



Grazed Habitats Management Plan

Gait Barrows National Nature Reserve

2020-2025



Photo 1: Red Poll cow on the 'marl grassland' at the margin of Hawes Water.

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1. Introduction to the site

Gait Barrows National Nature Reserve (NNR) sits at the heart of the Arnside and Silverdale AONB limestone landscape and is made up of a diverse mosaic of habitats including open water, wetland, woodland, limestone pavement and grassland. The NNR comprises three separate Sites of Special Scientific (SSSI); Gait Barrows, Hawes Water and Thrang Wood and is part of the Morecambe Bay Pavements Special Area of Conservation (SAC). The reserve is approximately 122ha in size.

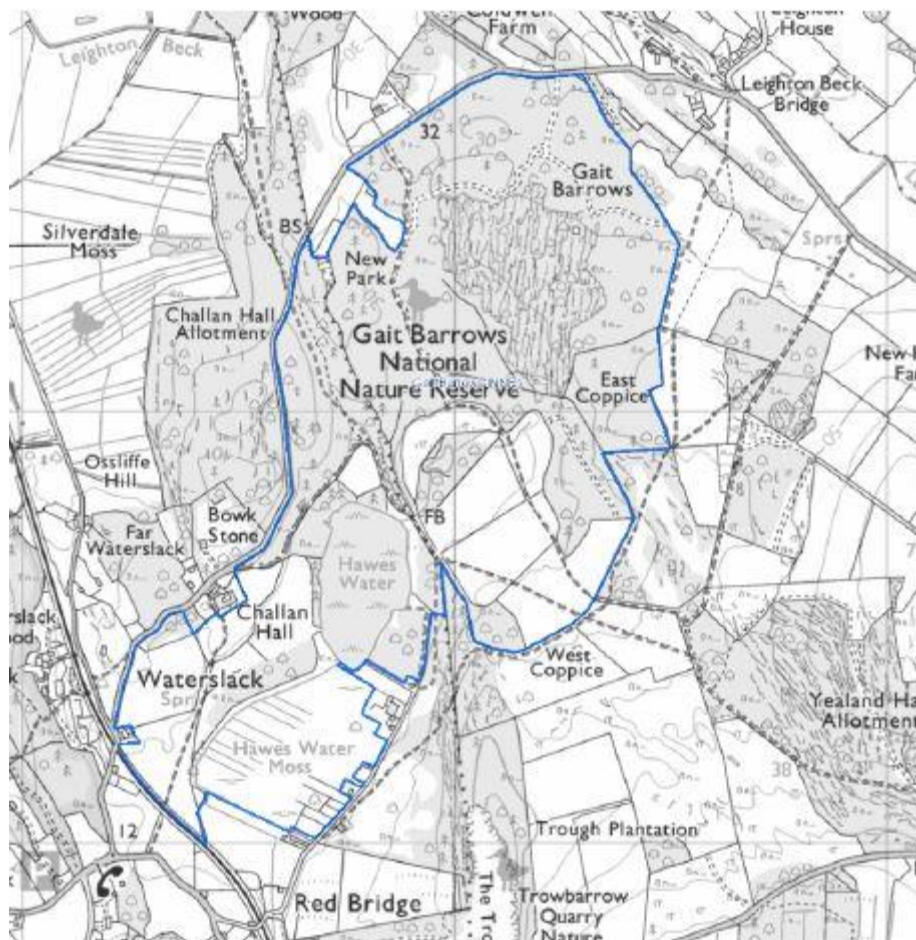


Fig. 1: Gait Barrows NNR boundary in blue

This plan forms part of the Gait Barrows Management Plan Review 2020-2025 and aims to set out the management and rationale for grazing management on the reserve. The grazed area represents approximately one third of the area of the reserve (42 of 122ha).

2. Areas covered by the grazing plan

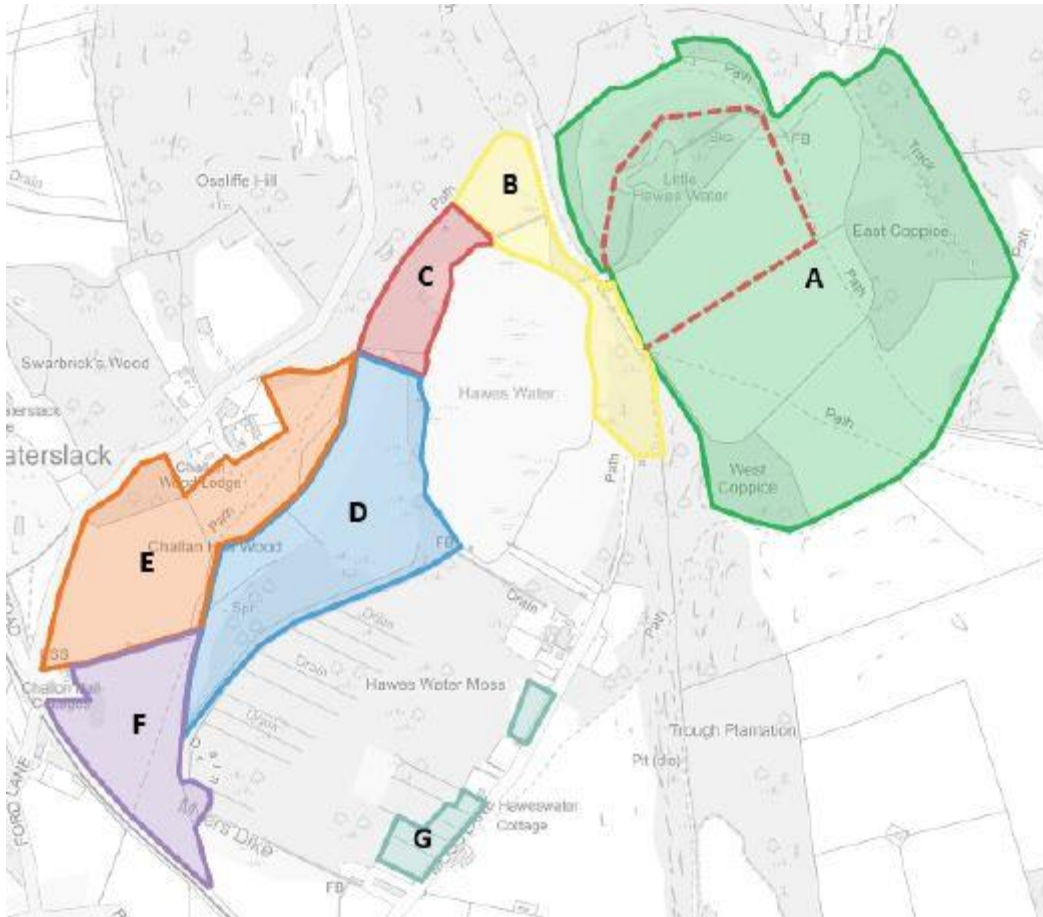


Fig. 2: Grazed areas on the reserve

- A** – Gait Barrows pastures
- B** – Lakeside fen pastures
- C** – Summerhouse fen
- D** – Boathouse fen
- E&F** – Challan Hall pastures
- G** – Moss Lane pastures

3. SSSI units, features and condition status

Grazed areas from map	Area (ha)	SSSI Unit number GB – Gait Barrows HW - Hawes Water	Current SSSI Condition	Reportable features on units (habitat)
A	16.40	27 (GB)	Unfav-no change	Lowland fen Open water
	4.16	19 (GB)	Unfav-recovering	Mixed ashwoods
	1.07	22 (GB)	Unfav-recovering	Mixed ashwoods
	0.86	pt25 (GB)	Favourable	Mixed ashwoods
	0.30	pt26 (GB)	Favourable	Mixed ashwoods
B	0.89	3 (HW)	Favourable	Lowland fen
	0.41	5 (HW)	Favourable	Lowland fen
	0.30	7 (HW)	Favourable	Lowland fen
	0.94	pt8 (HW)	Unfav-declining	Lowland fen
C	1.41	4 (HW)	Unfav-no change	Lowland fen
D,E&F	13.94	20 (HW)	Favourable	Lowland fen Wet woodland
	0.55	12 (HW)	Unfav-no change	Mixed ashwoods
G	0.77	Not SSSI	N/A	N/A

Table 1: Gait Barrows NNR SSSI units and condition status.

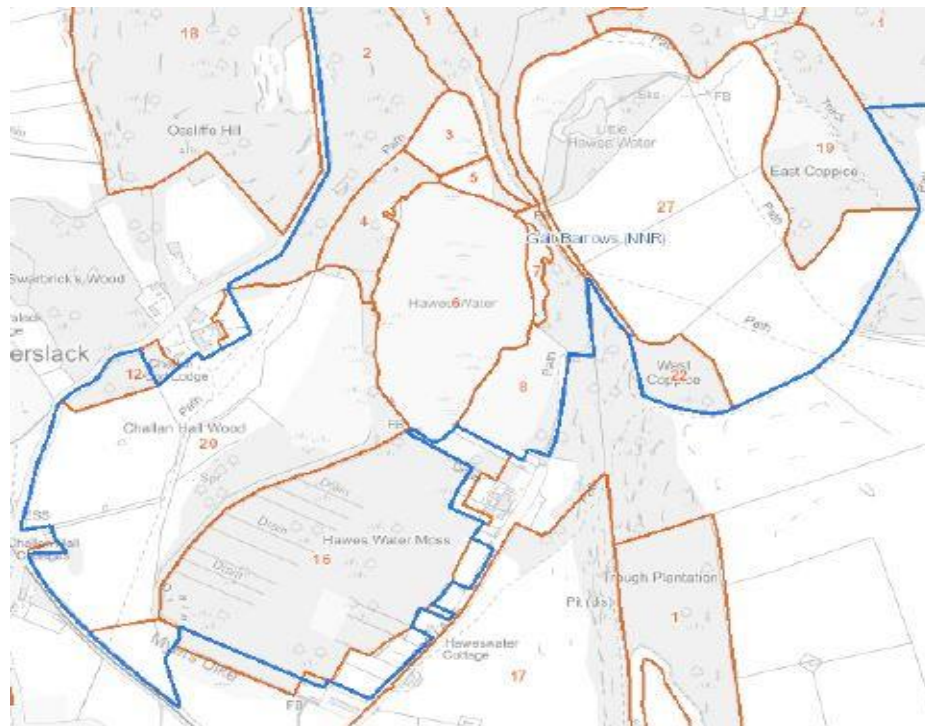


Fig 3: Gait Barrows NNR SSSI units

4. Historic management

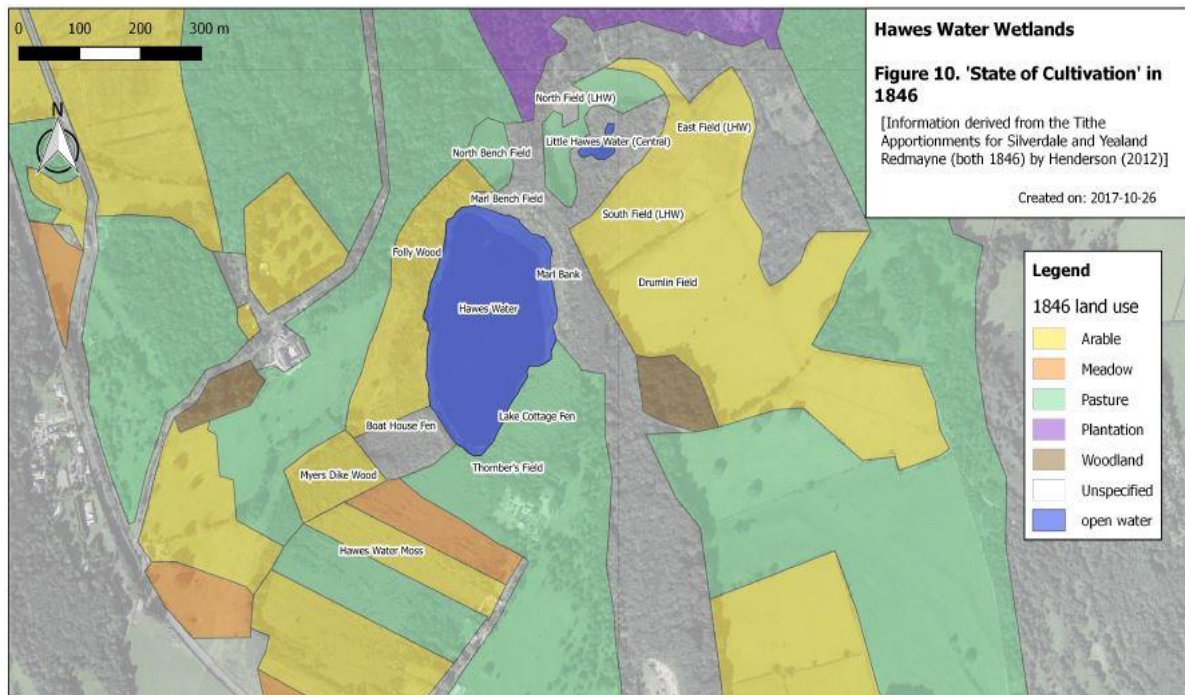


Fig. 4: Land use at Gait Barrows in 1846

Fig. 4 shows the land use of various parts of the reserve in 1846 (173 years ago). It's surprising to see that large parts of Gait Barrows pastures (Area A), Boathouse fen (D), Challan Hall Pastures (E&F) and Summerhouse fen (C) were cultivated and in arable cropping at that time. In many ways, the landscape was much more intensively managed (although without modern artificial fertilisers) with some current fen areas comprehensively drained and managed as either arable or pasture. The Gait Barrows Pastures around Little Hawes Water were again drained, ploughed and sown with arable crops (mainly kale) in the 1940's during WWII.

Some areas that we now think of as mature woodland (Area C – Summerhouse Fen) are relatively recent additions to the landscape. Photo 2 below, taken around 1900 from Challan Hall Allotments, shows the northern end of Hawes Water looking west towards Gait Barrows pastures (Area A). It demonstrates how this landscape has radically changed over the last century. At the time the photo was taken, there were fewer trees and larger areas of open ground probably grazed by sheep to create a mosaic of grassland, fen, scrub and wood pasture.

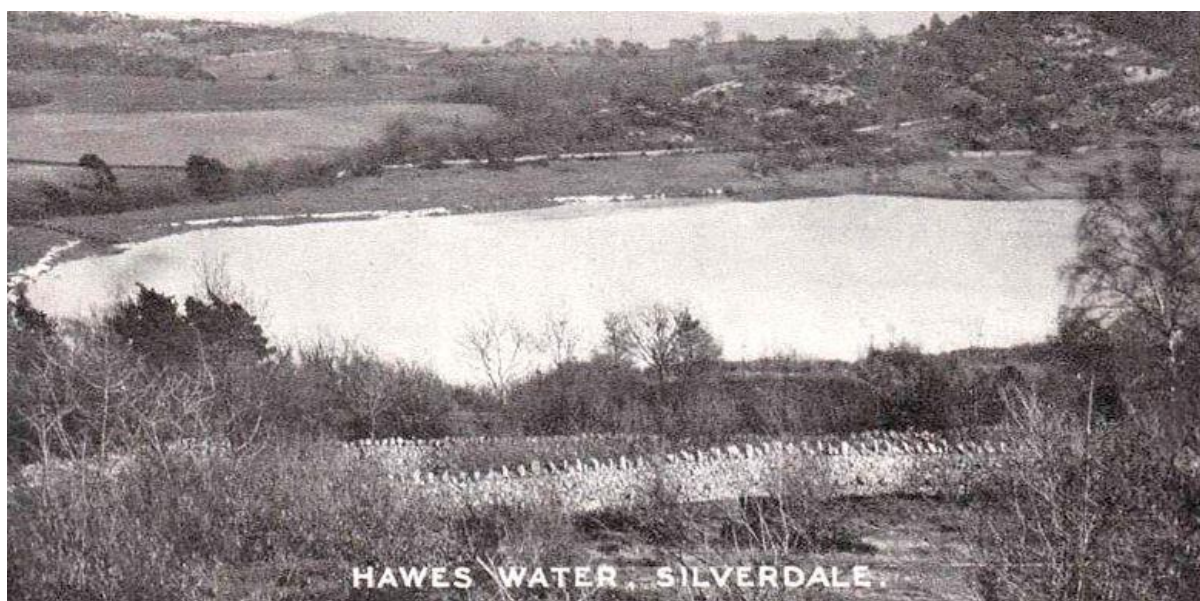


Photo 2: Hawes Water circa 1900 taken from Challan Hall Allotment looking towards the lakeside fen pastures (Area B).

5. The grazed habitats five year 'Vision'

Gait Barrows National Nature Reserve (NNR) is a rich and diverse mosaic of limestone habitats in favourable SSSI condition status supporting an amazing array and abundance of wildlife.

The grazed wetlands at Gait Barrows have had their natural hydrological processes restored. The Little Hawes Water basin has been returned to its pre-drained state with the installation of a sluice in the man-made ditch between the two water bodies and the nationally rare alkaline swamp and fen plant community have returned to their former range.

Wood pasture, scrub, grassland and wetland blend seamlessly into one another. Organic conservation grazing by large herbivores such as cattle, deer and ponies have helped to engineer a dynamic mix of habitats mimicking the natural grazing and browsing habits of their ancestral species. In summer, the species-rich grasslands are a blaze of colour and host a variety of orchid species including the green-winged orchid. The marl grasslands adjacent to Hawes Water support a broad assemblage of nationally rare flowering plants, in good numbers, such bird's-eye primrose, fragrant orchid and grass-of-parnassus that had previously been uncommon.

The removal of internal fencing to create an extensive grazing compartment at Gait Barrows pastures has softened the hard linear boundaries between woodland, fen and grassland facilitating the development of a more natural transition between the habitats. A shift to autumn and winter grazing has allowed pockets of scrub to develop within the grassland, providing greater structural diversity and with it a whole range of new niches for species. The amalgamation of coppiced woodland, fen and grassland areas re-instated a large proportion of the historic Colt Park enclosure, fully restoring the 400 year old walls and returning their original function.

The open access and public rights of way allow fantastic opportunities for visitors to experience the wild landscapes and get close to the native-breed grazing animals. The disabled access and 'tramper' route established through Gait Barrows pastures and along the Hawes Water fringe (that links to the wider AONB) is well used and considered to be one of the most beautiful in the country.

6. Management of the grazed habitats

Gait Barrows Pastures (Area A, Fig.2)

The Nature Conservancy Council (now NE) acquired Gait Barrows pastures in 1977 as part of the larger Gait Barrows NNR pavement and woodland acquisition. Before 1977, the pastures were grazed with cattle and sheep and would have received applications of manure and some artificial fertiliser. After dedication as a National Nature Reserve, grazing was managed along organic principles with cattle during the summer and autumn. Hay crops were taken on some areas until falling soil fertility meant it wasn't financially viable for the tenant.

The grassland plant community at Gait Barrows Pastures was not notified as a designated SSSI feature due to its 'agricultural improvement' and poor species diversity at the time of SSSI notification in 1984. However, the grasslands form an important part of hydrological catchment for Little Hawes Water and so are assessed with that in mind. This remains the situation, although the grassland is now much more species-rich and includes examples of unimproved pasture indicator species such as northern marsh/common spotted orchids and adder's tongue fern. Increases in species-richness tend to correlate with falling soil fertility and a relaxation in grazing pressure in the first half of the growing season.

Photo 3 below, shows a relatively uniform sward across the pastures. Water levels within Little Hawes Water were lower than they are today and the linear ditches leading into and out of Little Hawes Water are clearly visible and look to have been recently cleared. Fencing is located close to the tarn edge enclosing a thin fringe of scrub with very little fen habitat.



Photo 3: Aerial photo of Gait Barrows Pastures and Little Hawes Water taken in 1973.



Photo 4: Aerial photo of Gait Barrows Pastures and Little Hawes Water taken in 2017.

The photo 4 above, shows the Little Hawes Water basin in 2017. Wet woodland (mainly willow and alder) has established within a much larger area around the tarn, fenced to exclude livestock. The small dam that was installed in the ditch connecting Little Hawes Water to Hawes Water in 2005 has had some effect in raising the water levels within the basin creating a larger expanse of open water and fringing swamp and fen habitats (all SAC qualifying features).

Morecambe Bay Conservation Grazing Company has grazed these meadows since 1994 with an organic native-breed cattle herd.



Photo 5: Morecambe Bay Conservation Grazing Company Red Poll cattle grazing the Gait Barrows pastures.

Typically, cattle have been introduced onto the pastures in July to allow the grasses and wildflowers to set seed. This means that the pastures perform like haymeadows in the earlier part of the season with the 'hay' then grazed off instead of being cut. Grazing in this way has achieved a greater sward structure diversity during the growing season which is extremely beneficial to flowering plants and invertebrates. The cattle are removed when the year's growth had been consumed (1-3 inches on the grassland and 3-6 inches with tussocky areas in the wet grassland and fen). Grazing around the tarn in the wetland habitat has helped to maintain a mosaic of trees, scrub and fen vegetation with a varied structure that is important for providing habitat niches for many different species. Supplementary feeding has not been permitted, as this can import nutrients and allow stock to remain on ground where they can't be sustained naturally. Some additional pony winter grazing (September – March) also occurred from 1994-2000, to help manage the fen habitat around Little Hawes Water.

Gait Barrows pastures are currently in unfavourable SSSI condition (See table 1, unit 27). This condition status refers only to the designated features within this unit i.e. Open water and Lowland fen. These SSSI features are recorded as unfavourable not due to their current condition or management (which is favourable) but because of the past history of drainage, that means the extent of the habitat is smaller than could be expected before intervention. Natural England aims to rectify this situation by installing a sluice in the interconnecting man-made ditch between Hawes Water and Little Hawes Water to restore a more natural hydrology to the basin. At which point we can re-assess the unit, where it's likely to become favourable again. As the grassland in Unit 27 is not a notified feature of the SSSI, it isn't considered when assessing the condition of the SSSI unit except in relation to its hydrological influence. Marl tarns are a very rare feature and the Hawes Water and Little Hawes Water waterbodies are the only remaining marl tarns in Lancashire, so it is vitally important that they are managed to maximise their biodiversity potential.

Future management will shift to autumn/winter grazing, with cattle being introduced from October and allowed to graze through to the end of March, forage and ground conditions withstanding. Supplementary feeding will not be permitted. The wetland parcel around Little Hawes Water (within the red dashed line of Area A, Fig.2) will be managed in conjunction with the lakeside habitats (Area B).

West Coppice (Unit 22) and East Coppice (Unit 19) will be amalgamated with Gait Barrows pastures (Unit 27). Removing the existing internal fencing will include these areas as grazed wood pasture within the larger grazing parcel. This effectively reinstates the original 17th century enclosure, Colt Park (New Park), created by Thomas Middleton from Leighton Hall circa 1630 to enclose 85 acres of what was then Yealand Common for rearing of horses. Many sections of the original (nearly 400 year old) walls are still exist, so expanding this grazing enclosure back to its original extent will help to preserve these walls into the future and return their intended function.

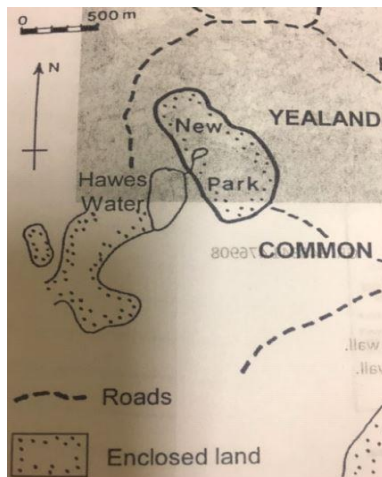


Fig 5: Map of Colt (New) Park boundary



Photo 6: Section of Colt Park wall where it joins with a later enclosure wall

The hard edges to the woodland will be softened by coppicing selected hazel stools, hawthorn and blackthorn. Deer fencing around previously coppiced coupes will be removed and further small areas of coppice work undertaken to add age structure to the woods and regenerate the ground flora in places. The permanent open ride through East Coppice will be widened and scalloped to provide nectaring opportunities for fritillary butterflies.

Fencing along the south side of Little Hawes Water will be removed completely to allow cattle to range into the fen and wet woodland. Sections of the hard, linear edge that has developed with fencing will again be coppiced to create a more natural looking transition from wet woodland to fen and swamp.

Lakeside Fen Pastures (Area B, Fig. 2)

These lake side habitats have not been grazed in recent decades. Attempts had been made to graze the small fen pasture (Unit 3, Fig. 3) with ponies and then cattle, but an

unreliable water supply and the poor nutritional value of the vegetation made stock management challenging and attempt was abandoned. This resulted in an increase of woody growth and expansion of the bracken beds.

'Marl grassland' can be found on the northern and western fringes of Hawes Water (Units 5 & 7), a rare alkaline plant community made up of species such as blue moor-grass, black bog-rush, grass-of-parnassus, fragrant orchid and dark-red helleborine. Lack of grazing of this habitat resulted in a dense grassy sward with a proliferation of dead thatch, woody growth, bracken, bramble and reed. The marl grassland (an SAC qualifying feature) was in poor condition and some of the plant species previously mentioned were in sharp decline. The open nature of the grassland had only persisted due to the efforts of a group of dedicated NNR Volunteers who cut woody growth, bracken and bramble, acting as a proxy for grazing animals. In 2017, as part of a project to restore the wetland habitats around Little Hawes Water, mature plantation trees and scrub were removed to open up the fen and reconnect the these important lake edge habitats to Gait Barrows Pastures (see before and after photos below).



Photo 7: The lakeside habitats just prior to restoration work in winter 2017/18.



Photo 8: The lakeside habitats in summer 2019, reconnected to Gait Barrows Pastures (RHS of boardwalk).

Since 2017, the fen has been grazed in conjunction with Gait Barrows pastures (Morecambe Bay Conservation Grazing Company) by opening the inter-connecting gates. Fencing between the areas A and B means that cattle can be excluded when necessary. SSSI Units 3&5 are separated from units 7&8 by the ditch that connects Hawes Water and Little Hawes Water and so form a separate grazing compartment. Two cows were moved into this compartment by pushing them across the small stone culvert bridge (by opening a pair of gates across the footpath and closing them again once the cows are through). This year (2019), the cows grazed area B from August to early November.

Part of Area B (Unit 8) is in unfavourable SSSI condition. This was due to the presence of the plantation woodland/scrub on marl and peat. On these substrates we would expect to see marl grassland and alkaline fen habitats (both SAC features). As the trees and scrub have now been removed, it is likely to be recorded as favourable SSSI condition after its next assessment.

Around half a hectare of beech and sycamore plantation on slightly elevated ground in unit 8 remains but was heavily thinned to open the canopy and encourage ground flora to develop. These trees are also part of the grazed area B and will continue to be managed as wood pasture. Some additional small-scale thinning is planned to the centre of the plantation to create a sunny glade but mature beech around the periphery will be retained. Some trees to the northern edge will also be felled over the next few years.



Photo 9: Red Poll cow grazing marl grassland in unit 7 with Juniper scrub in the background.

Future management will be a continuation of the current regime of cattle grazing from late summer through to early winter to remove the year's growth of vegetation. Grazing with cows creates open niches and disturbance in the sward that is needed for species

such as Bird's-eye primrose to thrive. The cattle are also effective at stripping leaves from woody species and reed and trampling bracken, all of which can become dominant if not kept in check, therefore helping to keep the marl grassland in favourable condition.

Summerhouse Fen (Area C, Fig. 2)

Although this part of the reserve (Unit 4, Fig.3) hasn't been grazed in living memory, it certainly would have been in the past. Fig. 6 below, shows Summerhouse fen circa 1900, as a series of three small grazing compartments. Remnants of gates, stone walls and fencing can still be found today. The northern compartment contains mature larch, pine, oak, yew and even a horse chestnut that appear to be represented on the map and would have been planted as part of the designed 'picturesque' landscape around the Summerhouse and Challan Hall. These are certainly some of the oldest trees on the reserve and where possible will be retained as important landscape features.

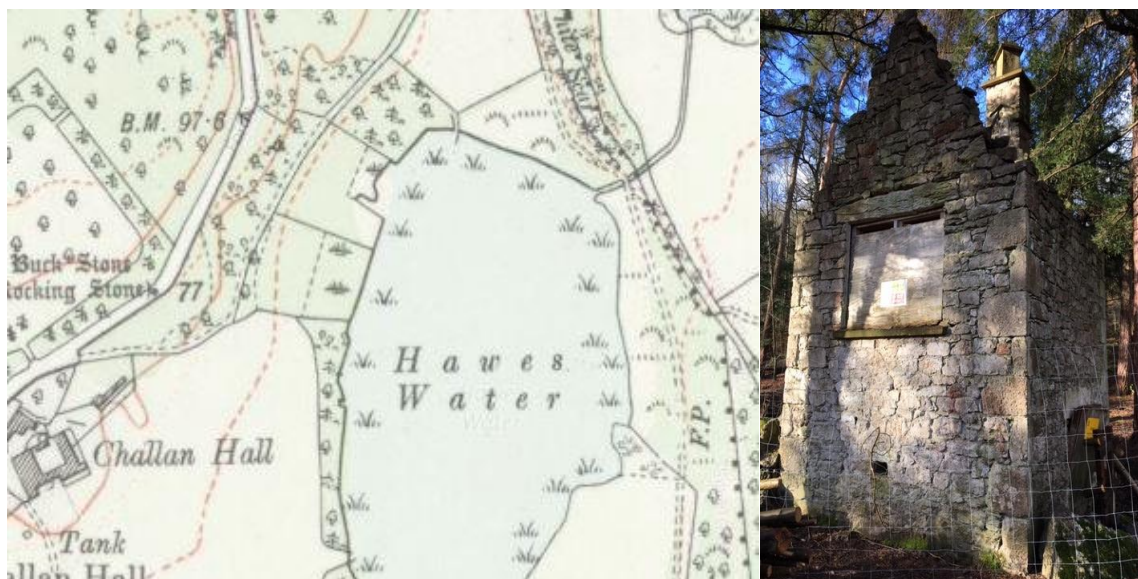


Fig 6. Map of Hawes Water circa 1900 and the Summerhouse now.

Since the cessation of grazing, this part of the reserve had developed into full canopy secondary woodland of mainly sycamore and ash on the higher, drier ground and alder and willow in the wetter fringes along the lake edge, grading into *Cladium mariscus* (saw-sedge) fen. The map also indicates this change from open ground on the left to fen/swamp on the right.

This unit is currently described as being in unfavourable SSSI condition, however this is due to it being previously assessed as a woodland. In fact, its notified feature is the alkaline fen community which is nationally rare and an SAC qualifying feature of the site. This unit will be reassessed in future for its alkaline fen interest.

Natural England has been working with the Silverdale Woodbank since winter 2018/19. The Woodbank has been thinning the woodland in this unit to open up the canopy, help create a more diverse ground flora as well as restoring the fen. This work is ongoing but is likely to be finished in the next two winter seasons. After thinning is completed (and the Summerhouse restored in summer 2020), Summerhouse fen will be fenced alongside the path (see Fig. 7 below) to amalgamate with Areas B & D and allow cattle grazing to be re-introduced to the wood pasture/fen mosaic. Access to the summerhouse will be maintained from the adjacent public right of way.



Fig 7: Green line is proposed new fencing. Red line is fencing to be removed.

Challan Hall Pastures (Area E, Fig. 2) including Boathouse Fen (Area D)

English Nature (now NE) acquired Hawes Water and Challan Hall Pastures in 1988. Prior to that time, grazing had been mainly with sheep. Sheep grazing continued during the summer months for another 10 years. Winter grazing with ponies was introduced in 1995 and was the only management species from 1998 until 2019.

The grassland plant community at Challan Hall Pastures was not notified as a designated SSSI feature due to its 'agricultural improvement' and poor species diversity at the time of SSSI notification in 1986. However, the pastures form an important part of hydrological catchment for Hawes Water and so are assessed with that in mind. The only habitats in SSSI unit 20 (fig. 3) that are notified features are the lake fringing alkaline fen (see photo 10 below), and the wet woodland adjacent to

Myers Dike both in area D. Therefore, unit 20 is currently in favourable condition due to the assessed condition of the fen and wet woodland habitats but not the grassland.



Photo 10: Looking east across the fen pasture, reed and scrub adjacent to Hawes Water (Boathouse fen, Area D).



Photo 11: Patches of herb-rich pasture in summer (Area E)



Photo 12: Towards the end of winter 2017 with pony grazing.

Natural England doesn't currently have a grazier at Challan Hall pastures as the pony grazing finished in summer 2019. We are reviewing options for the period of the management plan 2020-25, to engage a conservation grazier to help us deliver our vision for this part of the reserve.

As with other grazed habitats, future management will focus on softening the hard boundaries between habitats to create a diverse mosaic of grassland, fen, scrub and

woodland which creates plenty of 'messy' vegetative structure and lots of 'niches for species'. In area D this would include removing some of the internal fencing between compartments (see aerial photos below) to allow grazing animals to move more naturally between habitats and improving the visual quality of the landscape. Previously fenced off woodland will be incorporated into the larger grazing unit and stock will have access to the lake edge (as in Area B). Wetland habitat edges will also be softened, by allowing the swamp and fen communities to develop across their natural extent.

The fence between compartments D&E will be re-located to the break of the slope to make it less visually intrusive. After woodland thinning work has been completed in Area C, Area D will be amalgamated with areas B&C to make one larger lake edge fen grazing compartment. This will help to spread the grazing pressure over a larger area and remove some the hard linear boundaries.

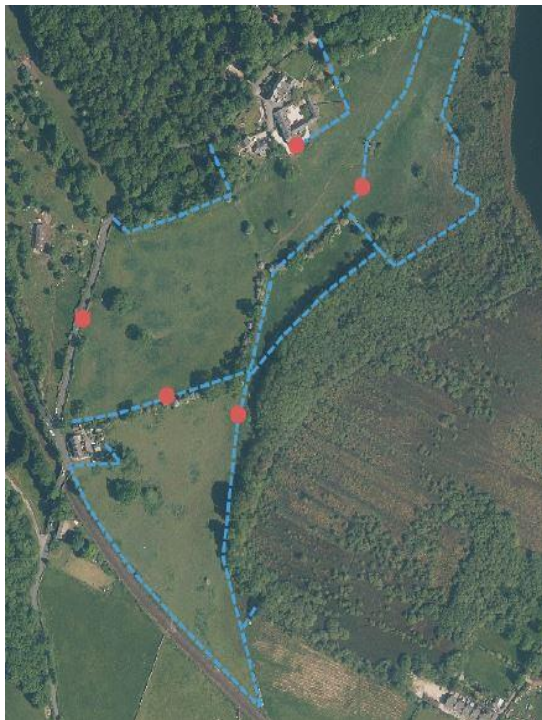


Fig. 8: Current fencing at Challan Hall Pastures (blue), gate (red dot).



Fig. 9: Retained fencing (blue), fencing to be removed (red), New fencing (yellow).

The habitats in Area E&F have become relatively static and depauperate, i.e. lacking in the numbers and types of species, for this type of grassland. Although the grassland isn't a SSSI feature, its contribution to biodiversity and the wider landscape could be greater than is currently achieved. Our ambition is to introduce dynamism by allowing pockets of scrub to develop, especially along the woodland edges and re-coppice alder and willow scrub on the fen at the lake edge. Views will continue to be maintained for the residents of Challan Hall, across the pastures to Hawes Water.

The mature alder woodland in area D is mostly of a single age structure. Some small scale coppicing will be undertaken to soften the woodland edge and introduce some

age structure. Over mature hedgerows of mainly hawthorn between areas D&E will be retained as important landscape features and as an invaluable food source for birds.

Future grazing for Area E of Challan Hall Pastures will follow organic principles, most likely with cattle. Cattle grazing produces a varied sward structure i.e. short and tussocky areas, that are beneficial for both flowering plants and invertebrates. Initially, stocking levels would need to be low enough to allow scrub regeneration in places but also remove the current year's grass growth by the end of the season. This could be most easily achieved by adopting an autumn/winter grazing regime, forage and ground conditions withstanding. Supplementary feeding will not be permitted. Red and Roe deer are also a regular sight in the pastures and fen, so will contribute to the mix of grazing species in this part of the reserve.

Challan Hall Pastures (Area F, Fig. 2)



Photo 13: Area F looking south towards the railway line.



Fig 10: Aerial photo of Area F.

Area F is the southernmost parcel of Challan Hall pastures and the least botanically interesting of the group. The fertility is higher than some of the other grazed areas (a recent soil test showed a P index of 1). However, the soil is deeper and more loamy, so this is to be expected to some extent. Patches of creeping thistle and stinging nettle are frequent and again point to nutrient enrichment from stock feeding or inputs of fertiliser or manure in the past. The grassland type fits with semi-improved, neutral grassland MG6.

The field has an impressive open-grown veteran oak (see photo above) and several huge boundary trees of ash, small-leaved lime and beech that help to give it a parkland feel. There are several medium sized depressions (possibly old quarry pits) that hold water in winter and in wet weather.

The southern tip of the field is wetter, low lying and peaty. Fig. 10 above shows a darker disk of peat (to the RHS) in this area. Wetland species such as reed, alder and willow would naturally colonise but have been kept in check by past pony grazing.

Although part of the grazed habitats management plan, Natural England has decided to rest this compartment for the 5 year duration of the management plan and exclude grazing completely. The aim is to facilitate the natural regeneration of scrub by removing the grazing pressure. This will most likely consist of bramble, blackthorn and hawthorn on the drier parts of the field and alder, willow and reed pushing out from the bottom corner of Hawes Water Moss on the wetter peaty soils. Once established scrub and bramble thickets can act as thorny shelters for larger tree species to grow through.



Photo 14: 'The thorn is the mother of the oak'. A photo taken at Knepp Estate in Sussex (Sept 2019), showing a bramble thicket protecting a young oak tree.

As the grassland here isn't a notified feature of Hawes Water SSSI, Natural England is less constrained and more able to experiment to create habitat with more structure, biomass and species diversity. The grazed habitats within the National Nature Reserve should aim to be less agricultural in function and appearance and provide a diverse range of ecological niches for the maximum number of species as possible.

Removing grazing for a period of time will allow the development of a tussocky grassland sward that will be excellent habitat for small mammals and associated raptor

species such as barn owls and kestrels (for which we will erect some boxes). Moles are an established feature of the grasslands here and help to create patches of bare earth. It is likely that this area may develop patches of creeping thistle, nettle and ragwort in the first few years due to the elevated nutrient status. However, experience from the Knepp Estate Wilding Project shows that these species tend to peak and then decline as they are targeted by feeding insects and soil fertility reduces. This will need to be monitored and ragwort managed if it is becoming abundant. Public footpaths and infrastructure will be maintained as usual and paths mown if necessary to facilitate easy access.

Moss Lane Pastures (Area G, Fig. 2)

Moss Lane pastures were acquired by English Nature (now NE) with Hawes Water Moss in 1992. They fall within the boundary of the NNR but not the SSSI/SAC. They are currently grazed with cattle from Morecambe Bay Conservation Grazing Company.

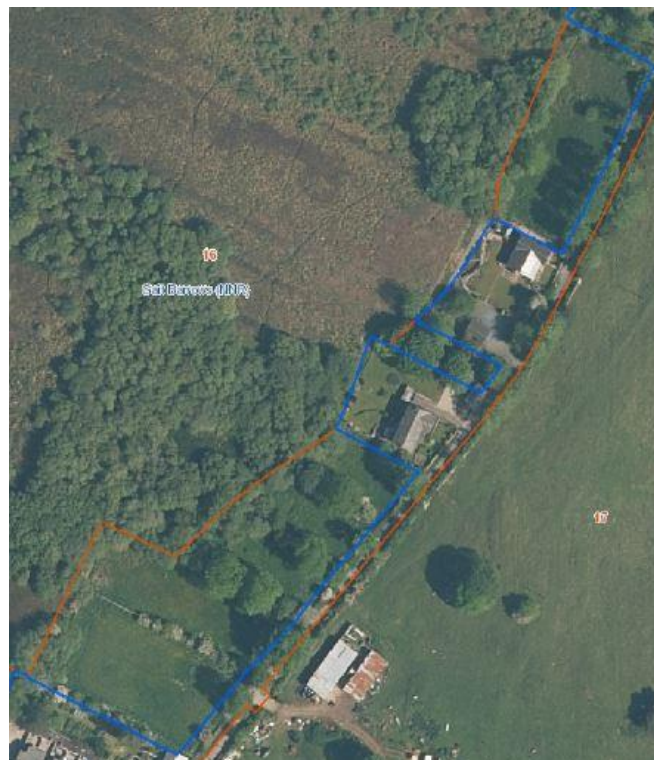


Fig 11: Aerial photo of the pastures. NNR boundary blue, SSSI boundary red.

7. Access provision

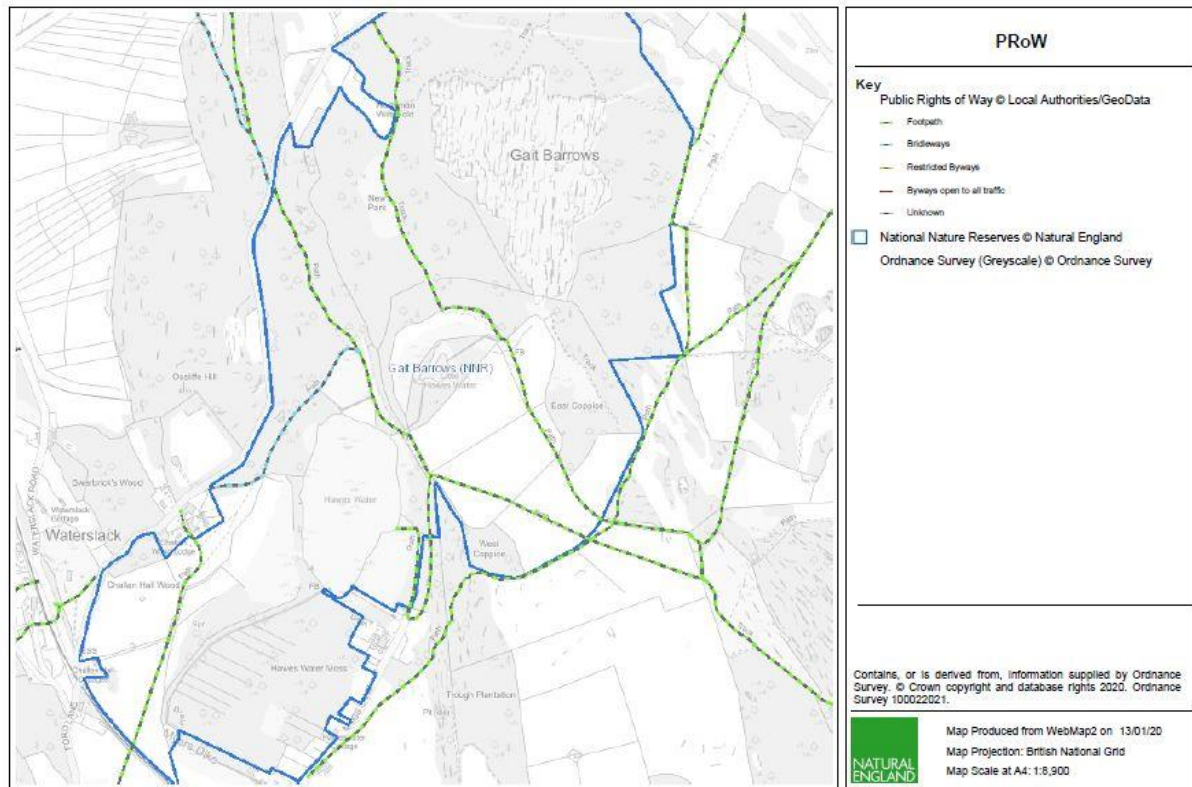
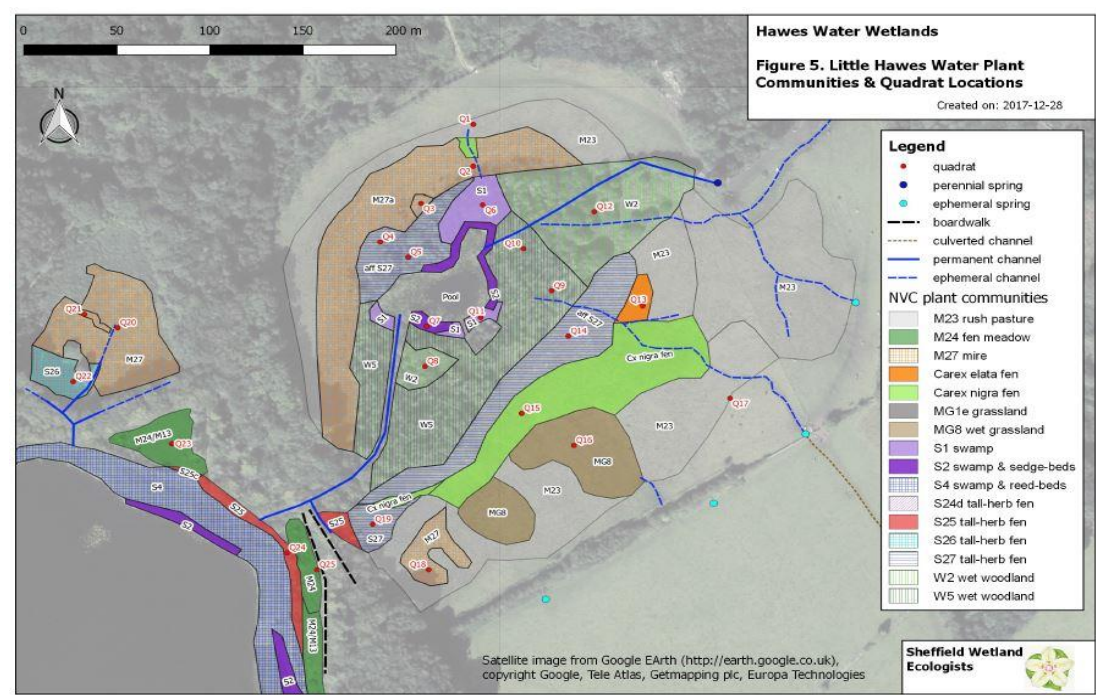


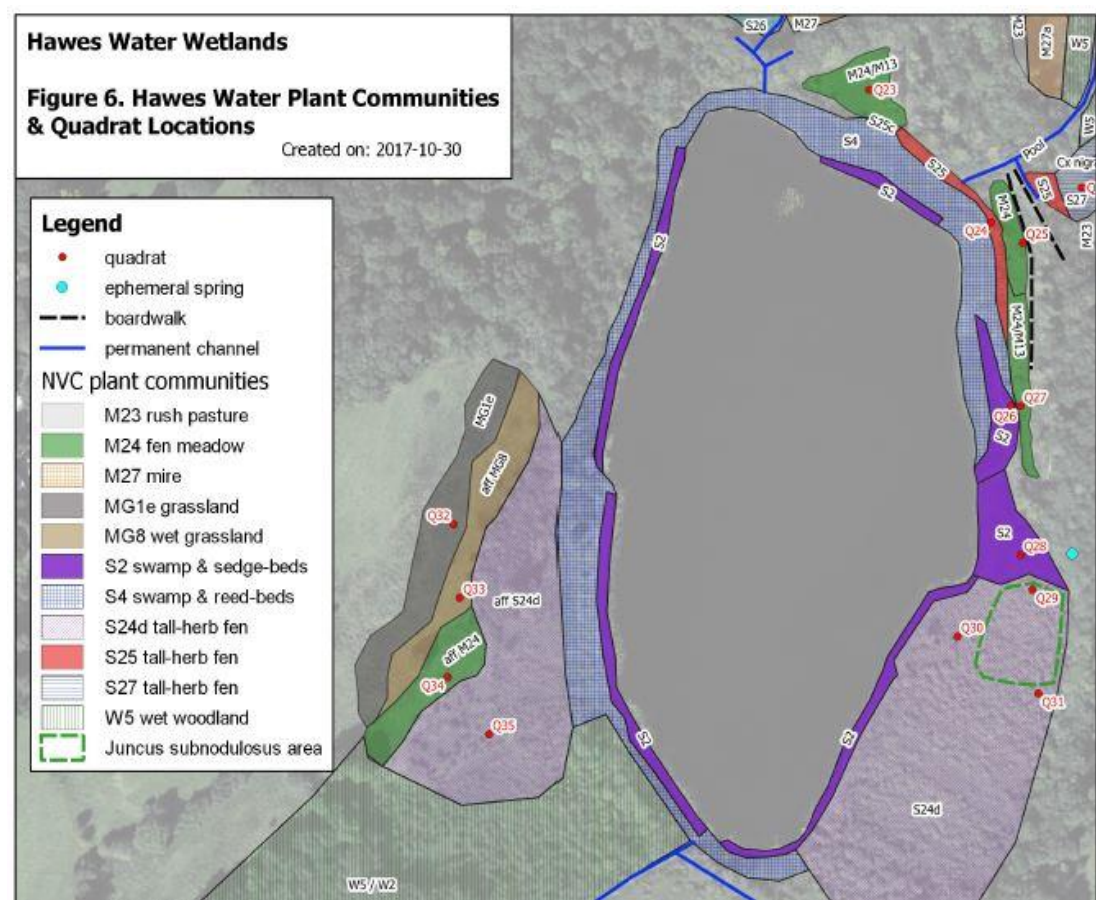
Fig. 12: Public rights of way through Gait Barrows NNR.

There are approximately 1600m of Public Rights of Way that run through the grazed parts of the reserve although all of the areas in the plan are also designated as open access. In most places, PRoWs and livestock are kept separate but footpaths traverse the grazed meadows of Gait Barrows and Challan Hall (Areas A,E&F) where there has been grazing for many years.

8. Annex



Annex 1: NVC map for the Little Hawes Water basin (Areas A&B).



Annex 2: NVC map for Hawes Water margins (Areas B,C&D)