the extent of open water and its associated swamp and fen.
- return conservation grazing to some of the alkaline fen communities around Hawes Water and Little Hawes Water to improve the condition of the habitat and prevent succession to wet woodland (see the Grazed Habitats Management Plan for more detail)
- soften the transitions between woodland, wetland and grassland so that the habitats blend seamlessly with fewer hard boundaries (see the Grazed Habitats Management Plan for more detail)
- work collaboratively with the University of Cumbria and the Back on our Map (BOOM) species recovery project and the People's Trust for Endangered Species (PTES) to re-introduce Hazel Dormice into the reserve in 2020.
- continue the coppice management of the limestone woodlands to create ideal habitat for fritillary butterflies and dormice.
- help our volunteer deer stalkers and local partners to effectively manage deer populations within the reserve and in the wider landscape.
- boost Duke of Burgundy butterfly numbers at Gait Barrows with a programme of cow slip planting with Butterfly Conservation (Stepping Stones Project).
- re-instate a large proportion of the historic Colt Park enclosure, fully restoring the 400 year old boundary walls and returning their original function.
- sympathetically restore the Summerhouse historic building near Challan Hall providing niches for wildlife and preserving as an important landscape feature.
- work with local partners (RSPB, AONB, Landscape Trust and Morecambe Bay Partnership) to develop an exemplary 9km all-terrain mobility scooter route through the NNR and wider AONB providing equal access opportunities for people with limited mobility.
- collaborate with our neighbours, local people, non-governmental organisations and other public bodies; we can achieve more together.

### In the next 5 years we want to:

- fulfill our health and safety and other legal obligations.
- carry out works (see below) to achieve our aims. We have to bid annually for funding so we are not able to form a guaranteed work plan.
- progress towards having all parts of the NNR in favourable SSSI condition status (or at least unfavourable recovering).

- find funding to survey the hydrology of Hawes Water Moss, develop a project plan and undertake the work needed to restore the natural hydrology of the moss.
- continue the coppice rotation of the limestone woodlands (at least 1ha/year) and maintain the network of rides and glades especially where important for access.
- monitor the progression of ash die-back disease and take action where dying trees could be a safety risk to the public. Dead or dying trees within the wider woodland will be left as important standing deadwood wildlife habitat.
- manage roe and fallow deer populations to a level where deer fencing around coppice coupes isn't necessary.
- implement the actions from the Grazed Habitats Management Plan.
- provide quality access routes through parts of the reserve via boardwalks and paths, so that all visitors can appreciate the site without having to navigate difficult terrain.
- refurbish the Summerhouse and reinstate it's views across the lake.
- survey all of the drystone walls across the reserve and restore the Colt Park boundary walls (where they still exist).
- continue to host visits from universities and other educational groups and provide opportunities for learning.
- re-introduce and monitor Hazel Dormice at Gait Barrows to form a stable and expanding population.
- review and update signage on the reserve.
- monitor the condition of the NNR and the success of any management that we undertake.



Little Hawes Water 'marl tarn' surrounded by willow and alder 'carr' woodland, swamp and fen.

## How will we achieve our vision for Gait Barrows NNR?

Sometimes we need to do some works that may at times appear unsightly, but which we will endeavour to keep to a minimum. We will take account of the requirements of particular species, avoid the bird breeding season, and obtain all necessary permissions (e.g. felling licence, ordinary watercourse consent) before work starts.

**Coppicing and deer fencing** is necessary to create age structure in the woodland and to provide bare ground where species such as primrose and violets can flourish (the food plants of some of the fritillary butterflies). Coppice work is usually undertaken during the winter months and outside of the bird nesting season. Where possible, timber is removed but log piles can provide places for reptiles to shelter, bask or hibernate. Brash is burned on tin sheeting to avoid scorching the ground. Some standard trees and less common shrub species such as guelder rose, buckthorn and spindle are retained. As well as being beneficial for some flowering plants and insects, reptiles and some types of birds benefit from the more open conditions. This type of woodland management also provides optimum foraging conditions for hazel dormice. Coppice plots or 'coupes' have to be deer fenced at Gait Barrows otherwise regeneration of the vegetation is severely inhibited by deer browsing.

**Thinning of secondary woodland** close to the Challan Hall entrance of the reserve is helping open up the dense canopy and allow the fen vegetation from the lake edge to expand its range. Most of the thinned trees are young sycamore, but there is also ash and hazel. Most mature trees will be retained, although some larger sycamore will be felled. The work is being carried out by volunteers from the Silverdale Woodbank. Larger timber is removed as woodfuel and brash is burned on tin sheeting. After thinning has finished, the area will be fenced to allow several native-breed cattle to conservation graze this wood pasture and fen.

**Installing a sluice** in the man-made ditch between Hawes Water and Little Hawes Water will help us to control water levels within the Little Hawes Water basin and return the hydrology of these valuable wetlands to their pre-drained state. We are currently monitoring the water levels within the basin to see how water levels behave before the sluice is installed.

**Grazing** will be an important part of future management, with roughly one third of the reserve comprising grazed habitats (Grassland, fen, woodland and wood pasture). See the Grazed Habitats Management Plan for more detail.

**Path resurfacing** on the disabled access route from Challan Hall, via Hawes Water, to Moss Lane will ensure that visitors in wheelchairs or pushing buggies have easy access to the lake edge. We will also refurbish the two disabled parking bays at the Moss Lane entrance to the reserve.

**Drystone walling** will be an ongoing project throughout the next few years to restore gaps in existing stock boundaries and restore historic walls for future generations. Walls are an important landscape feature of the AONB too.

## Constraints

### Funding

With current (2020) Government spending limits, we have very little Grant in Aid (GIA) funding for conservation management projects. This is unlikely to change in the short to medium term. There are however, external funding opportunities that we can bid for (with the help of the External Funding Team in Natural England) to help pay for discreet projects. We also work in partnership with the Coppice Co-op and Silverdale Woodbank to manage particular woodland areas of the reserve and have a energetic team of volunteers who undertake a massive amount of coppice and scrub management work for us during the winter season.

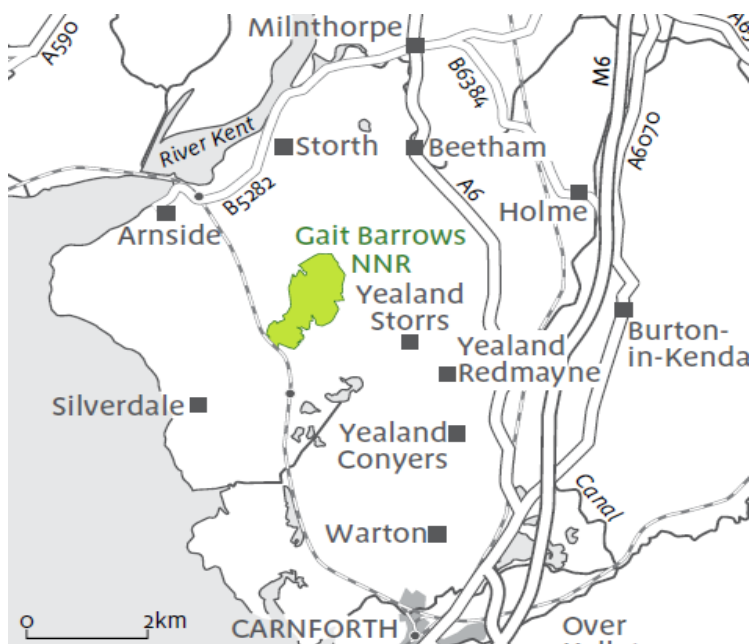
### Staffing

We have a dedicated NNR team who also work across various other sites in South Cumbria, so time and resource can be limited.

## How to get to Gait Barrows NNR

Gait Barrows NNR is near Morecambe Bay in north Lancashire, 2.5km north of Silverdale and 3km from Arnside at SD 481772.

By car, access is via minor roads from the A6 at Beetham to Brackenthwaite Road. A small visitor's car park can be found on the reserve off Brackenthwaite Road. The nearest train stations are in Silverdale and Arnside and there is a local bus service to the area from Carnforth.



The NNR is designated as Open Access Land, but walking through the wetlands or across the limestone pavements can be potentially hazardous. Other than on the boardwalk and surfaced paths, the terrain can be uneven.

Dogs are only permitted onto the reserve on the public rights of way and are not allowed elsewhere in the NNR. We request that dogs should be kept on leads at all times to avoid disturbing birds and other animals.

# Annex: Table of features at Gait Barrows NNR

Feature number	BAP Broad Habitat Type or Geological Site Type	Specific Feature	Explanation of Feature	SSSI	SAC	GCR
1	Inland rock; Earth Heritage	Limestone pavement Habitat for flora and fauna. 0V38 <i>Asplenium trichomanes</i> - <i>Asplenium rutamuraria</i> community 0V39 <i>Asplenium viride</i> - <i>Cystopteris fragilis</i> community. 0V40 <i>Arrhenatherum elatius</i> - <i>Geranium robertianum</i> community. (IK - Karst – GCR)	Limestone pavement- Habitat for flora and fauna and Karst. H8240 Limestone pavements	*	*	*
2	Open standing water	Oligotrophic water body; Marl lake and tarn.	Hawes Water lake and Little Hawes Water tarn. H3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	*	*	
3	Fen, marsh and swamp	M13 <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> mire; M24 <i>Molinia caerulea</i> - <i>Cirsium dissectum</i> fen meadow	Marl grassland adjacent to Hawes Water. H7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	*	*	
4	Calcareous grassland	CG9 – <i>Sesleria albicans</i> – <i>Gallium sternerii</i> grassland	Species-poor sesleria grassland on broken pavement and limestone outcrops. H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates	*	*	
5	Broad-leaved, mixed and yew woodland	W13 <i>Taxus baccata</i> woodland	H91J0 <i>Taxus baccata</i> woods of the British Isles	*	*	
6	Fen, marsh and swamp	S2 <i>Cladium mariscus</i> swamp	Saw sedge dominated swamp fringe around Hawes Water and parts of Little Hawes Water. H7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	*	*	
7	Broad-leaved, mixed and yew woodland	W8 <i>Fraxinus excelsior</i> - <i>Acer campestre</i> - <i>Mercurialis perennis</i> woodland W9 <i>Fraxinus excelsior</i> - <i>Sorbus aucuparia</i> - <i>Mercurialis perennis</i> woodland	H9180 <i>Tilio</i> - <i>Acerion</i> forests of slopes, screes and ravines (upland mixed ash woodland)	*	*	
8	Inland rock	Narrow-mouthed whorl snail	<i>Vertigo angustior</i> on the pavements at Gait Barrows.		*	
9	Fen, marsh and swamp	S4 <i>Phragmites australis</i> swamp and reed-beds; S24 <i>Phragmites australis</i> – <i>Peucedanum palustris</i> tall-herb fen; S25 <i>Phragmites australis</i> - <i>Eupatorium cannabinum</i> tall herb fen; M27 <i>Filipendula ulmaria</i> - <i>Angelica sylvestris</i> mire.	Sedge swamp, Reed bed, Open water margin, Tall herb fen, Fen meadow and Rush pasture.	*		
10	Calcareous grassland; Broad-leaved, mixed and yew woodland; Inland rock;	Invertebrate assemblage	Including high brown fritillary, northern brown argus, pearl bordered fritillary, small pearl-bordered fritillary, Duke of Burgundy, dingy skipper, white-letter hairstreak, grayling; red wood ant, least minor, barred toothstripe, <i>Bradesia chandleri</i> , <i>Dasyhelea lithotelmatica</i> , <i>Armadillidium pictum</i> , <i>Issus muscaformis</i> , <i>Trigonocranus emmeae</i> ,	*		

	Fen, marsh and swamp		<i>Microdon mutabilis</i> , <i>Osmia parientina</i> , <i>Platypalpus carteri</i> , <i>Empis prodromus</i> , <i>Dactylolabis sexmaculata</i> , <i>Clubiona caerulea</i> , Dragonfly assemblage			
11	Fen, marsh & swamp	Bittern	Breeding, implied by booming male at time of notification but no breeding records for many years.	*		
12	Calcareous grassland	Vascular plant assemblage	Angular Solomon's seal, rigid buckler fern, fingered sedge, dark red hellebore, blue moor grass, stinking hellebore, spring cinquefoil, spring sedge, limestone bedstraw, spring sandwort, bird's-eye primrose, saw sedge	*		
13	Fen, marsh & swamp; Broadleaved, mixed and yew wood.	Breeding bird assemblage	Including song thrush, grasshopper warbler, spotted flycatcher, marsh tit, bullfinch, reed bunting, greylag goose, shelduck, teal, marsh harrier, kestrel, water rail, lapwing, woodcock, green woodpecker, dunno, redstart, mistle thrush, willow warbler, goldcrest, lesser redpoll, hawfinch	*		
14	Broadleaved, mixed and yew wood	Fungi assemblage	Not a notified feature. Including <i>Clavaria purpurea</i> , <i>Phellodon confluens</i> , <i>Entoloma bloxamii</i> , <i>Physarum conglomeratum</i> , <i>Hypoderma hedera</i> , <i>Ramaria broome</i> , <i>Ramaria sub-botrytis</i> , <i>Ramariopsis biformis</i>			
15	Earth Heritage	FB – Quaternary of the Pennines and Adjacent Areas. Pollen Stratigraphy (GCR)	Flandrian vegetation history in lake and peat deposits. Not a notified feature.			*
16	Broad-leaved, mixed and Yew woodland	W2 <i>Salix cinerea</i> - <i>Betula pubescens</i> - <i>Phragmites australis</i> woodland; W5 <i>Alnus glutinosa</i> - <i>Carex rostrata</i> woodland	Wet woodland.	*		
17	Neutral grassland	MG5 <i>Cynosurus cristatus</i> - <i>Centaurea nigra</i> grassland; MG6 <i>Lolium perenne</i> - <i>Cynosurus cristatus</i> grassland.	Lowland meadow at Gait Barrows and Challan Hall Pastures. Not a notified feature but site fabric.			
18	Open standing water	Macrophyte assemblage	Aquatic plants. Not a notified feature.			
19	Broad-leaved, mixed and yew woodland; Fen, marsh and swamp; Standing open water; Neutral grassland	Mammal assemblage:	Including badger, otter, brown hare and bats. Not a notified feature.			
20	Calcareous grassland	Lady's slipper orchid	Species Recovery Project. Re-introduced to site. Not a notified feature.			
21	Calcareous grassland; Broad-leaved, mixed and yew woodland; Inland rock	Moss and liverwort assemblage	Including <i>Scorpidium turgescens</i> (only English site). Not a notified feature.			
22	Broad-leaved, mixed and yew woodland; Inland rock; Calcareous grassland	Lichen assemblage	Including <i>Synalissa sinfonia</i> . Not a notified feature.			

23	Fen, marsh and swamp; Standing open water	Amphibian assemblage	Frog, toad, smooth newt, palmate newt. Not a notified feature.			
24	Calcareous grassland; Broad-leaved, mixed and yew woodland; Inland rock	Reptiles	Common lizard, slow-worm, grass snake. Not a notified feature.			
26	Scrub community	W21 <i>Crataegus monogyna</i> – <i>Hedera helix</i> scrub, <i>Viburnum lantana</i> sc	Including guelder-rose, wild privet, dogwood, purging buckthorn, spindle.	*		

## Gait Barrows National Nature Reserve waymarked walks

