

MANAGEMENT PLAN

Mousehold Heath

2008 – 2013

Mousehold Heath Conservators

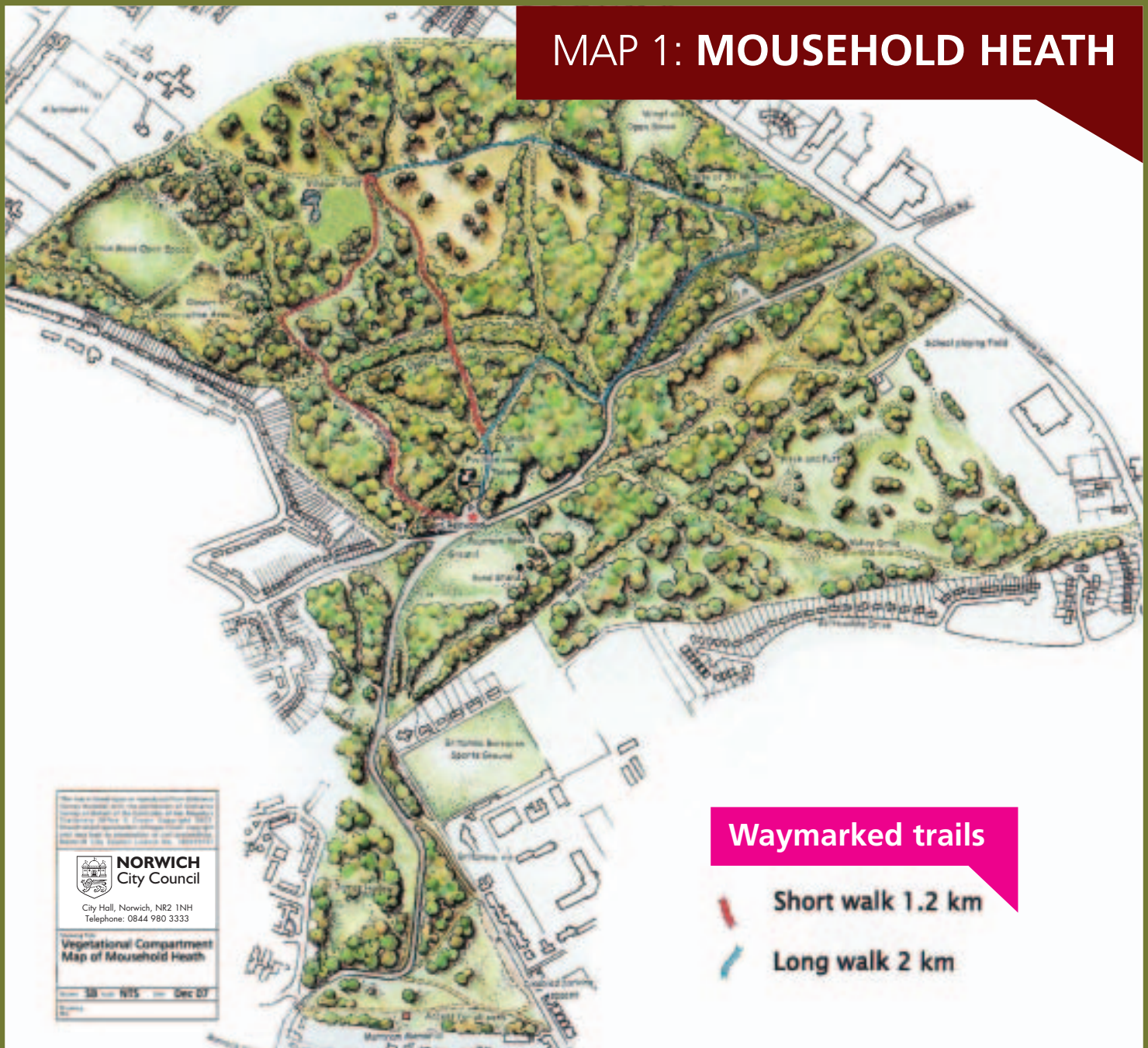


NORWICH
City Council

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MAP 1: MOUSEHOLD HEATH



Mousehold Heath is a unique 88 hectare (184 acre) area made up of woodland, heathland and recreational open space within Norwich. The site has played an important part in the history of Norwich and it is a designated Local Nature Reserve (LNR)*. It is important both for its wildlife and as a place where people can unwind from the pace of city life.

Mousehold Heath is managed by the Mousehold Heath Conservators and Norwich City Council on behalf of the people of Norwich. A new draft management plan for Mousehold Heath has been produced on behalf of the Mousehold Heath Conservators and is available for public consultation until Friday 14 March 2008.

*Local Nature Reserves are places that are protected by local authorities because of their special wildlife or geological features and their accessibility to the public.

1. GENERAL INFORMATION

1.1 Location

Mousehold Heath lies in the northeast quarter of the city of Norwich, Norfolk, just inside the city ring road. Central grid reference is TG245104.

1.2 Site status

- Local Nature Reserve
- County Wildlife Site (Reference number 1469)
- St. Williams Chapel is a Scheduled Ancient Monument
- The current *Norwich Local Plan (2004)* defines Mousehold Heath as a publicly accessible open space, and local plan policies NE7 and NE8 provide protection for the site's nature conservation and geological interest.

1.3 Tenure

- Norwich City Council
- Mousehold Heath Conservators

1.4 Site definition

See *Map 1 – page 3, Mousehold Heath*.

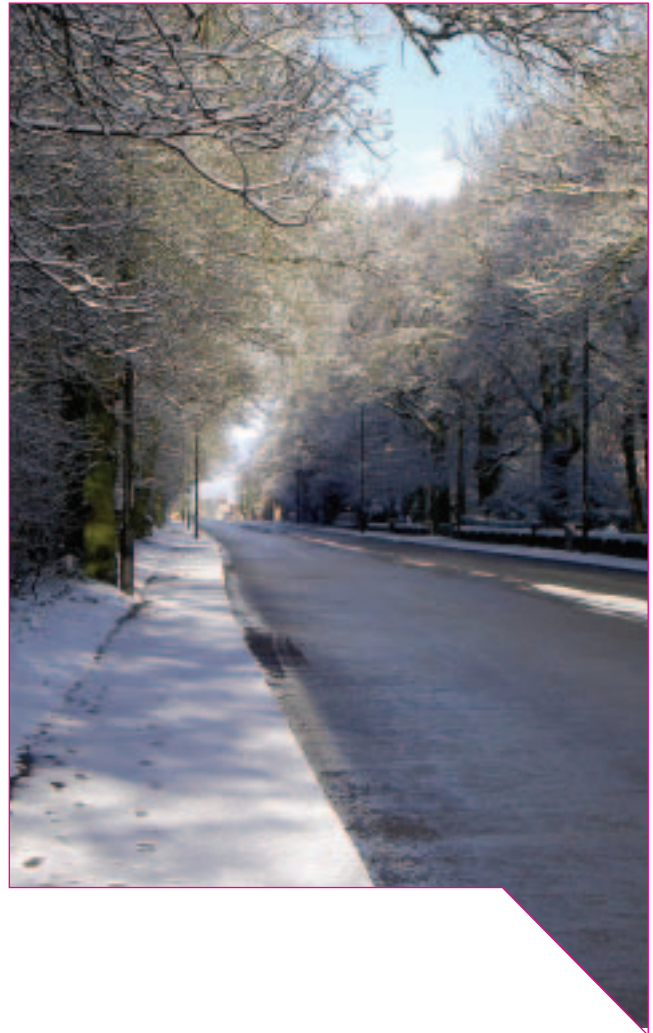
1.5 Legal/official constraints

- Byelaws
- Mousehold Heath Conservators are responsible for the management of the heath as set out in the Norwich Act 1984 (this supersedes the original 1884 act).
- Wildlife and Countryside Act (1981): provides protection for a wide range of species, some of which occur at Mousehold Heath.
- National Environment and Rural Communities Act (2006): Section 40 of this act places a duty on all public bodies to conserve biodiversity.

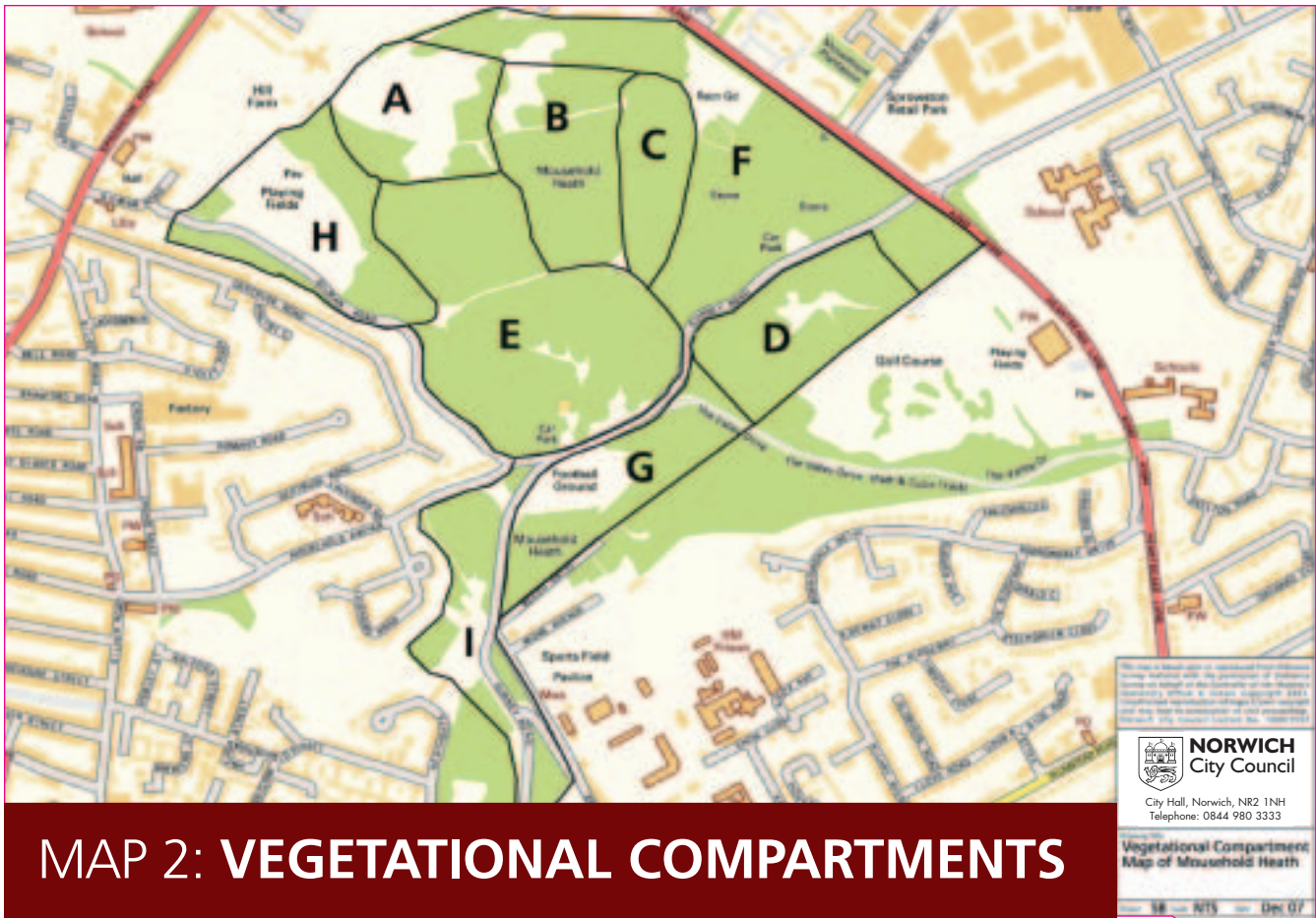
1.6 Main fixed assets

- Pavilion (dating from 1901, and currently leased to Zak's restaurants)
- Public toilets (adjacent to pavilion)
- Bandstand (Fountain Ground)
- Changing rooms (Fountain Ground)

The former Ranger's House, dating from 1888, was sold to a private buyer in 2006.



2. ENVIRONMENTAL INFORMATION



MAP 2: VEGETATIONAL COMPARTMENTS

2.1 Physical – climate

Temperature

Maximum: 17.4°C (August)

Minimum: 3.3°C (January)

Rainfall

Maximum: 126mm (October)

Minimum: 39mm (May)

Total: 819.4mm

Based on mean average figures from July 2000 to May 2001

2.2 Physical – hydrology

There are currently no visible springs or watercourses on the heath. There is one shallow rain fed pool, known as the Vinegar Pond, which tends to dry up completely in the summer. This pond is located in a slight hollow, but there has been some debate as to its precise age and origins, or whether the pond is artificially lined. A survey in May 2007 indicates that the current pond probably originated in the 20th century as a result of ground compaction from quarrying and military activities.

In 2003, a small pond lined with bentonite clay was constructed to the north of the Vinegar Pond to provide a further amphibian spawning site.

It is known that there were other ponds in the past; for example, a small pond formerly existed in the small valley between Compartments B and C (see Section 2.5 below), but there is now little sign of this.

2.3 Physical – topography

Mousehold Heath is on the western edge of a plateau typically more than 40m above sea level. The site has a varied relief, due to a combination of natural processes and past human activities, especially quarrying, which today give the site much of its interest. The distinctive steeply sided, but flat-bottomed valleys at Mousehold were probably formed during cold stages of the Ice Age, when permafrost would have prevented water from soaking into the gravels and sands as it does today. The valleys would originally have drained into the River Wensum, and they would have cut deeper as the river itself gradually eroded deeper.

2.4 Physical – geology

The basic geology of Mousehold Heath consists of 25m of gravels, sands and glacial till on top of a chalk bedrock.

2. ENVIRONMENTAL INFORMATION *CONTINUED*

The coarse flint gravel (about 3m thick) which forms the Heath's surface, and the underlying sandy gravel and sand (about 5m thick), were deposited by ice sheet meltwater rivers up to 400,000 years ago. Below is several metres of sandy, clayey till with stones (known as 'brickearth'), that was left by an ice sheet. Between the till and the chalk is a thick sequence of sands, known as the Norwich Crag; these are mostly marine and sometimes include shells, and are up to a million years old. The chalk itself is very much older, originating about 70 million years ago in the Cretaceous Period. The chalk was laid down in a warm, crystal clear sea and is exposed at the southern end of Mousehold Heath in St. James' Pit.

2.5 Physical – soils

The soils are mainly sandy, which are acidic and nutrient poor on the higher ground; where trees or bracken have gradually replaced the heathland vegetation, a more fertile surface humus layer has developed. Deeper, humus rich soils with a higher nutrient status occur in the wooded valleys.

2.6 Biological – habitats

Until the early 20th century, Mousehold Heath was predominantly an open heath landscape, probably dominated by dry *Calluna vulgaris* heath and grassy heath. Today, it is largely covered in secondary woodland and scrub, consisting mainly of oak (*Quercus robur*) and birch (*Betula pubescens* and *B. pendula*), with rowan (*Sorbus aucuparia*), which readily invade heathland communities suffering a decline in their management. Since the second world war, and particularly since 1975, there has been a rapid rate of decline of the open heath communities – a fact that is clearly apparent from aerial photographs taken at various dates.

Mousehold Heath can be divided into a number of different compartments (See Map 2 – page 5). In the scheme below, the main remaining areas of heathland vegetation are located in compartments A – D. Compartments E – I consist primarily of non heathland vegetation including woodland and grassland.

Compartment A contains large areas of dense gorse, rabbit-grazed acid grassland and mixed scrub consisting mainly of birch. Heather has largely disappeared from this area. Bracken is mainly confined to the mixed scrub area around the northern part of the compartment. This compartment also contains the Vinegar Pond.

Extensive fires occurred in this compartment in summer 2006; much of the burnt vegetation, mainly gorse, was cleared in winter 2006/7.

Compartment B formerly contained many scattered young and semi-mature birch and oak trees and extensive gorse scrub. Bracken and heather dominated

areas have been managed for several years, but control of bracken has had limited success. Other parts of this area are dominated by grasses, with encroaching gorse and bramble. There is a stand of even-aged birch in the southern part of the compartment.

In the winters of 2005/6 and 2006/7, many of the birch and oak trees were removed to conserve the heathland and to re-establish a heathland corridor between Compartments B and C.

Compartment C is fairly uniform in character, surrounded by woodland and scattered encroaching scrub. Similar to B, the areas of heather are relatively well established, though in places being out-competed by bracken. Some tree and scrub removal was undertaken here in the winters of 2005/6 and 2006/7.

Compartment D includes the original 'Pilot Project' area. Some of the heather in this area is long and mature, and in places forms a dense mosaic along with gorse. In some areas, particularly towards the boundary with the pitch and putt course, mature gorse and broom are dominant. There is considerable birch encroachment over most of the compartment. In the areas where topsoil stripping took place in 2003, there is good heather regeneration.

Compartment E consists mainly of woodland; this area also contains Zak's restaurant. The woodland is mainly birch-oak – a recognised woodland type that invades neglected heathland sites (Rackham, 1986) – although other species, including rowan and sycamore, are also present. Small remnants of heathland vegetation (mainly gorse and broom) occur within the woodland and to the north east of Zak's/the Pavilion car park, adjacent to Gurney Road, there is a small area of acid grassland with anthills. This area is suffering rapid encroachment by both self-sown and planted trees.

Compartment F consists mainly of woodland similar in character to compartment E, and it also contains the remains of St William's Chapel. This too was formerly a fairly open area that has been invaded by scrub, resulting in the chapel remains being heavily obscured. The Wingfield Sports Ground and the pitch and putt car park are also included in this compartment.

Compartment G contains the Fountain Ground sports field, which is maintained as amenity grassland and is surrounded by semi-mature trees. The bandstand is also situated in this area.

Compartment H also contains the Gilman Road Open Space and the Desert Conservation Area, which is managed as a wildflower meadow. Both areas are surrounded by semi-mature trees and woodland, with small areas of gorse and broom, especially along Gilman Road.

Compartment I consists of the narrow southern extension of Mousehold Heath between Mousehold Avenue and Gurney Road and Britannia and Gurney Roads. The northernmost parts of this area consist mainly of woodland and scrub with remnant heathland vegetation, much of it becoming moribund due to the dense shade. The former Ranger's House is also located here. The southern tip of this compartment is formed by St James' Hill, a wide expanse of grassland fringed by scrub.

2.7 Biological – flora

Areas of heather can still be found on the heath. *Calluna vulgaris* is the main type of heather found, but *Erica cinerea* also occurs – although it is much scarcer. Bracken (*Pteridium aquilinum*) encroaches on these open heath areas as well as being common in the woodland. Other typical plants of heathland communities that occur at Mousehold include sheep's sorrel (*Rumex acetosella*), broom (*Sarothamnus scoparius*) and common gorse (*Ulex europaeus*). Mousehold is also locally important for two species of dwarf gorse, *U. minor* and *U. gallii*; *U. minor* occurs in only one other location in Norfolk and *U. gallii* in only two.

In some areas, notably Compartment A, heathland grades into acid grassland, and small pockets of acid grassland survive elsewhere at Mousehold. In Compartment E, near Zak's restaurant, large anthills, an indicator of relatively undisturbed grassland and with their own associated wildlife, occur. 'The Desert' is an area of formerly close-mown amenity grassland in Compartment H that is now managed as a wildflower meadow. A much larger expanse of grassland, although fairly species poor, is found on St. James' Hill.

The wooded areas consist primarily of birch-oak woodland, which is typical of recent secondary woodland on heathland sites. A number of other tree species, including some planted exotics such as horse chestnut, a Turner's oak (which forms the centrepiece of the Pavilion car park), and a giant redwood, are also present. The flora of the wooded areas, apart from relict stands of heathland vegetation, is generally species poor. In some areas it consists mainly of bramble, often growing with honeysuckle and bracken. In some areas where the canopy is particularly dense, ground flora is almost entirely absent. There is also a low diversity of epiphytic vegetation (plants that use trees as a means of support), with only two species of fern, other than bracken, recorded. There are also a few species of common mosses and lichens on some trees, and ivy is locally abundant.

2.8 Biological – fauna

Many common woodland birds occur at Mousehold, including sparrowhawk, jay, magpie, green and greater-spotted woodpeckers and great, blue and long-tailed tits. The song thrush, a Biodiversity Action Plan (BAP)*

priority species, is reasonably common. Many parts of the woodland, however, lack undergrowth and/or mature trees, and thus tend to be deficient in nesting opportunities for birds.

Few birds that are strongly associated with heathland occur regularly at Mousehold; the remaining heathland area is probably too small to support breeding populations, and the intensive use of the site for dog walking would discourage ground nesting species.

Mammals known to occur include bank vole, wood mouse, grey squirrel, rabbit, common shrew, hedgehog, fox, stoat and Reeve's muntjac and roe deer. Red squirrels were present until about 1970, but they no longer occur. Pipistrelles, and probably other bat species too, hunt over Mousehold Heath although it is not known if they actually roost there.

The Vinegar Pond is an important spawning site for frogs, and toads are also present at Mousehold. Common lizards occur in the remaining open heathland areas, and slow-worms are also present; adders are said to have occurred in the past, but there are no recent records. All British reptile species declined considerably during the last century, mainly due to habitat loss, and although slow-worms still frequently occur in urban areas the presence of common lizards so close to a city centre is exceptional.

Most invertebrate groups are under-recorded at Mousehold, but the site is known to be of importance for solitary bees and wasps, especially for species associated with heathland or bare ground habitats, and the recording of further invertebrate groups should be investigated.

Dragonflies and damselflies are often seen at Mousehold Heath, especially near the Vinegar Pond, and regular recording of these was started in 2008.

Weekly recording of butterflies also currently takes place at Mousehold. The most notable resident species is the green hairstreak (*Callophrys rubi*), an uncommon butterfly whose only known colony in Norwich is at Mousehold. The caterpillars of this species feed on young shoots and flowers of gorse and broom. Other important butterfly species occurring at Mousehold are the small heath (*Coenonympha pamphilus*), and the white admiral (*Ladoga camilla*), both of which are Biodiversity Action Plan species.

* See Section 4.1 for further discussion of Biodiversity Action Plans.

2. ENVIRONMENTAL INFORMATION *CONTINUED*

2.9 Archaeological and historical features

Mousehold Heath is a historic landscape with many features testifying to its past socio-economic importance to the City of Norwich. These include the many pits and hollows from past quarrying activities, some of which would have contained lime and brick kilns. Within the overall landscape are several individual features of archaeological and historical interest, the most important of which is the St. Williams' Chapel site, a Scheduled Ancient Monument.

The chapel was founded in the 12th Century to commemorate a local boy who was supposedly murdered in a ritual killing. It was once known as 'St William's in the Wood', and the chapel itself is believed to have been located in a wooded grove, complete with woodbanks, long after most of the other woodland on Mousehold had turned into heathland (Rackham, 1986). Both chapel and grove were destroyed during the Reformation in the 16th Century, and now only earthworks remain. The site is now considerably overgrown with bramble, scrub and trees.

Various archaeological finds have been made at Mousehold Heath, including three prehistoric hand axes as well as other flint artefacts

The Vinegar Pond, as well as being a significant wildlife habitat, is also a historic feature in its own right, although it probably dates only from the 20th century. Other features include rifle butts, which survive south of Valley Drive, and the old tram track, which runs from Mousehold Lane through part of the site to Gurney Road. This appears to have been used primarily for goods traffic, especially in connection with the building of an airfield to the north of Mousehold during World War One, and it was abandoned in 1921. It is now a distinctive woodland path with high banks on either side.

The archaeology of Mousehold Heath has yet to be thoroughly investigated, and it is likely that other sites and features await discovery.



3. CULTURAL AND HISTORICAL INFORMATION

3.1 Cultural information

There are several well-known cultural references to Mousehold Heath. Two of Britain's most celebrated landscape painters, John Crome (1768-1821), and John Sell Cotman (1782-1842), of the Norwich School of Artists painted scenes of Mousehold Heath. Both works show a very open and typical heathland landscape. Another Norwich school artist, Henry Ladbrooke (1800-1870), painted a large work depicting sheep grazing on Mousehold Heath which is now displayed in City Hall.

Local writers were also inspired by Mousehold Heath. George Borrow (1803-1881) mentions his true life meetings with gypsies on Mousehold in his work *Lavengro*, and the writer and first world war poet Ralph Hale Mottram (1883-1971) also knew the site well and campaigned for its conservation. The Mottram Memorial on St James' Hill commemorates his association with the area.

3.2 Historical references

There are several medieval references to the gradual reduction in size of the ancient and very extensive Thorpe Wood and its replacement by Mousehold Heath, mainly as a result of grazing pressure. These are described by O.Rackham (1986) in *The History of the Countryside*.

Mousehold Heath has played a role in several nationally important historical events.

During the Peasant's Revolt of 1381, a rebel group camped on the heath while undertaking offensive operations against government forces in Norwich, taking with them several high ranking prisoners they had captured earlier. One of these, Sir Robert de Salle, a prominent knight who was in charge of the Norwich defences, was killed by the rebels when he tried to escape.

Mousehold Heath played an important role in Kett's Rebellion of 1549. The rebel force, led by Robert Kett, camped on the heath while besieging Norwich, and the final battle of Dussindale, at which the rebels were finally defeated by a large government army, is believed by some authorities to have taken place on or near Mousehold rather than on the site of the modern Dussindale housing development.

During the second world war, two military aircraft crashes occurred at Mousehold Heath. On 12 February 1942, a Hampden bomber came down in the Long Valley, and on 25 July of that year a Beaufort torpedo bomber crashed on the Fountain Ground. A memorial plaque to those who died in these accidents was unveiled on 22 April 1990.



3.3 Past uses of Mousehold Heath

Heathland was formerly regarded as a useful resource, providing grazing and a wide range of products made from heather, gorse and broom; it was also an important source of fuel, especially in areas with little woodland. Bracken was also regarded as a valuable material with many different uses. It is known from historical documents that Mousehold was managed for these purposes since at least the 14th century, when commoners had rights to keep cattle, sheep and pigs on the site.

Rabbits were also introduced and were actively managed for food. Their grazing activities helped delay the succession of the heathland to woodland until the 1950s, when their numbers were reduced by myxomatosis.

3. CULTURAL AND HISTORICAL INFORMATION *CONTINUED*

Generally, these processes would have had a very positive effect on the heathland habitat in that they produced a mosaic of vegetation of different ages (thereby encouraging a wider range of wildlife dependent on it), and prevented reversion to woodland. Traditional management practices, such as grazing and cutting, may also have helped prevent bracken from out-competing heather. Active management also limited the build up of large quantities of combustible material, thereby reducing the risk of catastrophic fires.

Mousehold was also quarried extensively from at least the 16th century until well into the 20th; a factor that has been responsible for the varied relief of the site with its characteristic hills and hollows. The quarrying, especially the larger scale activity of the late 19th-early 20th centuries, may well have had some adverse effects on the site's vegetation and associated wildlife, although many heathland species, especially invertebrates, favour bare ground and these may have benefited. It is very unlikely, however, that all the heathland vegetation could have been destroyed during the quarrying and plants and animals would probably have been able to re-colonise the former quarried areas, once operations had ceased, from adjacent pockets of heathland that survived.

The heath was used for military training from 1790, when a cavalry barracks was built in Barrack Street. There is still a path known as the Cavalry Track at Mousehold, although this is currently (2008) very overgrown. During World War II, limited military training occurred at Mousehold but an attempt by the War Office to take over most of the area for a battle training ground in 1947 was defeated by strong local protests.

Mousehold Heath may have always been used for public recreation to some extent, but it was not until the late 19th century, and the passing of the Norwich Act (1884) that created the Mousehold Conservators, that this became the dominant use for the site. From this time onwards, Mousehold became extremely important as a site for open-air recreation by the people of Norwich. Early photographs (eg Gorham, 1908) show large numbers of people enjoying the heath on both informal occasions and at organised events. Although there are now fewer organised events, public recreation has remained the major use of the site up to the present day, and it is likely to continue to do so.

3.4 Present uses of Mousehold Heath – recreation

People use Mousehold extensively, mainly for dog walking and other informal recreation such as running or jogging, casual ball games and picnics. There are a large number of paths running throughout the heath, many of which are 'unofficial' and these tend to come and go over time. There is an orienteering course, for which a guide and map are available, and a waymarked nature trail with a choice of routes. An interpretation board is located at the Zak's restaurant car park, and an interpretative leaflet was also produced by Norwich City Council's green spaces team and is still (2008) available. Unofficial camping occasionally takes place and, in the wooded areas, children and young adults sometimes construct dens and rope swings.

There is a designated cycle way, although unauthorised cycling occurs over many parts of the site, and this has caused some localised erosion. 'Do it yourself' mountain bike courses are often constructed and these are sometimes a hazard for other site users. A potentially more serious problem is the occasional, unauthorised, use of the site for off road motorcycling, including the recent craze for mini-motorbikes.

More organised sporting activities, mainly football and cricket, take place at the Fountain Ground and there is also a popular pitch and putt course adjacent to the south-eastern corner of Mousehold. Organised cross-country runs occasionally take place on the site.

The bandstand is still occasionally used for concerts, although much less so than formerly. Public fetes and similar events have also been organised by the city council, Mousehold Conservators and Mousehold Defenders.

A major constraint on the recreational use of Mousehold is the very busy Gurney Road, which effectively divides the site in two. Crossing this road can be extremely daunting for pedestrians and there is further environmental impact from noise and traffic fumes.

3.5 Visitor facilities

Apart from the interpretation board and waymarked trail, visitor facilities at Mousehold are limited. There is no visitor centre, although the possibility of having one at Mousehold has been the subject of discussion for many years. There is a current (2008) proposal to use part of the former Ranger's House as a visitor centre, in addition to the potential for the provision of accommodation for overnight stays.

There are eight car parking areas, which are listed below:

1. Adjacent to Zak's restaurant, on Gurney Road.
2. The pitch and putt car park on Gurney Road.
3. At Hill Farm Track, off Gilman Road on the site's far western edge.
4. Disabled parking bay at Mousehold Avenue end of Gilman Road.
5. On Mousehold Avenue opposite Gilman Road entrance.
6. Gurney Road, to the north east of the Fountain Ground.
7. Britannia Road, opposite Britannia Barracks football ground.
8. Britannia Road, in front of Norwich prison.

The car parks are free and are open to all, although the public car park adjacent to Zak's restaurant also caters for restaurant customers and the main Gurney Road car park primarily for pitch and putt players. The Britannia Road car park in front of the prison offers excellent views over the city and is on the route of the Norwich open-top tour bus. Other coach tours also stop here.

Although few visitors to Mousehold now arrive by bus, a route (currently operated by Firstbus services 21/22) runs along Sprowston Road, which is a short walk from the Gilman Road entrance to Mousehold Heath.

The only public toilet facilities at Mousehold are adjacent to Zak's Restaurant; these are very basic, and currently offer a poor level of facilities for visitors. The Fountain Ground has toilet and changing room facilities, although these are for the use of organised sports teams only.

The main refreshment facility for Mousehold is Zak's restaurant and there is also an ice-cream van concession.

Combined litter/dog waste bins are provided at various locations on Mousehold Heath and there are a number of seats, some of which are dedicated to deceased persons who were closely connected with the site.



3.6 Misuse and antisocial behaviour

As with any open space adjacent to (or, in Mousehold's case, surrounded by) a large urban area, problems of misuse and antisocial behaviour occur. Many of these are criminal offences, and include:

- Deliberate vandalism, such as graffiti to buildings, seats, gates, signage etc
- Unauthorised access by motor vehicles, including stolen ones that are often abandoned and set alight
- Fly-tipping of rubbish, including green waste
- General littering
- Dog fouling
- Illegal drug taking
- Arson (mainly setting fire to vegetation)

Much of the misuse and antisocial behaviour taking place at Mousehold Heath is common to other areas of Norwich, and many of the measures being undertaken to tackle these issues are outlined in other Norwich City Council policies. For these reasons, such issues are not discussed in depth here, although it is acknowledged that they have important implications for the maintenance and people's use and enjoyment of the site.

3. CULTURAL AND HISTORICAL INFORMATION *CONTINUED*

From an ecological viewpoint, the most serious form of misuse is arson. Although controlled burning is used as a management tool on some extensive heathlands, it is carried out so as to minimise damage to wildlife. At Mousehold, the area of heathland remaining is very small and there is little space available to which heathland wildlife can retreat in the event of a fire and from where it can re-colonise the burnt areas afterwards. Furthermore, much of the surviving heathland vegetation at Mousehold is in an old, moribund (dying) state. The presence of so much dead, highly flammable vegetation means that when fires do occur they are much hotter and more destructive. The age and poor condition of much of the heathland vegetation at Mousehold also hampers its recovery after a serious fire, with some heather and gorse plants being killed outright. A further undesirable effect of heathland fires is that they can encourage the spread of birch (*Rackham, 1986*), and probably also bracken, if these species are present as they are at Mousehold. [See also Section 7.3 (iv)].

3.7 Cultural – conservation management

Attempts to reverse the rapid loss of Mousehold's open heathland areas to woodland were undertaken at least as early as 1972-74, when selected areas were cleared of scrub. Some of this work involved follow up treatment with herbicides. Asulox was also used to control bracken at this time. Initial results appear to have been encouraging, although the momentum was not maintained, possibly due to other commitments on the staff involved.

In 1991, a pilot area (parts of which had been cleared during the 1970s conservation work) was cleared of encroaching vegetation to allow for the regeneration of heather and other heathland flora. Two further areas were cleared in 1994 and these now form one of the core areas of surviving heathland at Mousehold.

Further heathland management work has since been undertaken at Mousehold, including topsoil stripping in Compartment D in 2003 (which has resulted in good heather regeneration), further tree and scrub removal and gorse cutting in Compartments A, B and C in 2005-7, and more topsoil stripping in Compartments A and B (following extensive fires) in 2006-7.



4. MANAGEMENT OBJECTIVES

4.1 Main management objectives

The two key management aims for Mousehold Heath will be to:

- Ensure that the area is managed as effectively as possible to maintain and enhance its wildlife and historic value
- Promote and enhance people's access to, and enjoyment of, the site

4.2 Rationale for conservation management

Section 40 of the Natural Environment and Rural Communities Act 2006 (the NERC Act), states that:

'Every public body must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'

The NERC Act applies to Norwich City Council and the Mousehold Conservators and it is, therefore, essential that conservation objectives for Mousehold Heath should follow nationally approved biodiversity policies and targets set at national, regional and county levels.

The government's statutory conservation adviser, Natural England, has worked with local biodiversity action partnerships to produce a series of targets that aim to protect and, if possible, expand or restore a range of key habitats. Lowland heathland is one such key habitat and its national Habitat Action Plan outlines the following targets:

1. Maintain the current extent of all existing lowland heathland. This target represents no net loss of habitat.
2. Improve the condition of lowland heathland on sites currently in unfavourable condition.
3. Increase the extent of lowland heathland in England by 6,100ha by 2015.
4. Increase the number of heathland patches over 30ha from 10% of the total resource to 50% by 2030.

(From: Biodiversity Targets by Government Region, Gavin Measures, Natural England.)

It is also presumed that any further decline in the condition of heathland, whether this is currently in a favourable or an unfavourable condition, is halted and that new areas of heathland will be brought into a favourable condition through improved management.

Norwich City Council and the Mousehold Heath Conservators have a statutory duty to retain the heathland habitat at Mousehold and to improve its condition through suitable management, including the control or removal of bracken, scrub and trees where appropriate.

Norwich City Council is also a key member of the Norfolk Biodiversity Partnership, which co-ordinates biodiversity activity throughout the County. The Partnership has set local targets for key habitats and species in Norfolk, of which Lowland Heathland is one.

- Maintain 100% of current resource (4,757ha) .
- Ensure 95% of SSSI heathland sites (by area) are in favourable condition by 2010.
- Seek to increase the extent of heathland by 10% from the current estimate of 2,500 (Brecks and rest of the County) by 2006. The larger part of this 250ha to come from former heath currently under recent secondary woodland or conifer plantation, and all to be managed as sustainably as possible.
- Provide advice to landowners of 5 neglected heathland CWS with regard to management and funding options for restoration by 2005.
- In the rest of Norfolk, re-create 70ha of heathland on former minerals sites by 2010.

All members of the Partnership have signed up to these targets, including Norwich City Council, and all Partners who own or manage heathland are actively working to retain their existing heathland.

The amount of heathland within the Norwich City Council area is a tiny fraction of the total heathland resource in Norfolk, but to allow even this to further diminish in either extent or quality would open the City Council to criticism from its biodiversity partners.

The importance of the remaining heathland at Mousehold was also highlighted in the Green Infrastructure Strategy document for Greater Norwich (2007), which advocates that Mousehold Heath could form the key historic component in a major heathland habitat restoration scheme to the northeast of Norwich.

4.3 Main conservation objectives for Mousehold Heath

- Maintain, enhance and increase areas of heather and lowland heath vegetation
- Join existing areas of heathland vegetation
- Control encroachment by trees on open heathland areas
- Control bracken on open heath areas
- Maintain and enhance acid grassland areas
- Maintain and enhance areas of woodland selected for retention
- Maintain footpaths for public access
- Safeguard and improve management of the St. William's Chapel site
- Provide interpretation on history and natural history of site
- Increase public understanding of issues relating to conservation of lowland heaths
- Encourage sympathetic use of the site by the public through informal recreation and education
- Discourage misuse and antisocial behaviour by users, especially the setting fire of vegetation

4.4 Proposed management: a summary

It is proposed that the key management objective for the site will be to regenerate and expand the existing areas of lowland heathland vegetation while retaining the public's enjoyment and use of the heath in a responsible manner.

The remaining areas of acid grassland will also be retained and, if possible, extended. Mature woodland areas will be retained and managed to enhance their wildlife and amenity value. Every effort will be made to conserve and, where possible, enhance the biodiversity value of the site as a whole.

Mousehold Heath's importance as a historic landscape is recognised, and its conservation and integration with other users of the heath will be a further objective.

4.5 Habitat management – lowland heath

- Remove encroaching trees and scrub from existing heathland areas
- Expand remaining heathland areas by further removal of trees and scrub, and humus or topsoil stripping
- Control bracken
- Manage heather and gorse to create a mosaic of different ages and to prevent gorse from out-competing heather
- Manage to ensure continued presence of both dwarf gorse species (*Ulex galli* and *U. minor*)

4.6 Habitat management – acid grassland

- Cut once per year in late summer and remove arisings
- Remove any encroaching scrub and trees, and ensure no further tree planting takes place in these areas
- Monitor potential problem weed species (ragwort, thistles etc), but control only if present in large numbers
- Retain anthills where present

4.7 Habitat management – woodland

- Ensure that a regular programme of tree safety monitoring is undertaken
- Maintain and, where possible, enhance habitat value of designated woodland areas
- Remove dead/dying trees that pose an identified safety risk but retain dead wood habitat where feasible
- Natural regeneration, rather than planting, should be used to maintain those areas which are to be kept as woodland
- Enhance woodland habitat diversity through ride creation, coppicing, pollarding etc



4.8 Habitat management – Vinegar Pond

- Retain the Vinegar Pond, re-profile and install an appropriate lining to retain water throughout the year
- Work towards the eradication of introduced reed sweet grass
- Avoid introduction of further unsuitable plant and animal species and remove any unauthorised introductions should they occur

4.9 Management of the historic environment

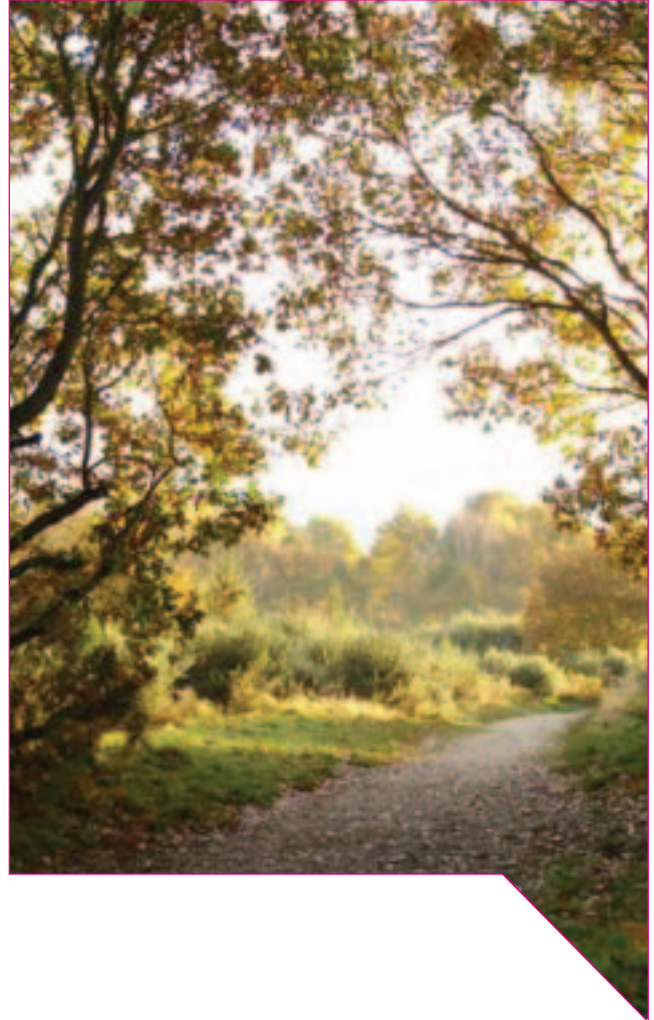
- Ensure that the importance of Mousehold Heath as a historic landscape is adequately recognised and promoted
- Retain and conserve key landscape elements such as open heathland, site relief (especially the hills and hollows landscape) and archaeological and historical features
- Work with County Archaeologist, Norfolk Landscape Archaeology and English Heritage to safeguard St Williams' Chapel site and control encroaching vegetation where necessary
- Ensure that Mousehold's remaining historic buildings owned by the city council (the Pavilion, now Zak's restaurant, and the bandstand) are retained, adequately maintained and protected against unsympathetic alterations
- Ensure that the Mottram Memorial and the plaque commemorating the World War II aircraft crash casualties are adequately maintained
- Promote further investigations of the landscape, archaeology and history with a view to its recognition and protection

4.10 Visitor management – access, education and interpretation

- Promote responsible access and use of the site and encourage local people to become more involved
- Discourage misuse and promote responsible behaviour, eg, clearing up dog mess, avoiding littering and fire lighting etc
- Review the by-laws that are in force and where appropriate revise or use other enforcement actions to reduce anti-social use of the Heath
- Organise guided walks and other public events
- Ensure access for all where appropriate
- Promote Mousehold for health-related activities
- Encourage sustainable use of the site for school and further education visits and fieldwork

4.11 Visitor infrastructure

- Retain key paths and ensure these are maintained and, where appropriate, waymarked
- Refurbish existing orienteering trail and update guide
- Ensure that open top bus and coach operators can continue to access Britannia Road viewpoint
- Maintain/renew interpretation boards as appropriate
- Update/reprint Mousehold leaflet as required
- Retain, and, where possible, enhance existing car parks but prevent any further loss of the site to car parking
- Focus visitor and access infrastructure at or near car parks so they act as “access hubs” thereby reducing the installation of access features in the main part of the heath
- Review current refreshment/catering facilities on the heath
- Improve toilet facilities
- Ensure existing site ‘furniture’ (fencing, bollards, signs, litter bins, benches etc) is adequately maintained and fit for purpose; remove redundant, inappropriate or visually intrusive items
- Review the location and number of litter and dog bins
- Ensure the design of future site ‘furniture’ is in keeping with the character of the site
- Provide cycle parking facilities at appropriate locations

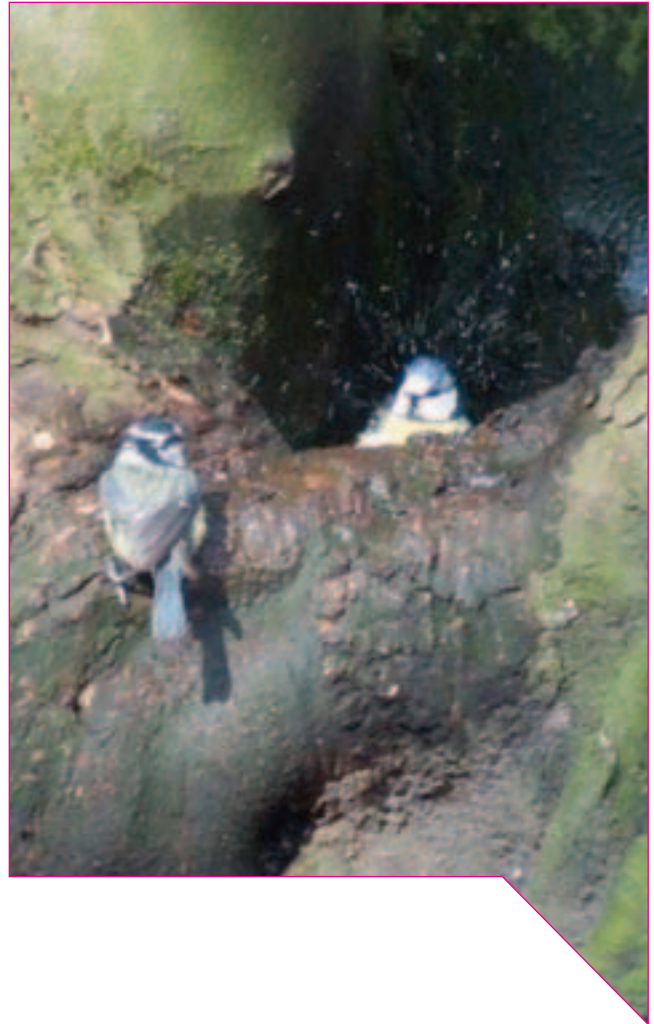


5. SITE MONITORING

5.1 Site monitoring (see also section 6.5)

In order to determine whether management is having an appropriate affect on the site's biodiversity, it is important that the site is monitored on an ongoing basis.

- Establish a survey and monitoring programme and encourage local recorders to provide data; include fixed point photography at key locations to monitor state of heathland habitat
- Record presence of flora and fauna during site visits by staff and volunteers
- Liaise with County Archaeologist, Norfolk Landscape Archaeology, English Heritage and other appropriate bodies to establish a monitoring programme for the St. William's Chapel site
- Review management on an annual basis



6. MANAGEMENT CONSTRAINTS

6.1 Future funding for Mousehold Heath

The annual budget for Mousehold Heath is intended to cover all aspects of maintaining the area. The amount available for conservation management is a relatively small part of this, and is unlikely to increase substantially in the future, unless more external funding is obtained. Most potential funding bodies would require an approved management plan and a set of agreed targets.

Mousehold Heath is in Countryside Stewardship (now part of the Single Payment Scheme), a government funded agri-environment scheme, for which an annual payment of approximately £350 is received. From 2001 to 2004, further external funding was obtained via the Tomorrow's Heathland Heritage scheme, which paid for extra management work on the remaining heathland conservation areas, but this scheme has now ended.

Funding is, therefore, a major constraint on the ability to undertake large-scale conservation management works, especially one-off projects, at Mousehold. Large capital projects can absorb much of the annual budget that could otherwise have gone towards conservation work.

Agreed actions

1. There is a clear need to source outside funding if future large-scale conservation management works are to be undertaken at Mousehold Heath, and if the 'stop-go' nature of previous work is to be avoided. Investigating and following up potential funding sources is time-consuming and sometimes unproductive but important if key management objectives are to be realised.
2. A proportion of the annual Mousehold budget should be set aside for the purpose of funding conservation works.

6.2 Availability of resources

There is a need to improve the resources and skills available for effective conservation management work at Mousehold Heath. There are two full time Mousehold Heath Wardens, plus a dedicated Citycare employee who removes litter and also acts as a useful back up to the Warden's surveillance and public relations role. The Neighbourhood Warden Scheme also takes in Mousehold Heath. Currently, the following carry out conservation management work:

- CityCare (contract) staff
- contract staff
- volunteers, mainly the Mousehold Defenders and British Trust for Conservation Volunteers (BTCV)



This mix of labour has achieved good quality work, but more could be achieved if the knowledge and skills base was to be improved. Heathland restoration and grassland management could also be enhanced if more specialist equipment, eg forage harvester, bracken bruiser etc, were to be available.

Agreed actions

1. The Mousehold Conservators should continually monitor the labour mix to ensure it delivers sufficiently high quality work in a cost effective manner.
2. Only suitably qualified and experienced private contractors should be used.
3. Training should be provided for any volunteers (such as the Mousehold Defenders), who are not part of a group with its own training arrangements such as BTCV.
4. Equipment needs should be identified and funding sought for purchase if appropriate. It might also be possible to hire in specialised equipment for one off projects.

6.3 Public understanding of heathland management

The management of Mousehold Heath is complex as a range of things need to be considered including its cultural use, historic value and biodiversity. Epping Forest, Hatfield Forest and Wicken Fen are three examples of other multi-use sites that lost much of their historic character and ecological value. This is because the people who originally looked after these sites did not always fully understand the special features of the site and how they developed. Subsequent management of these sites has largely made good the losses.

Heathland areas such as Mousehold usually developed after the woodland cover was removed. Afterwards, the heathland habitat was maintained by processes such as grazing, woodcutting and the harvesting of heathland vegetation. Until the mid 18th century, heathland was regarded as a useful multi-purpose, community resource. From this time until the late 20th century it increasingly became viewed as land that would be better used for something else, whether for intensive agriculture, forestry or built development. On the remaining heaths, lifestyle changes and economic factors gradually resulted in the decline of traditional management practices. In the case of Mousehold, sheep grazing, for example, is believed to have ceased in the late 19th century.

As grazing and heathland vegetation harvesting has come to an end at Mousehold, as at many other heathland sites, scrub, and eventually woodland, has replaced open heathland through ecological succession. In some areas of Mousehold, the process was accelerated by the deliberate planting of amenity trees. Aerial photographs of Mousehold Heath show a still relatively open landscape in the 1940s. Even in 1975, many of the areas now under woodland and scrub were still heathland. From Norwich City Council records (*eg Smith, 1979*), it is apparent that the threat to the remaining heathland at Mousehold was recognised at least from the early 1970s, and management work was undertaken to try to retain at least some of it. However, even with greater staff resources than those available today, and the permitted use of herbicides to control scrub re-growth, these efforts were insufficient to prevent the continuing loss of heathland to trees.

If the heathland habitat is to be retained (and ideally expanded) at Mousehold, some tree removal will be necessary, along with bracken control and soil stripping to encourage heather regeneration. It is important that the Mousehold Conservators and Norwich City Council understand and endorse this work. Public education and explanation of why the work needs to be undertaken could go a long way to reducing potential criticism. This education work should be a major role for the wardening staff.

Agreed actions

1. Fact finding visits to other Norfolk heathland areas to view heathland restoration techniques, other management, public access initiatives and examples of good practice will be organised for the Mousehold Heath Conservators, Norwich City Council staff and any other interested parties.
2. More public relations work, eg guided walks, displays etc should be undertaken to increase public awareness and understanding of the work being carried out. This could be part of a wider community strategy for Mousehold Heath.
3. More effort should be made to inform and engage with the local media to ensure they present a fair and accurate view of the work being undertaken at Mousehold.

6.4 Use of herbicides at Mousehold Heath

Herbicides were formerly used at Mousehold Heath for two main purposes:

- (i) to kill regrowth from cut stumps
- (ii) to control bracken

During the 1970s, a variety of herbicides were used for stump treatment. Later on, more environmentally friendly glyphosate based formulations, which are mixed with water, were used. Asulox, a selective herbicide that does not damage heather and most other plants, was used to control bracken from at least the 1970s (*D. Smith, 1979*).

The Mousehold Heath Conservators currently have a 'no herbicide' policy in force at Mousehold, as it was considered there were risks to the public, as well as wildlife, from herbicide use. Herbicide treatment of cut stumps to prevent re-growth is an essential part of most heathland restoration schemes elsewhere, and the no herbicide use policy at Mousehold is a management constraint.

Alternative methods of controlling regrowth include grazing, physical removal of the stumps and repeated cutting. These have all been tried at Mousehold and, currently, cutting is the main method used to try to control regrowth. The nature of the site, and the level and type of public use at Mousehold, is likely to rule out any attempt to reintroduce grazing. Physical removal of the cut stumps may be practical on some areas of the heath but it is labour intensive and, in areas of dense scrub growth, it may cause unacceptable damage. The pits that stump removal would create could also be a public safety issue. Cutting without follow up chemical treatment does not normally kill broadleaved scrub, but causes them to produce large numbers of shoots.

It is highly unlikely – at least with the current level of resources – that cutting trees without follow-up chemical treatment of the cut stumps will be sufficient, in the long term, to maintain even the remaining open heathland areas at Mousehold, let alone the areas proposed for restoration.

Bracken is an increasing problem at Mousehold and it now forms dense stands in some parts of the open heathland areas. A regular and sustained programme of cutting, bruising and/or physical removal might achieve a sufficient level of control without the need for herbicide use. This plan proposes that these methods will form the mainstay of future bracken control at Mousehold. The option to use Asulox to supplement these control methods would, however, allow more management flexibility and could be a necessity if the other control methods prove unsuccessful.

The future of the Vinegar Pond is currently threatened by invasive aquatic vegetation (reed sweet-grass) and should this not be eliminated by the scheduled excavation and reprofiling of the pond it is likely that herbicide application with a weed wiper would be the least ecologically damaging option.

Agreed actions

- The Mousehold Heath Conservators will continually review their current no herbicide policy, and where appropriate seek independent advice on issues and benefits associated with herbicide usage.

6.5 Shortage of key biodiversity information (See also Section 5)

The lack of survey information from Mousehold Heath for many plant and animal groups is another serious management constraint. Apart from butterflies, bees and wasps, almost every other group is either unrecorded, under recorded or the information held is out of date. Reliable and up to date records would greatly assist future management planning for the site.

Agreed actions

- Approach Norfolk and Norwich Naturalists, Norfolk Biological Records Centre, county recorders and other specialists to arrange recording programmes. Invertebrates other than butterflies to be a priority.
- Encourage Butterfly Conservation to maintain butterfly recording at the site.
- Involve volunteers in survey of notable trees at the site.
- Encourage staff, volunteers and members of the public to forward sightings or records to the natural areas officer.



7. DETAILED MANAGEMENT PROCEDURES – HEATHLAND

7.1 Selection of proposed heathland restoration areas

Bearing in mind the difficulty in maintaining even the existing area of heathland, it is extremely unlikely that the area of Mousehold Heath that could be realistically restored to heathland (here referred to as the Potentially Restorable Area, or 'PRA') could be managed without some use of herbicides to control regrowth from cut scrub (See *Map 3 – page 21*).

It is proposed that the areas below should be the priorities for retention or restoration as heathland:

- (i) Existing (2008) heathland areas
- (ii) Areas where heathland vegetation still exists, but is being invaded or out-competed by other vegetation, such as trees, scrub or bracken
- (iii) Areas linking existing patches of heathland vegetation
- (iv) Areas that have turned into woodland relatively recently (since c.1975) and where heathland restoration would still be reasonably practical and cost effective.

7.2 Management procedures

It is envisaged that the proposed heathland restoration programme at Mousehold will involve all or some of the following processes:

- (i) Removal and subsequent control of scrub and small trees (mainly birch and oak), including stump removal as appropriate
- (ii) Bracken control
- (iii) Gorse management and control
- (iv) Heather management
- (v) Humus/topsoil stripping and disposal

7.3 (i) Scrub and tree management

Since regular grazing and harvesting of heathland vegetation ceased at Mousehold, the amount of scrub and tree cover has continued to increase. Efforts to conserve the remaining heathland have, at best, only slowed down this process. As the trees within and surrounding the remaining heathland areas continue to grow, they are producing more seeds, shading effect and leaf litter, all of which combine to reduce the quality of the surviving heathland and threaten its viability. The removal of scrub and trees is, therefore, a key element in retaining and expanding heathland at Mousehold.

Management Aim: at least 95% of the scrub/trees in the existing and proposed heathland re-creation areas should be removed. A small number of scattered individual trees can be retained to provide additional habitat for wildlife, such as woodland birds, or as landscape features.

Management prescriptions: scrub and small trees will be removed by cutting down to near ground level. Should herbicides be used to prevent regrowth, the cut surfaces should be treated immediately with a glyphosate-based herbicide; this can be applied using a paintbrush. All cut material, including woodchip, will be removed from the site.

Alternatively, scrub re-growth will need to be cut back annually.

Scrub and tree removal will be undertaken between late October and the end of February. Minor trimming of regrowth could, if necessary, be undertaken outside this period, provided an assessment of the amount of disturbance likely to be caused is carried out beforehand.

(ii) Bracken control

Bracken is a natural component of many heathlands which, in the past, was kept in check by management practices such as cutting and grazing. In neglected heathlands, as at Mousehold, bracken has greatly increased and now forms dense stands that discourage the regeneration of heather and other heathland plants. In time, such stands produce a deep, nutrient-rich humus layer that further inhibits the regeneration of heather, which, like most other heathland plants, prefers shallow, nutrient poor soils.

Bracken is very difficult to eradicate totally but it can be controlled by mechanical methods such as regular cutting or rolling, or through spraying with Asulox (a selective herbicide that does not harm most other plants, including heather). There is some evidence that bruising bracken stems, by rolling rather than cutting them, provides more effective long-term control, although it is possible that rolling is more harmful to reptiles than cutting (*John Milton, Norfolk Wildlife Trust, personal communication*).

It is equally important that bracken litter is removed to encourage the regeneration of heather and other heathland plants. Removing the litter also weakens living bracken by exposing its underground rhizomes to frost. The bracken litter should be disposed of either off site or in an area of Mousehold specially designated for this purpose, such as an area of low wildlife value where future heathland restoration is not proposed.

The possibility of composting bracken for horticultural use could also be investigated.

Management aim: the extent of bracken cover will be reduced and kept in check by a programme of regular management.

Management prescriptions: bracken stands should be cut or rolled twice per year for the first four years. At the end of this period, the situation will be reviewed and a single annual cut/roll can be introduced if it is felt this can provide a sufficient level of control. A bracken roller

MAP 3: HEATHLAND MANAGEMENT



(towed by a vehicle or horse) could be used for large bracken stands; smaller areas could be treated manually (eg. by knocking down with a stick). Bracken bruising or cutting should be undertaken in mid June and late July; if or when a single treatment is undertaken, this should be carried out in late July.

It is recommended that mechanical control methods should initially be used to control bracken, although this could be reviewed at the end of the initial four-year control period.

Bracken should be removed mechanically, although small amounts could be dug out by volunteer labour.

(iii) Gorse management and control

Gorse, with its very long flowering season, is an essential component of most heathlands and it has significant wildlife value, notably for insects and nesting birds. In the past, management practices such as cutting and grazing kept gorse in balance with heather and other heathland plants, but the cessation of such activities has given gorse a competitive advantage. Gorse also prefers slightly more fertile soil conditions than heathers and soil enrichment can also tip the balance in its favour. These factors have resulted in a steady replacement of heather by gorse over much of the remaining heathland area of Mousehold.

Over-mature gorse (eg plants with more than about 12-15 years growth) become very leggy and lose much of their wildlife value. Old gorse stands also accumulate large quantities of dead material that is extremely flammable. Much of the gorse at Mousehold is currently in this state, a factor that contributed to the many fires that occurred in summer 2006.

It is, therefore, clearly desirable that, for the benefit of the wildlife that uses it and to prevent the build up of large quantities of flammable material, the gorse at Mousehold is managed to prevent it from out-competing the heather.

Management aims: to develop and maintain a good balance between the ratio of gorse and other heathland vegetation, especially heather, and to create a mosaic of healthy gorse stands of different ages.

Management prescriptions: in areas where gorse is out-competing heather, gorse plants should be selectively cut, (they could also be treated with a glyphosate-based herbicide, should the current 'no herbicide' policy be changed in future); smaller plants can be dug out. Cutting in autumn-early winter can inhibit gorse regeneration as it exposes the cut plants to repeated frost attack.

Other gorse stands will be cut on a rotation to ensure a mosaic of age classes ranging from newly cut to 12 year old growth.



(iv) Heather management

Heather is an important component of most heathland communities and its continued survival and expansion at Mousehold is a key management objective.

Management aims: retain all existing heather stands, and encourage expansion of heather and other heathland vegetation in areas now occupied by bracken or scrub.

Management prescriptions: introduce a rotational cutting programme to rejuvenate heather stands and provide a wider range of different aged heather. Carry out humus/soil stripping after consulting Norfolk Landscape and Archaeology in selected areas now occupied by bracken or scrub to encourage heather regeneration from seed bank. This can be supplemented by collecting and sowing heather seeds harvested elsewhere on the site. Monitor effectiveness of heather regeneration on an annual basis.

Most heathland plants, including heather, gorse and broom, can adapt to fire and usually regenerate readily after burning. Although controlled burning is sometimes used as a heathland management technique, this is not recommended at Mousehold for both public safety and ecological reasons.

8. DETAILED MANAGEMENT PROCEDURES – ACID GRASSLAND

8.1 The main acid grassland areas

Grass species favouring acid soil conditions are an integral component of heathland vegetation communities, although they sometimes replace heather and other heathland plants due to nutrient enrichment. Some areas dominated by grasses occur within the main heathland areas themselves, but more extensive grassland areas are also present. The main ones are 'The Desert', a former sports field that has been developed as a wildflower area, St James' Hill and an area bordering Gurney Road, to the east of Zak's restaurant, known as 'The Anthills'.

Rabbits still occur in parts of Mousehold and their grazing and burrowing activities help maintain open grassland (and heathland) areas, as well as creating patches of bare ground that are important for many invertebrate species and as basking places for lizards. Rabbits are, however, either absent from, or have a negligible impact on some grassland areas at Mousehold. The three main grassland areas identified above are either maintained by mowing (The Desert and, from 2006, The Anthills), or are currently un-mown (St James' Hill). The management of the various grassland areas is discussed below.

(i) The Desert

This area is currently managed by an annual cut in late summer-early autumn, with the arisings being removed to prevent a build up of nutrients (most wildflowers typical of semi-natural grasslands prefer nutrient-poor soil). This management regime appears to be satisfactory as although the site does not support a great number of different species, from casual observation the number of wildflowers present appears to be gradually increasing. At the same time, the amount of problem species, such as ragwort and dock, appears to be decreasing. This site is important for insects – several butterfly species, and at least five different bumblebee species were noted there in 2006 – and small mammals.

Management aim: retain as a wildflower meadow.

Management prescriptions: ensure current management regime is kept up and mowing should be undertaken by early September at the latest. Problem weed species, such as ragwort and dock, can be tolerated in small numbers but if necessary they can be removed by pulling, preferably with a Lazy Dog tool and disposed of away from the site.

(ii) The Anthills

This grassland area was, until 2006, unmanaged apart from very limited rabbit activity, and self-sown and planted trees and scrub are rapidly encroaching upon it. The area contains numerous large anthills produced by the Yellow Meadow ant (*Lasius flavus*). The size of these nests indicates that this area has been open grassland for a considerable time. This grassland area is sunny and sheltered and it is likely to be important for insects; furthermore, anthills have their own specialised ecology. This grassland area will be rapidly lost without appropriate management. It was cut from late summer 2006 and it is proposed to cut it annually from now on.

Management aim: restore area to open grassland.

Management prescriptions: remove 80-90% of existing small trees and scrub. Cut vegetation once a year in late summer-early autumn and remove arisings (it is recommended that nylon cord trimmers, rather than mowers, are used around the anthills to avoid unnecessary damage to them).

(iii) St James' Hill

From photographic evidence, and the presence of residual heathland plants such as gorse and broom, this area was formerly heathland but the bulk of it is now acid grassland. Developing woodland and scrub occur at the margins of the site and there are a few individual trees, mainly self-sown sycamores, within the grassland area but the site has remained basically open, despite the fact that it is not grazed or mown. It has been suggested that leisure activities, such as winter sledging, have helped slow down the rate of scrub encroachment. Despite this, the views over the city, notably from the Mottram Memorial, have become increasingly obscured by tree growth, and unless action is taken soon they will be lost entirely.

Management aims: retain the current extent of grassland, at least, and prevent further scrub encroachment or the planting of new trees. Retain residual heathland vegetation.

Management prescriptions: Grassland (a) Selectively remove self-sown trees from within the grassland area. The introduction of a cutting regime is not recommended at present, but the situation should be reviewed in 2012. Should a cutting regime ever be thought necessary, an annual cut in late summer (as for The Desert) is recommended. The area should not be managed as close-mown amenity grassland.

Management prescriptions: Woodland/scrub areas (b) Contain woodland and scrub within existing areas. Consider rotational cutting of some of the scrub to provide more varied age structure. Retain some dead wood (both standing and fallen) as habitat.

Management prescriptions: Reinstatement of views (c) Implement a programme of tree removal to reopen views from Mottram Memorial.

9. DETAILED MANAGEMENT PROCEDURES – WOODLAND

9.1 Selection of woodland retention areas

Most of the former extent of Mousehold Heath now consists of woodland. Map 3 depicts the core areas of woodland, outside the heathland areas that will remain as woodland. Additional areas may be retained, at least in the short term, if the resources to restore them to heathland are not available. The core woodland retention areas were selected on the following basis:

- (i) Areas with the longest continuity of woodland cover (such areas are likely to have more ecological value than more recent woodland, as well as being more appealing to visitors)
- (ii) Wooded areas with notable features, such as avenues (eg Beech Drive); notable specimen trees, whether naturally occurring or planted, will also be retained
- (iii) Wooded areas, including more recent ones, where it would not be practical or cost effective to attempt heathland restoration

9.2 Management procedures

Even the more mature woodland at Mousehold Heath is currently of limited ecological value; much of it consists of dense, even-aged stands with little understorey or ground flora, and it would benefit considerably from more active management. The creation of a network of rides and glades would be especially beneficial, in that it would encourage species that need more light and encourage their movement around the site.

Currently, management is on a care and maintenance basis only, ie trees are only removed or cut back if they become dangerous or interfere with access. Increased funding would need to be made available for a more active woodland management programme, but as this is a much lower priority than the need for active heathland management most of the works could be undertaken as or when funding becomes available.

The following measures are proposed to enhance the ecological value of the key woodland areas:

- (i) Create rides and glades by selective widening of existing tracks and pathways (see Specific Projects below). These can subsequently be maintained through coppicing and mowing
- (ii) Introduce thinning and/or coppicing regime in selected area(s) of woodland to allow in more light and to create a more varied tree age structure
- (iii) Identify and map key specimen trees and woodland features such as avenues, and carry out remedial work as necessary
- (iv) Increase amount of available dead wood habitat by retaining standing and fallen dead wood so far as this is compatible with safety considerations; other material should be chipped and removed from site
- (v) Retain creepers such as honeysuckle and ivy on trees

unless safety considerations dictate otherwise

- (vi) Monitor the spread of sycamore within woodland areas and implement control measures if necessary
- (vii) Maintain woodland areas by natural regeneration, not planting

9.3 Specific Projects (see Map 4 – see page 25)

(i) Upper Long Valley

Create ride by widening existing path. Cut back on southern side of path to give a minimum 5-7m wide ride. At each of the three 'cross road' junctions with other paths, create glades by selectively cutting back or felling adjacent trees and scrub. Maintain a shrubby edge to ride and glades by coppicing margins on a 4-7 year rotation and mow if or when required (all arisings are to be removed).

(ii) Long Valley

Expand glade at intersection with Birch Walk and maintain thereafter by mowing annually, with all arisings to be removed. Manage scrub surrounding the glade on a four-year coppice rotation, but remove adjacent (potentially invasive) rhododendron. Consider creating small pond in existing damp area within glade.

(iii) Silver Birch Walk

Open up on one or both sides to form ride linking with Upper Long Valley and Long Valley by cutting back scrub.

(iv) Old Tram Track

Open up route of Old Tram Track and connecting route to St William's Chapel site, Wingfield Open Space and main heathland restoration area by cutting back vegetation on both sides.

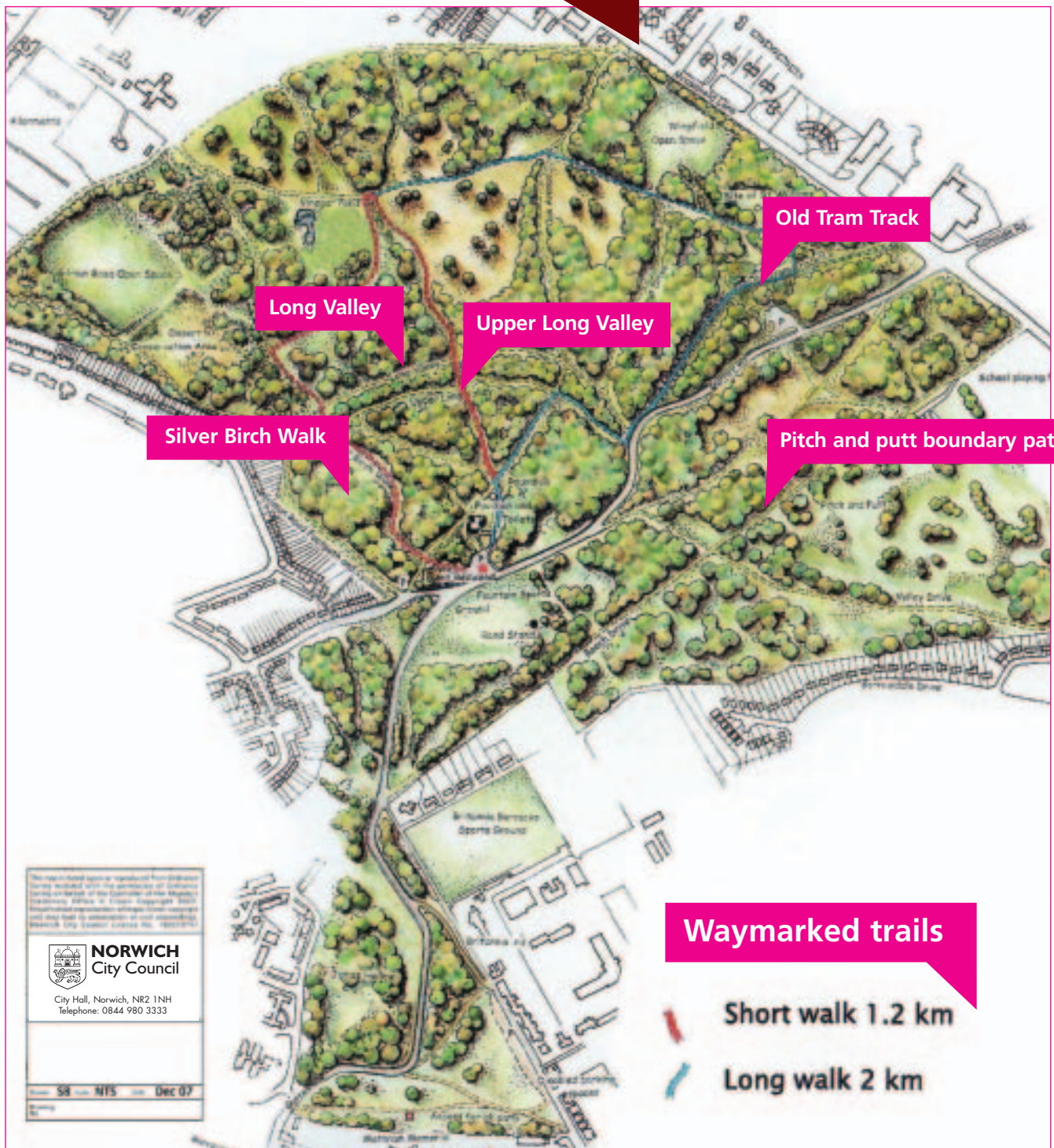
(v) Pitch and putt boundary path

Open up path alongside pitch and putt course north of intersection with Valley Drive to form a ride at least 5-7m wide.

(vi) Coppice area

Identify woodland area of 0.5 – 1ha for implementation of coppice regime and cut on rotation.

MAP 4: SPECIFIC PROJECTS



10. HISTORIC ENVIRONMENT

10.1 The built heritage

(i) St Williams Chapel

Continue to liaise with County Archaeologist, Norfolk Landscape Archaeology, Norfolk Monuments Management Project and other appropriate bodies, regarding the management and interpretation of this historic site.

The Norfolk Monuments Management Project (a partnership which includes Norfolk Museums and Archaeology Service and English Heritage) encourages the management of field monuments in ways which conserve them for future generations to enjoy, and enables access to additional funding streams, through Section 17 management Agreements.

Undertake the following specific actions:

- Investigate renewal of Section 17 Management Agreement in 2008.
- Monitor trees and other vegetation, and manage to prevent further damage to the site.
- Cut encroaching vegetation annually to an agreed ten year plan.
- Review public access to the site, and, if necessary, divert paths, including an existing waymarked trail, to reduce damage to the archaeological remains.
- Consider provision of an interpretation sign and/or an interpretative leaflet. (See also Section 11 (vi)).

(ii) Other archaeological and historical features

Work with County Archaeologist, Norfolk Landscape, Norfolk Monuments Management Project and others as appropriate, to identify, and produce management statements for other archaeological and historical features, including the rifle butts, old tram track and former quarries.

(iii) The Pavilion (Zak's restaurant)

Ensure that the building is kept in a good state of repair and decoration, and that its character is maintained. External alterations, including over-large or dominant signage, that are not in keeping with the building's character should not be permitted.

A firebreak should be maintained around the perimeter of the building; this should be cut annually, but avoiding the bird nesting season.

(iv) Fountain ground bandstand

Maintain structure in a good state of repair and decoration (*note: the bandstand was redecorated in summer 2007*). Ensure that any graffiti is removed promptly using the least damaging method. Promote the bandstand's use for concerts via Norwich City Council's events team.



(v) Mottram Memorial and World War II commemorative plaque

Reopen views of the city from Mottram Memorial by thinning out encroaching trees. Ensure that both the Mottram Memorial and the World War II plaque are freely accessible by the public and maintained in a good state of repair; clean at least annually and ensure any graffiti is removed promptly.

11. ACCESS, RECREATION AND EDUCATION/INTERPRETATION

11.0 Detailed management procedures: access, recreation and education/interpretation

(i) Footpath network

Ensure that the main footpath network is adequately maintained. Key paths should be kept clear of encroaching vegetation and any hazards or obstructions (eg fallen trees or branches), dealt with as soon as is possible. If surface repairs to paths are necessary, these should be carried out using materials sympathetic to the site. Tarmac surfaced paths and lighting are inappropriate for the site and their use will not normally be considered.

Pursue restoration of historic routes that are now overgrown and impassable (eg Cavalry Track); this work could be carried out by the Mousehold Defenders or other volunteers.

(ii) Access for disabled people

Review existing access provision and examine feasibility of upgrading selected routes to make them more suitable for people with disabilities. In consultation with appropriate organisations and individuals, consider feasibility of a wheelchair friendly route on the site.

(iii) Nature trail and orienteering routes

Ensure that existing nature trail and orienteering routes are maintained and repair or replace marker posts, signage and leaflets etc as appropriate. On-site materials, such as marker posts, should be in keeping with the site and preferably made of timber or a suitable recycled plastic alternative.

(iv) Geological trail

Investigate potential for a Mousehold Heath Geological Trail in partnership with Norfolk Geodiversity Partnership.

(v) Organised events

Organised public events that have minimal impact on the site, such as guided walks, should continue and there is some scope for expansion of these. The programme of band concerts at the Fountain Ground should continue. Occasional fetes or similar events that would raise public enjoyment and appreciation of Mousehold Heath should also be considered.

(vi) Cycling

Maintain existing authorised cycle access to the site and promote access to the site by bicycle as an alternative to car use; liaise with appropriate Norwich City Council officer(s) and cycling organisations. Consider provision of small cycle stands for visitors at an appropriate location, such as near Zak's restaurant.

(vii) Other active recreation

Investigate potential for enhancing sporting/recreational activities that, if managed correctly, could be compatible with the site's conservation status and current public usage. Potential activities could include running, a trim trail, geocaching etc.

The current use of the site by BMX bikes will be reviewed.

Types of outdoor recreation that might cause serious disturbance to wildlife or interfere with people's quiet enjoyment of Mousehold should not be permitted.

(viii) Car parking

Review existing car parking provision and consider improvements as necessary to improve appearance and maintenance of parking areas. The use of a plastic mesh system (as installed at Norwich City Council's Danby Wood car park since early 2006) will be considered and could be installed at one Mousehold car park on a trial basis.

NOTE: An increase in the number or capacity of car parks at Mousehold, on the use of tarmac for car park surfacing will not be considered.

(ix) Public transport

Approach the bus operator(s) with a view to promoting access to Mousehold Heath by bus.

(x) Toilet facilities

Replace existing toilet facilities or refurbish to a higher standard, and provide access for disabled users.

(xi) Education and interpretation strategy

Review existing and potential educational use of Mousehold. Review current and potential future provision of on-site interpretation, including an interpretation centre that would also provide a base for the Wardens to operate from. Review the wider provision of information about Mousehold Heath.

Prepare brief interpretation strategy with guidelines for future development.

(ix) Gurney Road

Identify examples of good practice with regard to traffic management in other environmentally sensitive sites. In conjunction with highways staff and police, and subject to sufficient resources, implement measures such as potential traffic calming and safer designated crossing points for pedestrians.

12. MISUSE AND ANTISOCIAL BEHAVIOUR

Liaise with other council departments, the police, and the local community to address problems of misuse and antisocial behaviour at Mousehold. Ensure that the site continues to be regularly patrolled by the Mousehold wardens, and, if possible, the neighbourhood warden service. Ensure that damage caused by vandalism, including graffiti, is made good as soon as possible.

Maintain liaison with Norfolk Fire and Rescue Service and the Norfolk Constabulary to deter arson at Mousehold. In particular, continue the 'Enjoy It, Don't Destroy it' poster campaign, backed up with visits to local schools and youth groups.

Distribute Map 5 (page 29) and reporting system for contacting Mousehold Wardens to all relevant Council sections, emergency services and the public to enable a faster, more efficient response to incidents.





MAP 5: AERIAL VIEW GRID MAP

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The History of the Countryside, Rackham, Oliver. Dent 1986.

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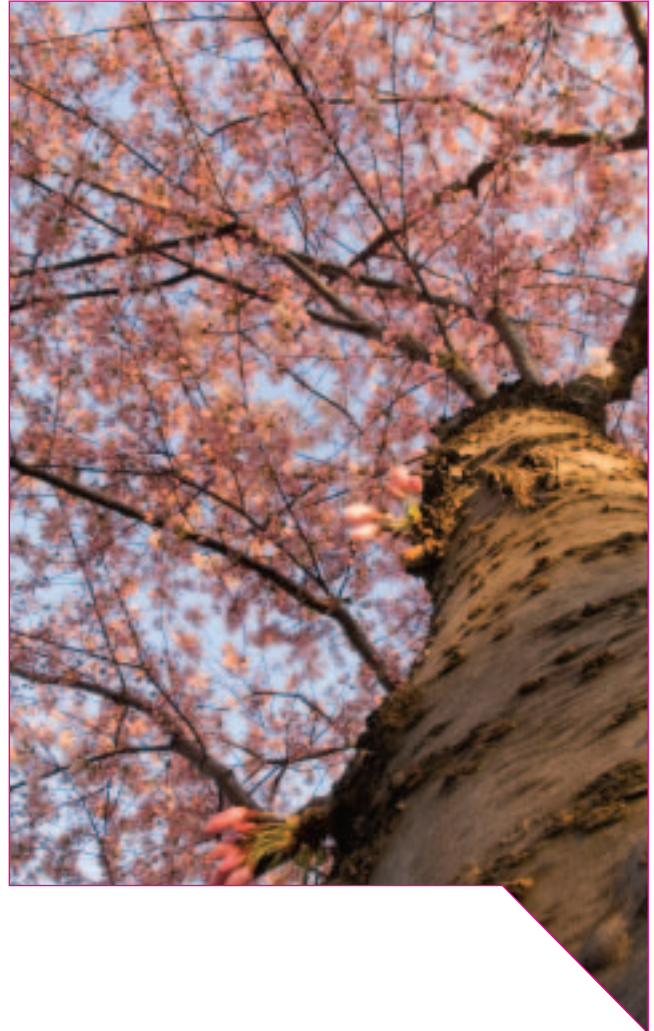
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* Now Norfolk Wildlife Trust.



MOUSEHOLD HEATH: TEN YEAR WORK PLAN

Year 1 = 2008

MANAGEMENT	YEAR									
	1	2	3	4	5	6	7	8	9	10
Records										
List/collect photos	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Collect data, flora/fauna		✓	✓	✓	✓	✓	✓	✓	✓	✓
Collect data on public use			✓			✓				✓
Identify/record significant trees	✓	✓								
Management – people										
Produce new leaflet/revise		✓			✓					✓
Renew interpretation boards			✓							
Organise events/guided walks	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Improve/replace toilet block				✓						
Routine inspections	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Management – estate										
Heathland, heather mowing			✓		✓		✓		✓	
Heathland, gorse management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heathland, scrub clearance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heathland, bracken control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pond maintenance	✓	✓	✓						✓	
Tree inspections	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Woodland conservation management		✓		✓		✓		✓		✓
Grassland conservation management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
St Williams Chapel site management proposals		✓								
Management – infrastructure										
Maintain paths and emergency access	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Maintain site furniture	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Maintain site, litter collection	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Management – administration										
Review management annually	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Prepare work programme	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Review management plan					✓					✓

N.B. This work plan is designed to be a framework for action only. The year(s) in which particular tasks are carried out might have to be changed according to needs and circumstances.



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NORWICH
City Council

If you have any queries about this document, please contact:

Green spaces,
Norwich City Council, City Hall,
Norwich, NR2 1NH
t: 0844 980 3333
e: community@norwich.gov.uk
www.norwich.gov.uk