

**Barlaston and Rough Close
Common
Management Plan
2018 - 2023**

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Executive Summary

Barlaston and Rough Close Common is 21ha of heathland and is the largest of the Borough's LNRs. External funding has allowed the lower common to be fenced in order to carry out conservation grazing. Regular annual management is also required to maintain and enhance this work in line with the Countryside Stewardship Agreement (2003 - 2013). This includes the day-to-day management of the site including the organisation of events and work parties, site surveys and general maintenance. Annual financial costs will be approximately £4500. Details of the works are found in the main body of the text and include:

- Heathland restoration
- Vegetation control
- Scrub/tree control

By managing the Borough's natural assets the Council is following national and local policy set out in:

- NERC Act 2006 - Section 40 and 41
- SBC Corporate Plan
- SBC Climate Change and Green Recovery Strategy

1 Introduction

This document is based upon the original management plan prepared by Sue Sheppard for English Nature in 1992 and the later Management Plan 2000 - 2010 written for the Council by Gill Castle of *Eco Tech*. It is now 20 years since the original Plan was written and therefore it is timely to renew management on site bearing in mind the lessons learnt from two decades of conservation work.

The reserve comprises two areas of lowland heathland, known as Barlaston Common to the west and Rough Close Common to the east. These two areas are divided by the A5005 (Lightwood Road), which runs approximately north-south through the site. Small areas of the site to the north are isolated from the main parts of the site by minor roads (Cocknage Road to the west and Common Lane to the east). The site is situated in the village of Rough Close in close proximity to larger conurbations to the north (Meir Heath, Meir, Lightwood and Normacot). The site is therefore subject to relatively high recreation pressure. In contrast, to the south the landscape is predominantly agricultural with scattered woodland.

The vegetation is relatively diverse, with distinct variations between the separate parts of the site. A range of habitats is represented. Dry heath and dry acid grassland dominate Rough Close Common to the east with acidic marshy grassland and patches of wet heath prominent at Barlaston Common to the west. Areas of woodland, scrub, neutral grassland, bracken and ruderal tall herb are also present throughout. To the north of Barlaston Common is a pool with open water and emergent vegetation.

1.1 Prescription

Management is required to maintain, enhance and expand the heath habitats. Preferred management at Barlaston Common would be the continuation of cattle grazing. At Rough Close Common where grazing would be inappropriate, other management options will be required such as control of scrub (including gorse and bramble), bracken and ruderal herbs and experimental cutting and turf stripping with the aim of encouraging ericaceous plants. Woodland expansion will be prevented although selected areas of mature established woodland will be managed and maintained.

Some other habitats on site also require management such as neutral grassland (by cutting), gorse (rotational cutting) and the pool (clearing invasive non-native species) while other habitats can be retained without the need for further management (such as selected areas of woodland, scattered scrub and selected areas of bramble, bracken and ruderal tall herb).

The diversity of invertebrate species will also be maintained through the prescribed habitat management.

Measures to maintain the intrinsic appeal and natural feel of the site and enhancing opportunities for recreation where this will not conflict with other objectives are recommended. Such measures include maintenance of the current amenity value (paths, interpretation, benches), removal of non-native species, retaining "screening" vegetation and checking encroachment and tipping at the site margins.

Other prescribed management includes attempting to reduce fire risks, maximising public awareness and support, monitoring of populations of notable species and the effects of all management and fulfilling legal and other objectives.

2 Site Description

The site comprises two areas of lowland heath on either side of the A5005 (Lightwood Road) in the village of Rough Close. The area to the west of the road is known as Barlaston Common while that to the east is known as Rough Close Common. Locals also refer to the two sites as the "Top" and "Lower" Common. Minor roads (Cocknage Road to the west and Common Lane to the east) run through the north of the site isolating small fragments on the northern boundary. Minor roads also run along the southern boundaries of the site. Land immediately adjacent to the site is agricultural to the west and north-west and residential to the north-east, east and south. The vegetation is relatively diverse, with distinct variations between the separate parts of the site. But for the presence of Lightwood Road, the two sites would have comprised one continuous block of heathland grading from elevated dry heath/acidic grassland to wet heath/marshy acidic grassland on the lower ground.

Barlaston Common (to the west) comprises of a series of habitats mainly acidic marshy grassland habitat dominated by purple moor-grass and soft rush with frequent (locally abundant) wavy hair-grass. Small areas of wet heath also occur where cross-leaved heath is locally frequent. Dry acidic grassland and dry heath are frequent around the margins. Woodland dominates the margins of the site. A pool with open water and emergent vegetation is present on the opposite side of Cocknage Road to the north of the Common. A further small triangle of the common is separated from the site by the track to Rose Cottage. The Scotch Brook, (which flows down to Stone before joining the Trent) runs through the bottom of the common from north to south.

Rough Close Common (to the east) supports areas of dry acid grassland and dry heath with locally abundant heather, bilberry and bell heather. A former quarry is an important feature of the Common and supports a variety of invertebrate species along its exposed top edge. Woodland features particularly around the perimeter. A small isolated area on the opposite site of Common Lane to the north of Rough Close Common is dominated by gorse and bramble.

Recorded History

Relatively little information regarding the history of the site is available although much can be learned from study of old maps and aerial photographic coverage. The earliest reliable old maps available (W.Yates, 1775) indicate that an extensive block of heathland existed in this area known as Meir Heath, of which Barlaston and Rough Close Commons are almost the only remaining remnants. The road dividing the site (Lightwood Road) already appears to be in existence at that time.

A later OS map (2nd Edition, 1901) shows that already almost all the former Meir Heath had been enclosed for agriculture, planted (for example Blacklake Plantation) or developed, for example Meir Heath village. The boundaries of Barlaston and Rough Close Common have remained largely unchanged since that time.

There is interest in the local history of the lower common as a natural spring was used as a well for drinking water. The spring, located near the western boundary, was nearby to former agricultural cottages, which were demolished around 40 years ago. The old brickwork can still be seen in places. There is also some industrial history associated with the Top Common. A number of earthworks that appear to be old quarries are present, especially at the top of the hill. There are also many earth-banks, furrows and wide path-like excavations across both sites whose origins remain unknown.

Past management (up until 1993) is not well recorded. Until recently the site had not been regularly grazed within the past 40-50 years, though there is evidence that some grazing occurred prior to this. Recent management (since 1993) is relatively well recorded, with SBC holding the records.

It has been difficult to find ecological records for the site. All we have are brief notes from a county survey in 1982, 1986 and then the 1992 Management Plan. Exactly what species of flora and fauna were on the site before these dates is not known.

2.1 Evaluation

Size

The total area of Barlaston and Rough Close Commons is some 20.6ha. It is generally considered that a viable heathland unit should be at least 10ha in extent. Therefore the site represents a viable unit. Since lowland heathland is recognised as a nationally and internationally threatened habitat, all heathland remnants are of value, regardless of size. Indeed, the majority of heathland sites in Staffordshire are smaller than Barlaston and Rough Close Common, therefore this site is considered to be of significant size in the context of heathland sites in Staffordshire.

Diversity / Rarity

Habitats

A wide range of habitat types is present at the site including dry and wet dwarf shrub heaths, dry and marshy acidic grasslands, semi-improved neutral grassland, scrub, woodland, bracken and ruderal tall herbs, emergent vegetation, open water and bare ground. Many of these habitats are typical components of heathland, particularly heath, acidic grassland, scrub, woodland and bracken.

Lowland heathland is a priority for nature conservation because it is a rare and threatened habitat. In England, only one sixth of the heathland present in 1800 now remains. The UK has some 58,000ha of lowland heathland of which the largest proportion (55%) is in England. The UK has an important proportion (about 20%) of the international total for this habitat. Therefore areas of lowland heath are considered to be of importance due to the rarity of the habitat.

Lowland heathland is a priority habitat in both the UK and Staffordshire Biodiversity Action Plans with its own Habitat Action Plan (HAP) both nationally and within the county. Wet heath is particularly rare, often occurring in relatively small areas, as at this site.

Lowland acidic grassland is also a priority habitat in both the UK and Staffordshire Biodiversity Action Plans with its own Habitat Action Plan (HAP) both nationally and within the county.

Use as little as possible

Vascular plants

In his book, "*Finding Wild Flowers*" (1971), Richard Fitter mentions the site, "Barlaston or Rough Close Common" as one of eight heathland sites listed for the county (p.329). The site was then clearly recognised as having a good heathland flora, though a species list from this time is sadly lacking.

Species diversity over the whole site is relatively high reflecting the habitat diversity with over 100 species of plant now recorded. However, many of the habitats are intrinsically species-poor, particularly the marshy acidic grassland (which extends over the majority of Barlaston Common). In general, the heaths of Staffordshire have a relatively limited diversity of flowering plants, although the presence of both dry and wet heathland at this site increases the diversity of heathland plants represented. Other habitats are not particularly species-rich individually.

No nationally rare vascular plant species are known to occur at the site. However, several species recorded at the site are considered to be rare or uncommon in Staffordshire (recorded in only 9-38 or 39-109, of the 885 tetrads in the county respectively, (Staffs Checklist, 2012)). Cowberry, bell heather, marsh violet, narrow buckler-fern, bulbous rush, cross-leaved heath, star sedge, pill sedge, bottle sedge and common yellow sedge are all uncommon in the county. Deergrass, first recorded in 2008, is classed as rare for the County. The species is not mentioned in any previous surveys so how long it has occurred on site is unknown. Tawny sedge, also rare for the county, was found in 2012 and previously recorded from a 1982 survey but not recorded in between.

There are old records for cottongrass (1992). Presumably this plants was found on the lower common.

Five species of Sphagnum moss have been found including those indicative of mire conditions.

Invertebrates

Heathlands often support an interesting range of invertebrate species. Diversity of invertebrates is generally lower in Staffordshire than in the southern lowland heaths, probably due to the cooler climate of the Midlands. However, over 550 species of invertebrate have been recorded at Barlaston and Rough Close Common including over 50 species of aculeate bees and wasps, most of which are associated with bare sandy ground, 258 species of flies, 121 species of beetles, 57 species of hemipteran bugs and 46 species of spiders. In addition to the open sandy areas, other particularly important habitats for invertebrates include areas of neutral grassland (often rank

grassland around the margins of the site), the pool, marshy grassland/wet heath, dry heath/acid grassland and scattered scrub. Green Tiger Beetle (*Cicindela campestris*) is found on the Top Common. Purple Hairstreak (1996) and Green Hairstreak (2002) butterflies have both been recorded.

13 Nationally Scarce invertebrate species have been recorded at the site. These are:

Acanthiophilus helianthi (a picture-winged fly) - Barlaston and Rough Close Common is the most northern British record for this species.

Adrena humilis (a mining bee) - a very local species of heathland and coastal locations.

Aulacigastromyia anisodactyla (a lauxaniid fly) - a widespread but generally scarce species.

Cneorhinus plumbeus (a weevil) - a widespread but local species.

Hilara albipennis (an empid fly) - a scarce species

Nomada lathburiana (a nomad bee) - once considered very rare (previously a red data book species) but now known from a number of Midlands sites.

Paroxyna absinthii (a picture-winged fly) - a rare species of coasts extending its range inland .

Phaonia atriceps (a muscid fly) - very scarce in Britain with records widely dispersed.

Pherbellia brunnipes (a snail-killing fly) - widespread but scarce over Britain as a whole.

Pherbellia dorsata (a snail-killing fly) - widespread but scarce over Britain as a whole.

Rhaphium lanceolatum (a dolichopodid fly) - a scarce northern species.

Scathophaga decipiens (a dung fly) - a widespread but highly localised species.

Tetanocera punctiformis (a snail-killing fly) - widespread but scarce over Britain as a whole.

Ground nesting solitary bees and wasps (of which there are many species at the site) are subject of a Staffordshire Species Action Plan. Barlaston and Rough Close Common are considered to be a key site for these species within Staffordshire.

Vertebrates

Reptiles: Common lizard is still found on both commons.

Birds: Willow tit, which has a stronghold in the Stoke area, breeds on the lower common. Green woodpecker is often observed on the lower common. In summer the site has good numbers of willow warbler, with some chiff-chaff and whitethroat. Reed bunting and snipe have been known to over-winter on the lower common, with the occasional woodcock. Bullfinch is seen all year round. In winter flocks of redwing have been seen in the woodland on the lower common. There are however, no records of typical heathland birds such as stonechat. Anecdotal evidence was given of skylark formerly breeding on the lower common. Woodland birds include great spotted woodpecker, treecreeper and nuthatch. Birds of prey observed on site include buzzard, kestrel, sparrowhawk, tawny owl and barn owl.

Mammals: Traps have found Wood mouse and Field vole. Mole is present. There are anecdotal reports of Weasel. Brown Hare has been seen on the lower common in 2015. Common pipistrelle and Noctule have both been recorded over the site.

Fragility

Heath is a relatively fragile habitat in that it requires management to retain its character. In the absence of management lowland heath suffers from invasion of scrub and bracken undergoing natural succession to woodland. Heather and other ericaceous shrub species degenerate in the absence of management, becoming tall and leggy, lacking vigour. Eventually there may be a lack of regeneration of the heath species and grassland, bracken and scrub take over. Heathland is also sensitive to nutrient enrichment and heavy recreational pressure.

Indeed, the main threat to lowland heathland, identified in the UK HAP is encroachment of trees and scrub and simplification of vegetation structure due to a lack of conservation management.

Recreation and nutrient enrichment may be a problem on parts of the site, particularly Rough Close Common that is heavily used by dog walkers. The quarry area is particularly subject to erosion.

Typicalness

Heathlands are a distinctive feature of the Staffordshire landscape, formerly covering far more extensive areas. Barlaston and Rough Close Common is described as belonging to the central/northern Bunter sandstone heaths. The main characteristic of this group (which occurs on outcrops of Bunter soft red sandstones and pebble beds) are the well drained, acidic and sandy soils, supporting dry heath and acidic grassland mosaics. Rough Close Common is thus more typical of the group than Barlaston Common. Indeed, Barlaston Common is somewhat atypical of the group since it experiences impeded drainage supporting wet heath and dominant stands of purple moor-grass.

In broader terms, however, the heathland at Barlaston and Rough Close Common is typical of the heaths of the county with several ericaceous species present including heather, bilberry, bell heather, cross-leaved heath and cowberry. The site supports a typical mix of habitats characteristic of heathland including heath, acidic grassland, bracken, gorse and scrub.

The site also supports nearly 50 species of invertebrates that are considered typical of heathland (heath-loving species) including specialists of heath, gorse and broom, wet heath and bog and "semi-heath species". However, a moth survey in 2009 failed to find any heathland specialists.

Ecological position

The heathland at Barlaston and Rough Close Common is relatively isolated from other heathlands, the nearest being the remnant heathland of Downs Bank (3km away), Park Hall NNR at 4.5 km away, the regenerating heath at Trentham Park (7km away) and Wetley Moor (9km away).

As a comparatively small area of heathland with no other nearby heathland sites, Barlaston and Rough Close Common is ecologically isolated which means it is particularly vulnerable to further loss and deterioration since many heathland species are unlikely to be able to recolonise the site should they be lost for any reason.

Intrinsic appeal

Barlaston and Rough Close Common is the only remaining area of unimproved habitat in the locality. As such it is of importance as a scenic area with a natural feel. There is a contrast of landscape features including the bare sandstone, steep slopes and rock outcrops of the quarry on Rough Close Common and the expanse of open marshy grassland on Barlaston Common.

The areas of heathland habitat on both parts of the site are especially attractive when the various ericaceous species, particularly heather, bell heather, cross-leaved heath and gorse, are in flower. Additionally bilberry and bramble provide berries in the late summer.

The pool to the north-west of the site is also considered to be very attractive and has a good floral community including bottle sedge, gipsywort and greater spearwort. Fulford Parish Council installed a bench there in 2010.

The site is of importance for recreation, probably mainly by local residents. The site is well used by dog walkers and occasionally by horse riders.

Potential

Despite its ecological isolation and relatively small area, there is potential to enhance the heathland and acidic grassland habitats at Barlaston and Rough Close Common through appropriate management. Such enhancement would include an increase in the cover of heathland species within the acidic grassland and an improved age structure within the ericaceous shrubs. There is potential to expand the area of wet heath at Barlaston Common. Control of scrub, bracken and ruderal tall herb could also enhance the heathland and acidic grassland habitats.

There is low potential for increasing the recreational use of the site. Rough Close Common is already heavily used, while Barlaston Common is of limited appeal due to the wet nature of the site and dense tussocky marshy grassland sward. An increase in recreational pressure could further damage the habitats at the site. However, there is potential to maintain and improve the current access to the site through maintenance of paths and on-site interpretation. There is also potential to involve the local residents in the maintenance and management of the site. Much local interest has already been expressed in the past.

2.2 Identification/Confirmation of Important Features

Site Feature	Importance National ¹	Importance County	Importance Local
extent of site (as a viable heathland unit)		*	*
dry heath habitat	*	*	*
wet heath habitat	*	*	*
lowland acid grassland	*	*	*
acidic marshy grassland		*	*
open water and emergent vegetation habitats			*
diversity of habitats		*	*
presence of locally rare and uncommon vascular plant species		*	*
diversity of invertebrate species, particularly bees and wasps		*	*
presence of notable invertebrate species	*	*	*
presence of common lizard			*
intrinsic appeal and "natural feel" of the site			*
use of the site for recreation			*
potential to enhance and expand heathland habitat		*	*

¹ = priority habitats listed in the UK BAP and species considered nationally scarce

3 Main Management Objectives

- To maintain, enhance and expand the heath habitats (both dry and wet heath) through appropriate management, within the context of a mosaic of habitats typical of lowland heathland.
- To this end, maintain the presence of cattle on the lower common.
- To maintain the diversity of habitats at the site and enhance notable habitats in addition to heath, particularly dry acidic grassland, acidic marshy grassland, open water and emergent vegetation.
- To control the spread of woodland on site and where potential exists for heathland restoration to remove trees.
- To maintain and enhance populations of locally rare and uncommon species of flora.
- To maintain and enhance the diverse invertebrate fauna, particularly bees and wasps and populations of nationally notable invertebrates and of other notable fauna.
- To maintain the intrinsic appeal and natural feel of the site, enhancing opportunities for recreation where this will not conflict with other objectives.

Note that these objectives at Barlaston and Rough Close Common are in keeping with, and will contribute towards, the following targets in national and local BAPs:

UK lowland heathland habitat action plan:

- maintain and improve by management all existing lowland heathland.

UK lowland dry acid grassland habitat action plan:

- arrest the depletion of unimproved lowland acid grassland throughout the UK.
- secure favourable condition over the resource.

Staffordshire habitat action plan for lowland heathland:

- maintain and improve all existing lowland heathland.
- halt the decline of heathland quality of all remaining sites by re-introducing appropriate management.

Staffordshire habitat action plan for lowland acid grassland:

- prevent any further net losses of unimproved acidic grassland (except for restoration to heathland and heath/grassland mosaics).

Staffordshire species action plan for ground nesting solitary bees and wasps:

- ensure important sites for solitary bees and wasps are not adversely affected.
- increase current important populations of solitary bees and wasps by site enhancement.

4 Rationale

Objective 1:

To maintain, enhance and expand the heath habitats (both dry and wet heath) through appropriate management, within the context of a mosaic of habitats typical of lowland heathland.

In the years up to 1993, the heathland at Barlaston and Rough Close Common was largely unmanaged (other than a few small incidental fires) and was in need of a programme of active management in order to retain and enhance its wildlife value. A management plan was prepared in 1992 and in 1993 the site was entered into a Countryside Stewardship agreement. Therefore some management to benefit the heath at the site has taken place since 1993.

Heath management from 1993 to 1999 includes extensive bracken control, scrub control (including bramble and gorse) and limited turf cutting/spread of seeds from heath species.

Heath generally benefits from several different forms of management, all of which prevent succession (to scrub and woodland) and maintain the heather, and other ericaceous shrubs, in a healthy growing stage. In the past lowland heaths were usually subjected to a combination of cutting (for fuel and fodder) and grazing (by both sheep and/or cattle). Heaths can also be managed by burning, though this is not suitable for this site. Therefore there are several potential management options to fulfil the above objective. Since the two parts of the site (Barlaston Common and Rough Close Common) support different types of heath/acid grassland, it follows that each is likely to require a different management approach. Separate control of bracken, ruderal tall herb and scrub invasion may also be required. Additional measures may be needed in

order to attempt to expand the areas of both dry and wet heath habitat. Each of these options is discussed below.

Cutting:

For cutting to be successful the heather should be in the building or mature growth stage (degenerate heather will not regenerate from root stock following cutting). The cut should be carried out between October and March - a cut in January or February reduces risk of frost damage. However, if the cuttings are to be used in heath restoration projects (see later) the cutting should be carried out between October and December when there is still seed in the florets. The heather should be cut to a height of no less than 10cm - a shorter cut may result in frost damage or desiccation. Cuttings should be removed following cutting (whether or not they can be used) to prevent nutrient enrichment and mulching. On the lowland heaths of Staffordshire a rotation of about 12-15 years is recommended.

If regeneration of heather is successful following cutting this may be the most appropriate management option, particularly on the dry heath and dry heath/acid grassland mosaics on Rough Close Common. If effective, cutting of small areas here is likely to benefit both the heath and acid grassland habitats, invigorating the ericaceous shrubs and reducing the dominance of grasses in areas of heath/grassland mosaic. Cutting of the whole site on rotation is unlikely to be possible due to the topography, particularly on and around the top of the quarry. However, here the thin sandy soils are likely to favour heath species and maintain a healthy heath habitat in the absence of management. The use of small machinery, such as an Allen-scythe or similar, will be appropriate to the small scale cutting required and the topography of the site. If initial experimental trials are successful, small areas should be cut on a 10 year cycle throughout the site with at least one small area at each site left to support degenerate heather. Cut material should be collected and removed from the site or used to seed into areas which have been turf stripped (at this site or at other local sites).

If cutting is found to be unsuccessful in regenerating the old heather at the site, light rotovation or scarification of the soils around degenerate heather bushes should be attempted on an experimental basis with the aim of encouraging regeneration from seed within existing heath.

Cutting is likely to be less appropriate over the wet heath/marshy acidic grassland of Barlaston Common due to the small areas of wet heath present and the extensive and tussocky nature of the purple moor-grass dominated acidic marshy grassland. The wet soils may also prohibit the use of machinery on the site.

Control of scrub (including gorse and bracken), bracken and ruderal tall herb:

Locally, scrub and bracken are encroaching on the heath and acid grassland habitats. If left unchecked these areas will succeed to woodland and the heath/acid grassland habitats may be reduced or even lost from the site. Scrub control can include pulling, weed wipe and spot gun treatment with an approved herbicide such as glyphosate (for smaller scrub) or cutting and treatment of the stumps, again with an approved herbicide such as glyphosate or triclopyr. Cut material should be removed from areas of heath even if it has been chipped. All species of invading scrub should be removed from areas of heath including oak.

Gorse is a natural component of lowland heath which provides valuable food and shelter for birds and invertebrates and is attractive when flowering. However gorse can become dominant at the expense of other heath species and mature gorse can become a fire hazard since it is particularly combustible. At Barlaston and Rough Close Common gorse control may be required if gorse extends further into areas of heath. Management is also required to remove dense patches of old gorse which might prove a fire hazard and to encourage vigorous young growth. Where control is considered desirable gorse should be cut (with small patches cut every few years on a 15 year cycle) with approximately 75% of stumps treated with an appropriate herbicide to reduce regrowth (whilst retaining some gorse). Cut material should be removed from site

Bracken is also a natural component of the vegetation at the site, but in the absence of control it can spread over heathland sites, shading out the more interesting heath species. In the past, bracken invasion has been a problem at Barlaston and Rough Close Common, though regular management in recent years has been successful keeping bracken in check. However, it is likely that on-going bracken control will be required to maintain the current relatively low cover of this species. Bracken control can be by pulling, cutting, bruising or a combination of these. Unfortunately, Asulox has been banned after 2012 due to European Law therefore we will have to stop spraying and develop the other techniques. Pulling, cutting or bruising are best carried out once in mid-June and again in late July. In either case, follow up management will be required in subsequent years.

Due to the presence of ruderal species, particularly rosebay willowherb which is quick to spread into nutrient enriched disturbed soils pulling should only be undertaken where it is unlikely to result in soil disturbance. Therefore it may be more appropriate to adopt chemical or cutting/bruising approaches to bracken control at this site.

Other invasive non-heathland species, particularly ruderal tall herb and bramble, are encroaching around the margins of the site. Some ruderal tall herb and bramble is desirable at the edges of the site since they add to the habitat diversity and are important nectar sources for invertebrates. However, rosebay willowherb, common nettle, dock species, thistles and bramble will require control at the site to prevent spreading into heath habitat. Control by cutting before the weeds set seed is likely to be the most acceptable and appropriate method. Bramble can be controlled by cutting and removing runners, however it is preferable and more effective to dig out the plants or treat with herbicide. Cut material should be removed from the site.

Tufted-hair grass (*Deschampsia cespitosa*) will need to be controlled by cutting back to prevent it spreading, especially from the centre of the site. Cattle will not graze this unpalatable grass, so it could spread creating large areas of coarse vegetation on the lower common.

Heather Scrapes

It is likely that management described above, particularly cutting at Rough Close Common and grazing at Barlaston Common, would favour heath species over grasses and may encourage the spread of heath within the acid grassland. After 5 years of grazing there is now a noticeable amount of young heather plants spreading across the site.

Specific measures to encourage the development of heath within the areas of acidic grassland on the top common have also been undertaken. Such restoration of heath involves removal of the existing dense sward of acid grassland down to the mineral soil (but not disturbing the soil beneath 1-2cm deep). Resulting turf and litter needs to be removed from the site. The exposed soil may then require rolling to give some compaction. Spreading of cuttings from appropriate ericaceous species (heather and bilberry in the drier areas of Rough Close Common) is then required. This has proved quite effective on the top common. It is important to get the right amount of heather cuttings onto the scrapes. Too little and grasses dominate, too much and there is not enough light for growth. It is possible to begin with a dense covering to suppress weeds and then reduce the cuttings in spring to encourage heather growth. Birch regeneration (or ruderal tall herbs) may require control to allow heath vegetation to establish.

Ponds

In the winter of 2011, four small ponds were created on the lower common. Three of these are in a series of marshy ground in the centre of the site. The other pond is located towards the southwestern part of the reserve and was made by enlarging an existing hollow. 2012 saw a lot of rainfall and the ponds held water all year, allowing rushes and invertebrates to colonise them.

Objective 1a - Grazing:

Grazing is generally the most successful and appropriate management for heathland sites, particularly where this is likely to have been the traditional management at the site. There are a number of reasons why grazing is widely viewed as the most appropriate form of management for heath, particularly wet heath and marshy acid grassland:

- Grazing with appropriate livestock maintains ericaceous shrubs in a youthful phase which more readily regenerates than older degenerate plants.
- Grazing at appropriate levels can favour ericaceous shrubs at the expense of acid grassland, thus increasing the proportion of heath in a heath/grassland mosaic.
- Grazing can be adjusted to suit each habitat using different types of animal, mixed grazing regimes and through monitoring and manipulation of stocking levels, to achieve the desired balance of vegetation types and species within the site.
- Grazing, at appropriate stocking densities, can significantly reduce the need for scrub control once an area has been cleared of taller well established scrub since animals will graze young scrub and coppice regrowth.
- Grazing can indirectly reduce bracken cover through the trampling action of animals put out to graze in spring/early summer (when bracken fronds first emerge and are at their most vulnerable) crushes the new growth. Repeated trampling of emerging fronds severely weakens the plant, so that in time only a low cover persists.
- Grazing is, to date, the only effective method of managing wet heath and acidic marshy grassland. Alternative methods including cutting and burning have not been shown to replicate the full range of conditions created by grazing, including the reduction of purple moor-grass tussocks, the creation of open wet pockets for mire species and an uneven age structure of ericaceous species.

There would be many problems associated with reintroduction of grazing at the top common due to the open nature of the common land, with several roads crossing and adjacent to the site and the high level of recreational activities. Additionally the presence of the quarry would probably make it unsafe. The small area of this part of the site coupled with the possibilities for successful management of the dry heath by other methods (for example small scale rotational cutting) means that grazing is not a feasible option.

Barlaston Common however, is a larger area, with lower recreational pressure, and the habitat has not been successfully maintained or enhanced by methods other than grazing. Therefore grazing is considered to be the best management option for this part of the site.

A feasibility study was carried out in 1994 specifically to look at the advantages of grazing at Barlaston Common and the possibilities for reintroduction of grazing at the site. The study concluded that grazing would be the most desirable and effective management option for the lower common. For this reason application was made to Defra to fence the lower common. In 2006, the Secretary of State approved this plan and in 2008 the fences, gates and stiles were installed. Funding for this work came from the SITA Trust through the Landfill Communities Fund and from Natural England stewardship payments.

Grazing was introduced in 2008, with a small herd of Red Poll cattle on site from April until late October. A grazing monitoring survey is being conducted with permanent quadrats marked out with oak posts. By 2011 the indications were that grazing is having a positive effect on regenerating heather and increasing species diversity. An example is the recording of sneezewort and devil's-bit scabious, which were recorded for the site back in 1982 but had not been seen until grazing returned. Presumably there was a seed bank disturbed by the grazing cattle? Plants that were already present have increased their cover. Tormentil and heath bedstraw can be seen flowering across much larger areas of the common. Young heather and cross-leaved heath can be found in many locations. Grazing is clearly helping the regeneration of these plants. It is also controlling the spread of trees.

Grazing however, has had a negative impact on cowberry, which has declined in its % cover. It may also be encouraging the growth of various thistle species particularly on the neutral grass area by the main Hartwell Lane entrance. Ragwort has also made an occasional appearance and is vigorously controlled. On balance however the benefits clearly outweigh these issues. Cowberry is still present and any weeds can be managed through pulling or herbicide. Monitoring is currently being undertaken and takes place ideally every two

years. Grazing will not completely control scrub or gorse or the encroachment of bracken so some supplementary management is required.

The number of cattle on site will be important to consider - between eight and ten cows seems currently to be around the right stocking density.

Objective 2:

To maintain the diversity of habitats at the site and enhance notable habitats in addition to heath, particularly dry acidic grassland, acidic marshy grassland, fen, open water and emergent vegetation.

Barlaston and Rough Close Common was presumably once dominated by heath (both wet and dry) probably with areas of acid grassland (both dry and marshy) and open water/emergent vegetation (assuming that at least one pool has been present on site for a very long time). This might therefore be seen as an ideal habitat composition for the site. However, other habitats such as areas of neutral grassland, scrub (including gorse), woodland, ruderal tall herb, bracken and bare ground are now well established at the site. Many of these other habitats are of value to wildlife in their own right. For example, the bare ground of the quarry will provide habitat for burrowing invertebrates and basking areas for common lizard; neutral grassland, scrub and tall herb provide nectar sources for invertebrates; and the woodland is of value to birds. The diversity of habitats present also adds to the intrinsic appeal of the site. Therefore restoration of heath to the whole site is neither practical nor desirable and areas of each habitat should be retained (though a balance may be required where habitats are in conflict, for example where scrub and bracken are invading heath).

The grassland habitats on the lower common are benefiting from the introduction of grazing. This form of management seems ideal and little further action is required other than the control of weeds.

Habitat likely to require specific management is the open water/emergent vegetation. The pool to the north of Cocknage Road is probably mesotrophic though not highly nutrient rich and provides habitat for a number of aquatic plant species and invertebrates. In the absence of management, emergent vegetation is likely to take over the pool. Bulrush (*Typha*) and other emergent species such as broad-leaved pond-weed and the introduced water soldier could also extend over the open water in the absence of management and periodic partial mechanical clearance of these species may also be beneficial in maintaining areas of open water and a diverse aquatic flora and fauna.

The northern part of the pond has become invaded by willow carr. This area of woodland is of value as an undisturbed wetland area and should be retained.

However, the spread of willow Carr further into the open water should be monitored and limited if necessary.

Management of the pool banks through cutting every 2-3 years, with cuttings removed from site will contribute towards the maintenance of a low nutrient status in and around the pool and encourage a species-rich sward.

There is a small section of the lower common on the western boundary that is fenced off with access through a gate and stile. The original fence line had not included this area, which had to be additionally fenced in 2009. It was decided to retain the original fence line and control cattle access to this section due to the different habitat found there. The Scotch Brook flows through this area creating a small fen habitat with a flora including angelica, brooklime and valerian. Beyond the stream, over a small footbridge is an area of more neutral grassland with occasional marsh woundwort and ragged robin. Cattle are allowed access during the summer once the plants are well established.

Objective 2a – Woodland Management

The 1992 Management Plan states that, *“Aerial photography of Barlaston and Rough Close Common indicate that over a 20 year period there has been a gradual increase in tree cover over both areas”*.

Increasing and encroaching tree growth was clearly an issue then but in the 20 years since that report was written the situation has worsened. Local residents have supplied photos from the 1970's that show an open heathland with little tree growth (see Appendix). There must have been a continuation of some form of Common's management in the past to have maintained this open heath otherwise the land would long ago have reverted to woodland. As the historic Meir Heath was present 300 years ago it is possible that there has been a continuity of habitat for all this time. If so, it is unfortunate to see land lost to woodland so recently. As mentioned above, there is evidence for agricultural cottages on site up to the early 1970's so perhaps when these were lost the last commoners ceased to contribute to the management of the site? Certainly, “something” must have dramatically changed, over a short period of time, with the human impact on the Commons to see the uncontrolled tree growth on site.

Whatever the reason, tree encroachment is now a serious issue for the site and requires careful management. Self set common oak and silver birches are rapidly spreading. Although woodland is an important habitat in its own right, there are many woodland areas in the vicinity whilst heath remains a rare fragmented habitat. A plan is required that will strike a balance between the now well-established areas of woodland and the need to retain and increase open heath. This is a slight change in emphasis from the previous

Management Plans and is the result of studying the changes on site over the last 40 years and examining habitat maps made in the 1990's (see Appendix). A more rigorous management of woodland is required if we are to retain heathland over the long term.

On some areas of woodland the amount of leaf litter created over the last 40 years has enriched the soils and made heath restoration impractical. These longer established areas should now be managed as woodland. There are areas however where the ground-cover just about retains the original acid grassland. These areas should have their trees removed or reduced. This also means pushing back the edges of the woodland where heathland soils are present along the woodland margin.

Across both sites are areas of maturing trees where recent work has concentrated on clearing all self-seeded scrub from amongst them, opening up the land. Trees have had their crown raised in order to allow grazing closer to them. The best specimen trees or interesting coppiced trees are retained, especially the oaks, with a view to creating something similar to a parkland habitat where woodland currently exists. If these trees are too well established to remove then this seems the best compromise. Looking into the future, there should be some fine veteran oaks within a grazed heathland.

In areas that are kept as established woodland, management will still be required. The wooded areas are comprised of some close growing birch and oak that would benefit from thinning out as they mature. Some small glade areas could also be developed. A suitable woodland flora could be established through plug planting or seed collecting.

Many of the trees have had their crown raised in order to allow access for grazing and to manage the trees for a certain shape. If some of the oak trees are to be managed to reach maturity or veteran status then crown raising will not assist this process. Therefore, some trees on the lower common have been left alone – including two oaks reached from the gated entrance opposite Little Lane. In 500 years someone might thank us for this.

The Lower Common

On Hartwell Lane the grazing fence had to be moved in from the planned route along the road due to the presence of storm drains. This has created a buffer zone between the heath and the road. Tree growth will be allowed on the outside of the fence and management will prioritise on the land within the fence perimeter. This allows the bottom southwest corner of the site to be retained as woodland. Sections of the western and eastern boundaries will be retained as woodland. An area of willow scrub along the course of the Scotch brook in the top northwestern corner will also be kept. A small copse is

located towards the centre of the site. Other small copses should be removed where the heathland soils survive or could be easily restored. Some of these copses can develop from within large gorse patches, so these will need controlling. Some of the large isolated birches could also be removed – though the tree with the barn owl box should of course be retained. It's quite possible that tree growth is responsible for the drying out of the lower common, in which case a more determined management programme should help retain the areas of wet heath and mire.

Holly forms the understorey in the main wooded areas and may need management to prevent it from dominating in the future.

The Top Common

There are several areas of woodland on site. These are the edge along Little Lane particularly the southeastern corner where the woodland is most mature. Holly, honeysuckle and one example of Box form the understorey. Another established wood is in an area south of the St. Matthew's School car park. The woodland boundary running along Common Lane is now more or less established. Tree growth is developing along the Lightwood Road boundary but this should be controlled in places as heathland areas still remain. This will also allow views across the road into the lower common.

Objective 3:

To maintain and enhance populations of locally rare and uncommon species of flora.

Bell heather, cross-leaved heath, the sedges and deergrass should all benefit from heath management described under objective 1 above particularly from grazing. Deergrass is found in two areas of the Lower Common. Bottle sedge is found on the southern edge of the pool and appears to be well established. Tawny sedge is only found within one very small area and thus is the most vulnerable of the rare plants on site.

On the lower common grazing is increasing the frequency of the heathland flora. Tormentil and heath bedstraw are spreading. Regenerating heather and cross-leaved heath can be seen across the site. In the central area by the three new ponds a marsh/ wet flush assemblage of species is developing from what was an area of willow scrub. Marsh bedstraw, greater bird's-foot trefoil, common yellow sedge, star sedge, tawny sedge, sneezewort, devil's-bit scabious and marsh willowherb are now found in this area. In 2015, a single Southern Marsh Orchid was also found in this area and in 2016 a small patch of Marsh Violet. Of some concern is that Marsh Thistle is also flourishing in this area and will require control to prevent it taking over. The

thistle could prevent cattle grazing and may cause a build-up of undesirable species.

Should further notable species be recorded in the future, specific management prescriptions to meet their ecological requirements should be drafted. If these are not already being carried out as part of the prescribed management, they should be incorporated into the management plan, provided they do not conflict with other objectives on the site.

There is also potential to re-introduce some of the species formerly found on site. Now that grazing is established and “managing” the site the conditions should exist to maintain them. Cottongrass and marsh violet were re-introduced to the site in the autumn of 2012 however there has been no sign of these since.

It may also be possible to enhance the acid grassland / heathland communities by introducing new species such as lousewort, saw-wort and bog asphodel. Seeds have been collected from suitable local sources and grown on. As a now fragmented habitat, there is no longer the chance for these species to naturally spread here. Dog violet has been planted throughout the woodland areas, grown on from local provenance stock. In 2015, a single Saw-Wort plant was flowering in the wet flush at the centre of the Lower Common.

Objective 4:

To maintain and enhance the diverse invertebrate fauna, particularly bees and wasps and populations of nationally notable invertebrates and of other notable fauna.

The diversity of the invertebrate fauna is likely to be maintained and enhanced through habitat management, as discussed under objectives 1 and 2. Although most specialist species are associated with areas of bare sand, dry and wet heaths and the pools, the value of all habitats present to the invertebrate fauna should be recognised particularly scattered scrub (including gorse and bramble), neutral rank grassland and ruderal tall herb which are not often viewed as desirable habitats at heathland sites. Over 350 invertebrate species have been recorded from the "verge" habitat on the site.

The majority of the bee and wasp species present at Barlaston and Rough Close Common are ground nesting solitary bees and wasps which require bare sandy ground which is fully exposed to the sun in which to nest and nectar sources such as common knapweed, dandelion-like composite flowers and umbellifers for foraging.

Much of the bare sandy ground at Rough Close Common is ideal for these species, particularly as it generally south-facing and exposed. The main foraging areas are likely to be the semi-natural rank grassland around the site margins.

The extent of bare sandy ground should be maintained. The continued use of paths at Rough Close Common and limited disturbance of the quarry area through recreation are likely to maintain suitable bare sandy ground and short turf with sandy patches, many areas of which will also be south facing. Some erosion of these footpaths and the quarry may be beneficial. However, some of the areas of the paths and quarry may be too greatly disturbed by recreation which could be detrimental to the bee's and wasp's nests.

Areas of heath at the site are not appropriate sites for the creation of new permanent bare areas (other than where turf stripping suggested under objective 1 above creates temporary bare ground).

- Areas of semi-improved and rank neutral grassland, especially where these support species such as common knapweed, mugwort, dandelion like composite flowers and other nectar sources.

These areas of grassland would benefit from periodic (though not frequent) cutting late in the summer (not before September), on rotation of around 3 years, ensuring that only a proportion of areas are cut in any one year. Such management should control scrub and bracken invasion and favour broadleaved flowering plants (nectar sources) over grasses. Cuttings should be removed from site to prevent further build up of nutrients. Appropriate maintenance of the road verges all around the site margins could also encourage further areas of nectar source species such as common knapweed. The use of herbicides and over-vigorous cutting should be avoided here if possible.

- spring flowering shrubs such as gorse, broom, rowan, hawthorn and blackthorn, particularly in association with tall herb

Areas of scrub and tall herb are common around the margins of the site and are likely to remain so without specific management. Indeed, it is important to recognise the value of these habitats during other management of the site so that scattered shrubs and some areas of tall herb are retained during control of scrub and tall herb within heath/acidic grassland areas, particularly around the site margins where most of the spring flowering shrub species are currently to be found.

- the pool with its emergent vegetation (particularly bulrush) and marshy vegetated margins

The maintenance of unpolluted unenriched open water habitat and areas of marginal/emergent vegetation (particularly a moderate cover of bulrush) within the pool, and marshy conditions around the pool, is of importance. Any pond clearance should be rotational, affecting only a portion of the pool in any one year.

Should further notable species be recorded in the future, specific management prescriptions to meet their ecological requirements should be drafted. If these are not already being carried out as part of the prescribed management, they should be incorporated into the management plan, provided they do not conflict with other objectives on the site.

Objective 5:

To maintain the intrinsic appeal and natural feel of the site, enhancing opportunities for recreation where this will not conflict with other objectives.

Barlaston and Rough Close Common comprises semi-natural habitats giving a "natural" feel to the site of high intrinsic appeal. It is desirable to maintain this natural feeling at the site. This can be achieved through management discussed under objectives 1-4 above and by preventing future introduction of species not native to the site. Retention of areas of scrub and woodland around the site margins will contribute to the "wilderness" experience, particularly at Barlaston Common since these habitats screen the surrounding housing and roads.

Grazing by the small herd of cattle helps to create a natural scene, and the grazing should provide a widening of the main paths and control of vegetation.

However, there is no designated right of access for bikes or horses; all definitive rights of way crossing the site are public footpaths. The use of motorbikes and/or mountain bikes on Rough Close Common could cause unacceptable erosion of paths in the dry heath and acid grassland habitat. There is no legal access for bikes at Barlaston and Rough Close Common (with only public footpaths crossing the site). Therefore any bike activity should be discouraged.

The recreation value of the site should be maintained whilst minimising conflict with other objectives, particularly the maintenance and enhancement of heath, which is vulnerable to recreation pressure. Recreation facilities are currently limited to a few benches. These should be maintained.

Other factors:

Relatively expansive areas of open combustible vegetation such as heaths are generally at risk from fire. Small isolated sites such as Barlaston and Rough Close Common are particularly vulnerable since a fire could completely destroy habitats at the site leaving no scope for re-vegetation with heath species. However, the small size of Rough Close Common precludes the construction of effective firebreaks and fire is unlikely to be a great problem at Barlaston Common since it is by nature wet and marshy so less liable to combustion. Scrub removal to thin out wooded areas should help prevent this.

It will be of paramount importance that all management undertaken is monitored carefully. This should include noting all management undertaken and the success/failure in achieving the objective. Subsequent management should be modified depending on the success/failure of previous management to ensure that objectives are being attained. To this end, grazing monitoring began in 2008 with a series of quadrats recorded across the lower common. Each quadrat is measured for vascular plants present and % cover, bryophyte cover, growth phase of heather, vegetation structure and height.

There may be a safety issue around the quarry, particularly where paths occur very near the top of the quarry. However, past attempts to place barriers here have proved unsuccessful. Tree and scrub have been removed to allow the top path to extend safely beyond any erosion. A new path was also created beyond this and that has now become well established.

Finally, there are legal and other obligations covering the site that must be fulfilled in the course of management of the site particularly the Countryside Stewardship agreement, which runs until 2013.

Higher Level Stewardship

The site has been entered into an HLS agreement, in partnership with Natural England from 2013 to 2023. The main management aims of this agreement are:

- Restoration of Lowland Heath
- Maintenance of Woodland edge
- Maintenance of ponds of high wildlife value
- Restoration of Fen

Management Required

Project No.	Project	Compartment	Frequency	Agent
17	Ensure all CSS / HLS works are undertaken according to 10-year agreement plan.	All	Annual	SBC
18	Monitor condition of pond – control <i>Typha</i> to prevent spread	Pond	Annual	SBC / Contr.
19	Monitor willow growth at back of pond – may need control	Pond	Annual	SBC
20	Cut and remove neutral grass around pond. Control spread of bramble.	Pond	1 – 2 years	Contr.
21	Arrange annual Spring Clean with Fulford Parish Council and volunteers	All	Annual	SBC / FPC / vols
22	Monitor litter, condition of litter bins and any fly tipping on lay-bys	All	Regular site visit	SBC
23	Inform public of management requirements and operations through interpretation and PR	All	As required	SBC
24	Inform and update local parish / councillors of upcoming work	All	As required	SBC

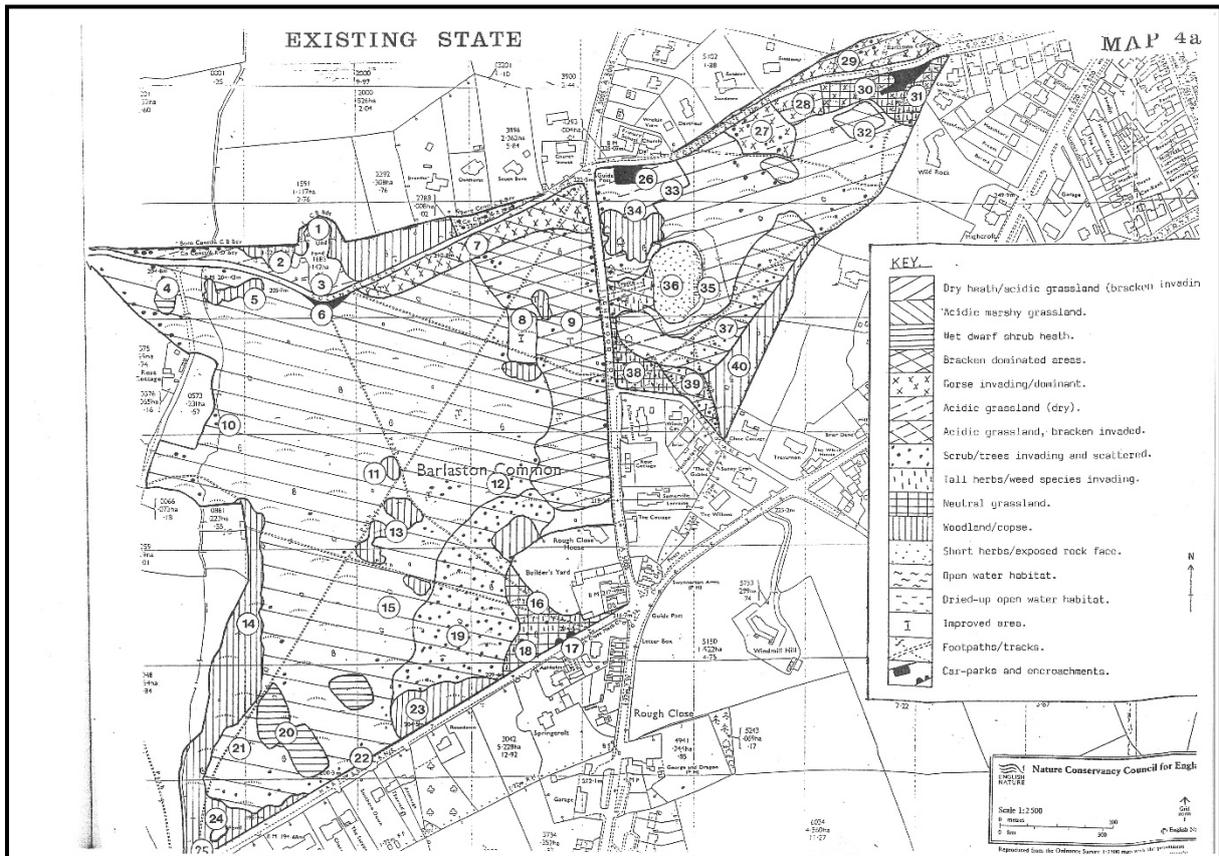
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Appendix



Maps showing existing state of Commons - 1992 and 1999



Photograph taken from Rough Close House in the early 1970s – (note lack of tree cover)

Barlaston Common - Species List

Zones key: P = pond, L = Lower common, G = gated area

T = Top Common

Species	Common name	DAFOR	Zone
<i>Ranunculus acris</i>	Meadow buttercup	occ	P
<i>R. repens</i>	Creeping buttercup	occ	L
<i>R. flammula</i>	Lesser Spearwort	rare	L
<i>R. lingua</i>	Greater Spearwort	freq	P
<i>Caltha palustris</i>	Marsh marigold	rare	G
<i>Cardamine pratensis</i>	Cuckoo Flower	occ	P
<i>C. flexuosa</i>	Wavy bittercress	rare	L
<i>Erophila verna</i>	Whitlowgrass	occ	T
<i>Arabis thaliana</i>	Thale Cress	rare	T

Species	Common name	DAFOR	Zone
<i>Ceratocarpus claviculata</i>	Climbing corydalis	occ	L
<i>Silene dioica</i>	Red campion	occ	G
<i>Lychnis flos-cuculi</i>	Ragged Robin	rare	G
<i>Stellaria holostea</i>	Greater stitchwort	occ	L
<i>S. graminea</i>	Lesser stitchwort	rare	L
<i>S. uliginosa</i>	Bog stitchwort	rare	P/G
<i>Lotus pedunculatus</i>	G. Birdsfoot trefoil	loc. occ	L
<i>Ulex europaeus</i>	Common gorse	frequent	L/T
<i>Sarothamnus scoparius</i>	Broom	rare	L / T
<i>Rosa arvensis</i>	Field Rose	occ	P
<i>Rubus fruticosus</i>	Bramble	freq	L/T/G
<i>R. idaeus</i>	Raspberry	rare	W
<i>Potentilla erecta</i>	Tormentil	freq	L/G
<i>P. anserina</i>	Silverweed	occ	G
<i>Equilobium hirsutum</i>	Great willowherb	occ	G
<i>Chamenrion angustifolium</i>	Rosebay willowherb	occ	C/G
<i>Urtica dioica</i>	Nettle	occ	
<i>Buxus sempiverens</i>	Box	rare	T
<i>Ilex aquifolium</i>	Holly	freq	L
<i>Fagus sylvatica</i>	Beech	rare	T
<i>Quercus robur</i>	Pedunculate oak	freq	L / T
<i>Betula pendula</i>	Silver Birch	freq	L / T
<i>Malus domestica</i>	Apple	rare	L
<i>Sorbus aucuparia</i>	Rowan	rare	G

Species	Common name	DAFOR	Zone
<i>Fraxinus excelsior</i>	Ash	rare	L / T
<i>Taxus baccata</i>	Yew	rare	T
<i>Anthriscus sylvestris</i>	Cow parsley	occ	P
<i>Angelica sylvestris</i>	Angelica	occ	G
<i>Apium nodiflorum</i>	Fool's Watercress	rare	P
<i>Heraclium sphondylium</i>	Hogweed	occ	T
<i>Rumex acetosa</i>	Common sorrel	occ	L / T
<i>R. acetosella</i>	Sheep's sorrel	occ	L
<i>Vaccinium myrtillus</i>	Bilberry	frequent	L / T
<i>V. vitis-idaea</i>	Cowberry	occ	L
<i>Calluna vulgaris</i>	Heather	L frequent	L / T
<i>Erica tetralix</i>	Cross-leaved heath	occ	L
<i>Erica cinera</i>	Bell Heather	occ	T
<i>Scrophularia nodosa</i>	Common figwort	rare	G
<i>Digitalis purpurea</i>	Foxglove	occ	T / L
<i>Mentha aquatica</i>	Water mint	occ	P
<i>Lycopus europaeus</i>	Gipsywort	occ	P
<i>Lamium album</i>	White deadnettle	occ	
<i>Galeobdolon luteum</i>	Yellow archangel	rare	L
<i>Stachys palustris</i>	Marsh woundwort	rare	G
<i>S. sylvatica</i>	Hedge woundwort	rare	L
<i>Plantago lanceolata</i>	Ribwort plantain	occ	P
<i>P. major</i>	Greater plantain	occ	L
<i>Galium saxatile</i>	Heath bedstraw	freq	L/T

Species	Common name	DAFOR	Zone
<i>G. palustre</i>	Marsh bedstraw	occ	L/P
<i>Diapsacus fullonum</i>	Teasle	rare	G
<i>Valeriana officinalis</i>	Common valerian	occ	G
<i>Succisa pratensis</i>	Devil's-bit Scabious	occ	L
<i>Achillea ptarmica</i>	Sneezewort	occ	L
<i>Senecio jacobaea</i>	Ragwort	rare	L
<i>Centaurea nigra</i>	Common knapweed	occ	L
<i>Cirsium vulgare</i>	Spear thistle	occ	L/G
<i>C. arvense</i>	Creeping thistle	occ	L
<i>C. palustre</i>	Marsh thistle	freq	L
<i>Iris pseudacorus</i>	Yellow iris	freq	P
<i>Typha latifolia</i>	Bulrush	occ	P
<i>Agrostis capillaris</i>	Common bent	freq	T
<i>A. stolonifera</i>	Creeping bent	freq	T / L
<i>Deschampia flexuosa</i>	Wavy-haired grass	abundant	T
<i>D. cespitosum</i>	Tufted hair grass	occ/freq	T
<i>Festuca ovina</i>	Sheep's fescue	occ	L
<i>F. rubra</i>	Red fescue	occ	T
<i>Holcus lanatus</i>	Yorkshire Fog	occ	T
<i>Holcus mollis</i>	Creeping Soft grass	occ	G / T
<i>Molinia caerulea</i>	Purple Moor Grass	abund	T
<i>Glyceria fluitans</i>	Floating sweet grass	rare	L
<i>Phalaris arundinacea</i>	Reed Canary grass	occ	G
<i>Juncus effusus</i>	Soft Rush	occ	L

Species	Common name	DAFOR	Zone
<i>J. conglomeratus</i>	Compact rush	occ	L
<i>J. acutiflorus</i>	Sharp-flowered rush	freq	L
<i>J. articulatus</i>	Jointed rush	freq	L
<i>J. squarrosus</i>	Heath rush	freq	L
<i>J. bulbosus</i>	Bulbous rush	occ	L
<i>Luzula campestris</i>	Field wood-rush	rare	L / T
<i>L. multiflora</i>	Heath wood-rush	freq	L
<i>Trichophorum cespitosum</i>	Deergrass	loc occ	L
<i>Isolepis setacea</i>	Bristle Club Rush	loc occ	L
<i>Carex nigra</i>	Common sedge	freq	L
<i>C. panicea</i>	Carnation sedge	occ	L
<i>C. ovalis</i>	Oval sedge	rare	L
<i>C. rostrata</i>	Bottle sedge	loc. freq	P
<i>C. echinata</i>	Star sedge	rare	L
<i>C. viridula oedocarpa</i>	C. Yellow sedge	loc. freq	L
<i>C. hostiana</i>	Tawny sedge	rare	L
<i>Pteridium aquilinum</i>	Bracken	freq	L / T
<i>Dryopteris filix-mas</i>	Male fern	occ	L
<i>D. dilatata</i>	Broad Buckler	freq	L
<i>D. carthusiana</i>	Narrow Buckler	rare	L
<i>Blechnum spicant</i>	Hard fern	rare	L/G
<i>Equisetum arvense</i>	Field Horsetail	occ	
<i>E. fluviatile</i>	Water Horsetail	rare	P

