

Weald Common Flood Meadows
Local Nature Reserve
North Weald Bassett
Site Management Plan 2016-2020



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Introduction

This plan was originally produced by Countrycare in 2002 and was updated in 2011 and 2016. It loosely follows the specifications laid down by Natural England for Site Management Plans. However, this plan is intended to be more of a "working document" and so some sections have been ignored and additional sections have been introduced.

It is intended that this plan should guide the management of Weald Common for five years from January 2016 to December 2020 and have sufficient information about past management of the meadow. By recording this information it is hoped that this plan, regardless of any staffing changes, will have the relevant information needed to guide future management of the site.

Within the plan, management for flooding takes priority. Works will be timed to suit nature conservation wherever possible. Any protected species will be given the appropriate consideration.

1.0 General Information

1.1 Location (See Appendix I, map 7.1)

Name:	Weald Common Flood Meadows	Area:	Thornhill 1 (0.75 ha.) Thornhill 2 (1.1 ha.)
Grid Reference:	Thornhill 1: TL 502 042 Thornhill 2: TL 499 039	Warden:	Environmental Services
Local Planning Authority:	Epping Forest District Council	County:	Essex
District:	Epping Forest	Parish:	North Weald Bassett

Conservation Status: Local Nature Reserve declared 2002, Local Wildlife Site declared 1992, reviewed 2009 Ep 124 (See appendix I, 7.6)

Nature of legal interest: Freehold, Epping Forest District Council

1.2 Site Description

The flood meadows were created in 1996 as part of the North Weald Flood Alleviation Scheme, a major engineering and habitat creation project. Together they cover an area of 1.85 hectares. Both meadows are located in residential areas adjacent to open space.

The meadows are in two separate areas. Thornhill 1 is an elongated site, 0.75 of a hectare, on high ground. It lies south east of a housing estate with open fields on the opposite side, a drainage channel which runs into Thornhill 2 bisects Thornhill 1.

Thornhill 2, which lies to the west, is 1.1 hectares in size. This triangular area is adjacent to the road south of houses in North Weald Bassett, close to the village hall. A stream running from higher ground on the eastern side meets the channel from Thornhill 1 at right angles and forms a storage pond below a semi circular bund.

The meadows are managed primarily for flood alleviation. However, within this remit the meadows are also managed for nature conservation. The meadows were sown initially with three different wildflower seed mixes. The species in these mixes reflect those found in the district's remaining water meadows (see Appendix II, 8.1). A mixed hedge has been planted along all boundaries of Thornhill 2 (see 3.3 and Appendix I, map 7.3.) and along all boundaries of Thornhill 1 (see Appendix I map 7.2.) Both the wet areas and remaining meadowland are improving floristically and becoming increasingly species rich.

1.3 Owners

The Environmental Services Department of Epping Forest District Council owns the land.

Contacts:	Qasim Durrani Assistant Director (Technical) (01992) 564 047 Engineering Drainage and water Environmental Services	Countryside Manager Epping Forest Countrycare (01992) 564224 Neighbourhoods Directorate
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At: Epping Forest District Council
Civic Offices High Street, Epping
Essex CM16 4BZ

1.4 Rights of Access (see Appendix I, map 7.1)

There is no public footpath through Thornhill 1. Direct access for management onto Thornhill 1 is made via a field gate in the south western corner.

Public access is permitted across the whole of Thornhill 2, with the entrance being a kissing gate in the north western corner. There are also four 'squeeze gaps' located in the hedges around the site.

Vehicular access to both sites may be made from the metalled road leading east from Epping Road (B181), which runs up to the site of the now derelict Ongar Radio Station

There are plans to designate the existing metalled road as a bridleway. To date this is still only a plan and no action has been taken.

1.5 Boundaries (see Appendix I, map 7.1)

Thornhill 1 has a row of houses on its western side and an open, formerly arable field on the eastern side. A metalled road with wooden fence forms the southern boundary. The western and eastern boundaries meet at a point at the northern end. The boundaries were planted up by Countrycare between 2003 and 2006 and hedgelaying began in 2012 on the field side.

Thornhill 2 is bounded to the north by a metalled road. The rest of this meadow is surrounded by what was arable land and is now parkland with a mixture of open grassland, hedgerows and trees. The whole meadow is bounded by a new hedgerow, planted by Countrycare between 1996 and 2005 and laid between 2006 and 2012, also post and wire fencing.

1.6 Land Drainage (See Appendix I, map 7.2 & 7.3)

Both meadows contain drainage channels. The Thornhill 1 channel flows downhill from the north into Thornhill 2. This meets a channel flowing from the east in Thornhill 2 at right angles forming a storage pond. This in turn drains into the North Weald brook and eventually Cripsey Brook.

1.7 Maps and Photographic Coverage (see Appendices I & III)

There are a number of photographs in the Countrycare archives of work carried out on these meadows.

1.8 Past Management

Since 1997 when the Service took over responsibility for the sites the grassland has been cut by contractors annually in late summer or early autumn with the grass being taken off site. The boundary of the sites were planted with hedgerow plants starting in 1998 and completed in 2012. The hedgerows on Thornhill 2 have all been laid, and surveyed, on Thornhill 1 they are in the process of being laid. Gates, fencing, steps and a bridge have all been installed and are regularly maintained. For a full list of management undertaken on the Reserves and hedgerows please see appendix IV 10.1 and 10.2.

2.0 Environmental Information

2.1 Physical Information

2.1.1 Topography

North Weald Bassett is a low-lying area within the North Weald Brook catchment. Its highest point is 100m Above Ordnance Datum (AOD). Both meadows are concave, Thornhill 2 lying between 81 and 85.5 metres AOD and Thornhill 1 lying between 88 and 90 metres AOD.

2.1.2 Geology and Soils

The surface geology consists of glacial boulder clay and head deposits, overlying London clay. Borehole and trial pits also revealed a variable layer of man made ground covering the site.

2.1.3 Hydrology

The meadows lie within an area of clay based geology which very much influences the river network, with numerous small tributaries feeding into the main river system. The meadows are situated within a sub catchment of the main North Weald Brook. Two watercourses drain the catchment, one flows at the rear of Thornhill, Emberson Way and Bassett Gardens (see appendix I map 7.1 for location of residential roads) and the other flows across scrubland from the railway. Both converge at the village hall before discharging into the North Weald Brook.

The whole reason for the development of the flood scheme was to try to counteract the rapid response of the area to intense rainfall events. Historically, severe storms in the catchment area have resulted in rapid surface run-off and flooding problems which were experienced in the village of North Weald in 1985, July 1987 and June 1993.

The combined water storage capacity of both flood meadows on Weald Common is 6300m³. This is the standard of protection against a major storm event with a 1:75 year return period.

2.2 Biological Information

2.2.1 Flora

Annette Ford undertook vegetation surveys in the summer of 1999. One hundred and fifteen species of plants were recorded within Thornhill 1 and 2 and they include a variety of grasses and herbs. Thornhill 2 had the greatest floral diversity at the time of surveying. Regular informal surveys are now undertaken during volunteer days and at other times to keep the list up to date. See Appendix II, 8.2 for a current list of species recorded.

Despite the increasing species diversity, both sites are still covered with hardy perennials such as clover, thistles and ragwort, particularly on the drier areas. This has not been helped by the grass cuttings not being removed for the past two years increasing soil nutrient levels.

Thornhill 1 has quite a number of cowslips (*Primula veris*) growing during the spring and is notable for betony (*Stachys officinalis*) which is an Essex Red Data Book species. It has undergone a drastic decline in recent years and is likely to be on the verge of extinction in the next few decades. There are also a number of

sedges and rushes present along the sides of the stream including soft and hard rush (*Juncus effuses* and *Juncus inflexus*), hairy sedge (*Carex hirta*) and false fox sedge (*Carex otrubae*).

Thornhill 2 is dominated by tufted and field vetch (*Vicia cracca* and *V. sepium*) and is also heavily grazed by rabbits on the northern side. The wetter areas are more diverse, as would be expected, with species such as purple-loosestrife (*Lythrum salicaria*), water-cress (*Rorippa nasturtium-aquaticum*) and meadowsweet (*Filipendula ulmaria*).

Condition surveys of the hedgerows have been undertaken in accordance with the DEFRA hedgerow survey guidelines. These have shown the hedgerows to be in good condition and well managed for wildlife.

2.2.2 Fauna

A local naturalist has provided us with a list of 36 species of birds seen on Weald Common in 2014/15. Included in the list are sightings of Barn Owl (*Tyto alba*) and Hobby (*Falco subbuteo*) both Essex Red data book species, See appendix II 8.3. for the full list. Regular surveys of butterflies and dragonflies need to be undertaken.

2.2.3 Communities

The site contains a number of different plant communities. Communities cover a whole range from those with plants associated with dry, open grassland through to those with plants associated with aquatic habitats. The largest community is that of grassland which may be sub-divided into wet and dry communities. It would be reasonable to assume that these communities are based on a neutral to basic substrate given the nature of the surface geology.

3.0 Cultural Information

3.1 Historical

Since the flood meadows are a relatively recent development there are no significant historical features associated with it. There are a number of old buildings to the east, some of which are grade one listed and form part of what was once Ongar Radio Station. The site is also just within the boundaries of the old deer park of Ongar Park Wood.

3.2 Land Use

The meadow's primary function is a floodwater storage area. However, since its conception it has always been intended to integrate this with public access and nature conservation. The meadow's secondary use is therefore for informal recreation such as dog walking and bird watching.

The management work taking place on the site is maintaining the wild flower areas, the drainage ditches and hedgerows. This is done by cutting the grass on an annual basis, clearing the ditches every 4-5 years, or as required and cutting the hedges no more frequently than every other year.

4.0 Legal Obligations

The Wildlife and Countryside Act 1981

The Act protects all wild birds from nest destruction, killing (except in certain cases) and injuring. Schedule 1 listed birds are given special protection in these respects and additional protection in that such birds may not be disturbed whilst building a nest or whilst in, or near a nest, nor any dependant young be disturbed. A licence is also required from Natural England for photography of nesting birds.

The Act also makes it an offence to kill, injure, or take any bat etc. A number of other animals listed in section 5 of the Act are also given special protection and include the Great Crested Newt. Section 9 (4) refers to Water Vole and states it is an offence to intentionally or recklessly damage, destroy or obstruct access to the place where voles are sheltering. Schedule 8 refers to protection of plants.

The Control of Weeds Act 1959

The Act requires the following plants are controlled:

Creeping Thistle (*Cirsium ravines*), Curled Dock (*Rumex crispus*), Ragwort (*Senecio jacobea*) and Spear Thistle (*Cirsium vulgare*).

Occupiers Liability Act 1957

The Act requires that the occupier take all responsible measures to protect any persons visiting the site, including trespassers. This means that parts of the site that are accessible are made reasonably safe, and that unsafe areas i.e. deep water are made inaccessible or assigned as unsafe. Potentially dangerous man made features are considered to require a greater duty of care than natural features.

5.0 Management Aims and Proposals

5.1 Management Aims

5.1.1 **Maintain the site's function as a flood alleviation scheme.**

5.1.2 **Maintain and enhance wet grassland habitat.**

5.1.3 **Maintain and enhance the hedgerows.**

5.1.4 **Maintain and enhance pond habitat.**

5.1.5 **Maintain and enhance populations of notable species.**

5.1.6 **Promote the site for educational use to the public.**

5.1.7 **Maintain access point, gates and bridges.**

5.2 Management proposals.

5.2.1 **Maintain the site's function as a flood alleviation scheme.**

5.2.1.1 All management work on the site should be with the approval of Land Drainage to ensure the integrity of the flood alleviation scheme. Ideally the pond should be dredged every four years, or as required. The linked stream and surface water drain should also be dredged every four to five years. This work is arranged by the Land Drainage Officers.

5.2.2 Maintain and enhance wet grassland habitat.

5.2.2.1 Both meadows should be cut on an annual basis in late August or early September. In poor summers it may be too wet for machinery to gain access to the site without causing unacceptable damage. It is essential that the meadows are cut once a year, the timing of the cut can be flexible. The whole site has been sown with wildflower seed. In order to increase amount of wildflower species the cut should be made when these species have set seed. It is essential to cut the meadow and remove the cuttings to reduce nutrients in the soil and control the grass.

5.2.2.2 Weed species and their control is a major factor to consider in terms of grassland management. Control of ragwort and creeping thistle is a priority on both sites. This can be monitored in future years by photographic recording of the areas cleared. Hand pulling of the thistles and ragwort should be scheduled in summer before they have set seed.

5.2.2.3 The vegetation along the central ditch, running east to west on Thornhill 2 along the drainage line, requires cutting back and thinning out to prevent scrub encroaching onto the grassland particularly at the eastern end. (See map appendix I, 7.5).

5.2.3 Maintain and enhance the hedgerows.

5.2.3.1 The boundary hedges around Thornhill 2 have all been laid and trimmed. These need cutting every two to four years in rotation as necessary (see appendix IV, 10.2 for timetable). Hedge four has a steep slope on the meadow side and road on the other side which may need trimming more regularly to avoid causing an obstruction.

5.2.3.2 The extended boundary at the northern end of Thornhill 1 was planted in 2013. There is a considerable amount of bramble on Thornhill 1 to be cleared from the hedgerow particularly on the field side.

5.2.3.3 On Thornhill 1 seventy metres of hedge remain to be laid on the field side. The first 30 metres can be laid during the winter of 2016/17 and the remainder the following year.

5.2.3.4 The hedges on the field side of Thornhill 1 suffer badly from deer browsing and once the hedge has been laid the pleachers will need protection. The cut brush from the hedge laying should be placed along both sides of the hedge to protect the pleachers and allow the hedge to grow into a good corridor for wildlife. The Field Maple needs cutting back every three years and bramble must be controlled. On the houses side the hedge should be left to bulk up as it is quite thin.

5.2.4 Maintain and enhance the pond habitat.

5.2.4.1 Water habitats comprise of the storage pond on Thornhill 2, the linking stream and the surface water ditch on Thornhill 1. The main area of standing water is in the storage pond. It is an important aspect of the flood meadow from an engineering and conservation point of view. Management should therefore concentrate on keeping invasive weeds out and drainage ditches clear. The management of marginal vegetation, which has encroached into the shallower areas, is also a priority. Species such as reed mace (*Typha latifolia*) may become a problem and would need thinning every four years.

5.2.4.2 Willow growing around the ponds and streams should also be coppiced one third at a time on a three year rotation.

5.2.5 Maintain and enhance populations of notable species.

5.2.5.1 Botanical surveys should be carried out during flowering period.

5.2.5.2 Regular surveys should be carried out to record butterflies, dragonflies and any reptiles and amphibians throughout the spring/summer period. This can be done either by staff on regular visits or volunteers on task days.

5.2.6 Promote the site for educational use to the public.

The site has great potential to be used as an educational resource. The site should also be used to promote the work of both the Land Drainage Section and Countrycare. This valuable working partnership has provided a site that has a dual function as a flood alleviation scheme and Nature Reserve.

5.2.6.1 Where possible hold educational events on Thornhill 2.

5.2.7 Maintain access points, gates and bridges.

5.2.7.1 Ensure all access points are kept clear and vegetation is cut back during the growing season. Keep sightlines clear so that possible hazards can be seen. Patrol on a weekly basis to record any misuse of the site. While on site, litter should be removed. Undertake a weekly visual check to ensure gates, steps and bridges are in a good state of repair and are safe.

5.2.7.2 Continue to compile photographic records; these could also be used in presentations and promotional material.

5.2.7.2 On Thornhill 2 the path between the access gate and the steps has become very muddy and needs the installation of a hardened path and subsequent inspection and maintenance.

6.0 Work Schedule

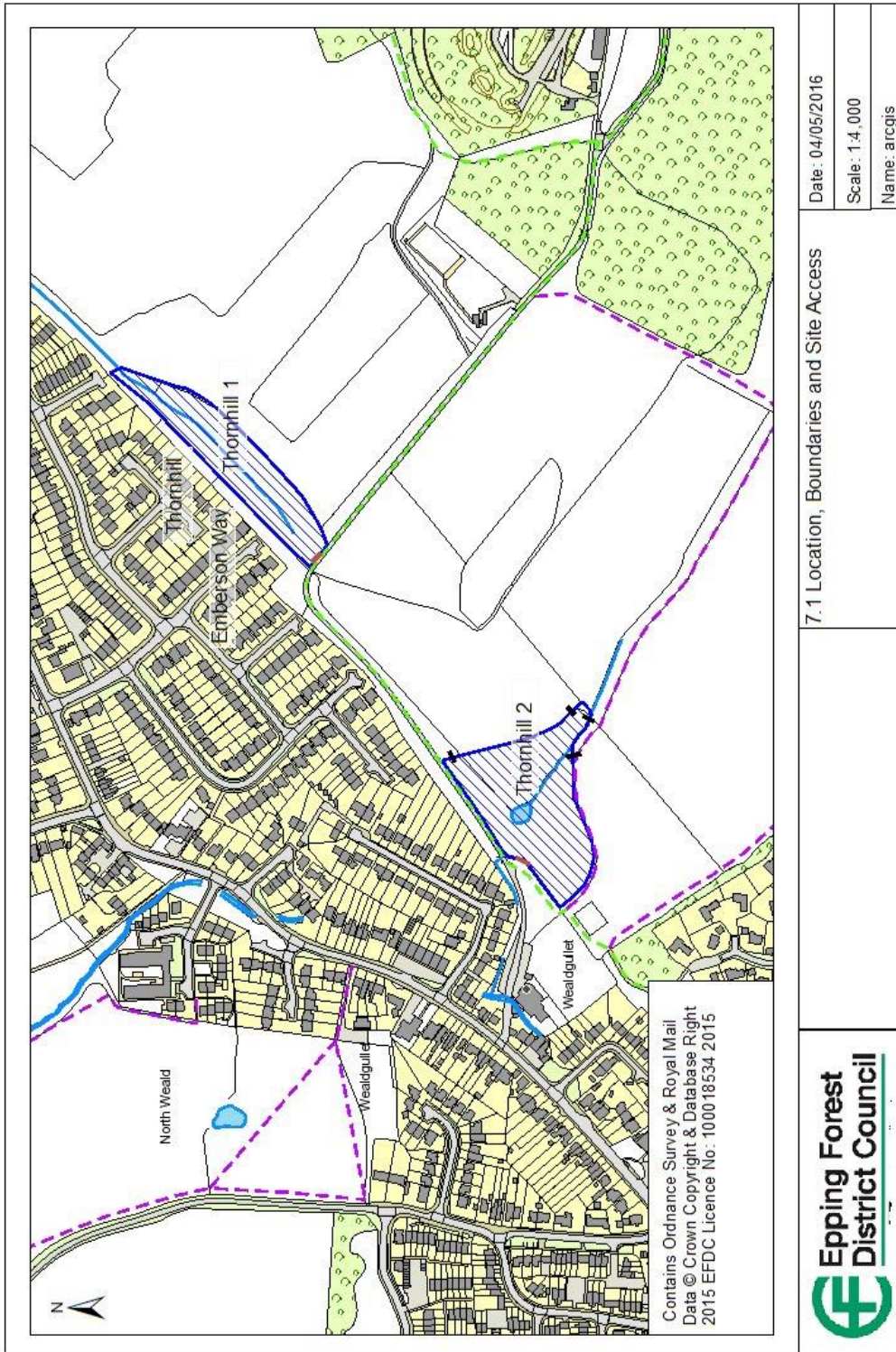
6.1 Work Programme: Five Year Period (See Maps in Appendix 7.4 & 7.5)

Projects	2016				2017				2018				2019				2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
6.2.1 Flood alleviation scheme																				
6.2.1.1 All Management by Land Drainage														L						
6.2.2 Grassland Management																				
6.2.2.1 Manage grassland by mowing (G)			S				S				S				S					S
6.2.2.2 Ragwort & Thistle pulling Thornhill 1+2		S	S			S	S			S	S			S	S				S	S
6.2.2.3 Thornhill 2 cut back scrub along ditch			S				S				S				S					S
6.2.3 Hedgerow Management																				
6.2.3.1a Cut H 1 on Thornhill 2				V								V								V
6.2.3.1b Cut H 2 on Thornhill 2								V							V					
6.2.3.1c Cut H 3 on Thornhill 2	V																	V		
6.2.3.1d Cut H 4 on Thornhill 2													V							
6.2.3.1e Cut H 5 on Thornhill 2										V										
6.2.3.2 Bramble clearance Thornhill 1 field side (B)	V									V										
6.2.3.3a Hedge laying Thornhill 1 House Side H6	V																			
6.2.3.3b Hedge laying Thornhill 1 Field Side H3				V		V														
6.2.3.3c Hedge laying Thornhill 1 Field Side H4								V		V										
6.2.3.4 H1 & 2 Hedge trimming Thornhill 1, Field Maple only								V												V
6.2.3.5 Plant up gap in H5 Thornhill 1. Construct fence to protect planting	V	V																		
6.2.4 Pond Habitat Management																				
6.2.4.1 Manage marginal vegetation on streams into the pond. Clear ditches and check for invasive species		S	V			S	V			S	V			S	V			S	V	
6.2.4.2 Coppice willow 3 year rotation around pond and central ditch Thornhill 2								V												V
6.2.5. Populations of notable species																				
6.2.5.1 Botanical surveys		S	S			S	S			S	S			S	S			S	S	
6.2.5.2 Butterfly & dragonfly survey (monthly) Survey amphibians & reptiles (quarterly)		S	S			S	S			S	S			S	S			S	S	
6.2.6 Education																				
6.2.6.1 Organise education events			S			S				S				S				S		
6.2.7 Maintain Access & Site Records																				
6.2.7.1 Ensure access points are clear during weekly patrol	S	S	S	S		S	S	S	S		S	S	S	S		S	S	S	S	
6.2.7.2 Quarterly site photographs	S	S	S	S		S	S	S	S		S	S	S	S		S	S	S	S	
6.2.7.3 Construction of hardened path Thornhill 2		V																		

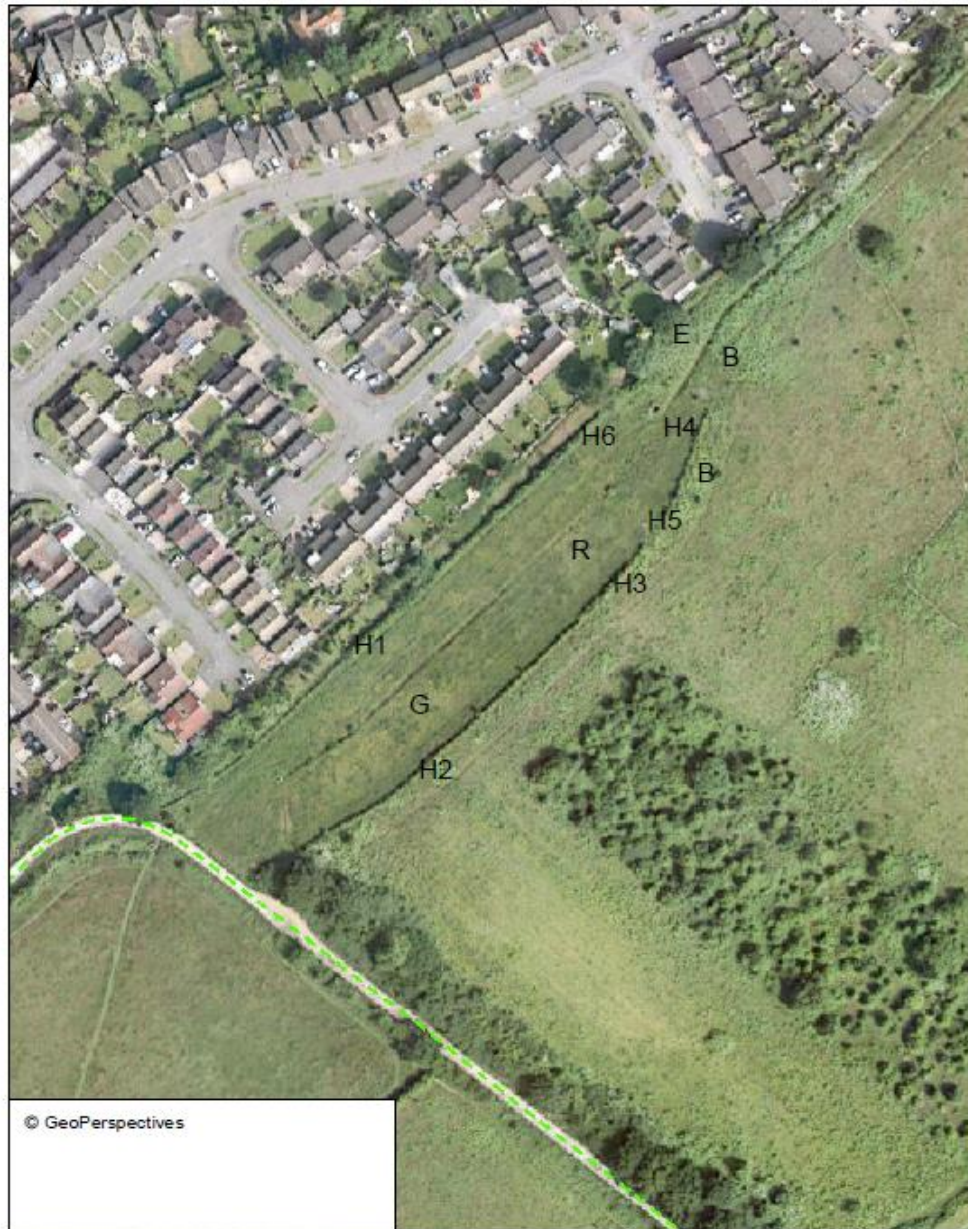
Key			
1 = Jan Feb Mar	2 = Apr May June	3 = July Aug Sept	4 = Oct Nov Dec.
L = Land Drainage	S = Staff	V = volunteers	

Appendix I

7.0 Map Coverage



KEY	
	Squeeze Gap
	Field Gate



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**Epping Forest
District Council**

7.2 Thornhill 1 Habitat Existing state

Date: 29/04/2018

Scale: 1:1,500

Name: argis

KEY

- B Bramble
- E Site extension
- G Grassland
- H1 House side laid hedge
- H2 Field side laid hedge
- H3 Field side unlaid hedge
- H4 Field side unlaid hedge
- H5 Gap in hedgerow caused by deer browsing
- H6 House side unlaid hedge
- R Ragwort



KEY	
D	Drainage channels
P	Pond
B	Raised bund.
G	Grassland
H	Hedges



KEY

- B** Bramble to be cut annually.
- G** Grassland annual cut late summer.
- H1** Laid hedge to be allowed to thicken up, cut the field maple and leave the thorn every three years.
- H2** Laid hedge to be allowed to thicken up, cut the field maple and leave the thorn every three years.
- H3** Hedge to be laid winter 2016/17.
- H4** Hedge to be laid winter 2017/18.
- H5** Gap caused by deer browsing to be planted up and protected.
- H6** Hedge to be laid winter 2015/16.
- R** Ragwort to be pulled annually in July/August.



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7.5 Thornhill 2 Management proposals

Date: 12/02/2016

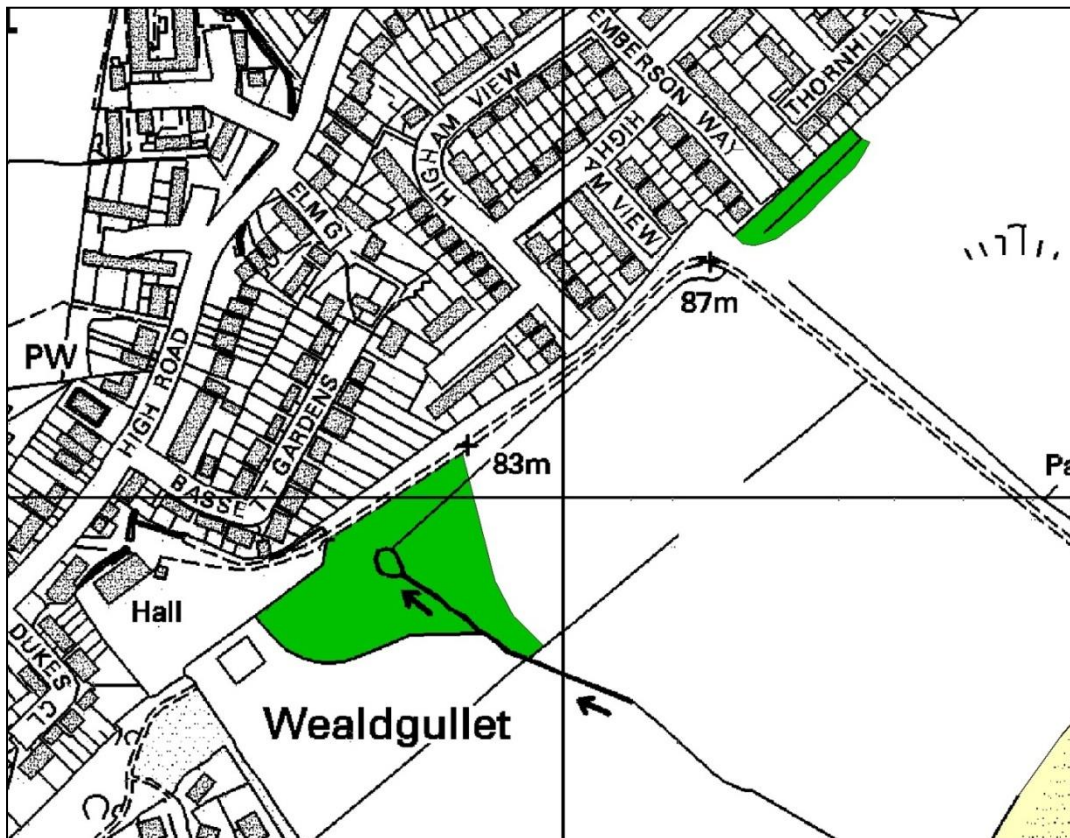
Scale: 1:1,000

Name: arcgis

KEY

- D** Ditch to be cleared every four years
- G** Grassland to be cut annually in late summer.
- H1** Hedge to be cut in December even years
- H2** Hedge to be cut in December odd years.
- H3** Hedge to be cut 2016 and every four years
- H4** Hedge to be cut every four years
- H5** Hedge to be cut every four years
- W** Willow to be coppiced every three years

7.6 Weald Common Local Wildlife Site Citation



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Ep124 Weald Common LNR (1.2 ha) TL 500040

This site, located to the south east of North Weald Bassett, comprise two meadows created in 1996 as part of a flood defence for the village and later declared a LNR in 2004. Despite the primary aim of flood alleviation, the opportunity to create a diverse wildlife habitat was incorporated into the scheme. The grassland is characterised by a range of species including Cowslip (*Primula veris*), Wild Carrot (*Daucus carota*), Grass Vetchling (*Lathyrus nissolia*) and Agrimony (*Agrimonia eupatoria*). The wet areas of the meadows and drains exhibit a wide variety of species. Cyperus Sedge (*Carex pseudocyperus*), Ragged-Robin (*Lychnis flos-cuculi*), Purple-loosestrife (*Lythrum salicaria*), Sweet-flag (*Acorus calamus*) and Water-plantain (*Alisma plantago-aquatica*) and several rushes (*Juncus* spp.) are recorded from these areas of the site.

BAP Habitats

Species-rich Grasslands (Essex)

Selection Criteria

HC11 – Other Neutral Grasslands

HC31 – Urban Sites

Rationale

This is a created site that serves not only a practical function, but enhances the local environment on the urban fringes of North Weald Bassett. The site has been developed for its wildlife potential, recreation and educational value for local residents.

Review Schedule

Site Selected: 2009

Appendix II

8.0 Flora and Fauna

8.1 Wildflower seed mixes

Three different wildflower seed mixes were selected as follows:

- M5 Short meadow mix: Fescue grass mix in the ratio of 20% wildflowers to 80% grass by mass.
- M6 Pond edge mix: Fescue grass mix in the ratio of 20% pond mix to 80% grass by mass.
- M7 Damp meadow mix: Fescue grass mix in the ratio of 20% wildflowers to 80% grass by mass with an increased percentage of Ragged Robin and the omission of Water Avens.

Variety		% by mass		
		M5	M6	M7
Cowslip	<i>Primula veris</i>	5		10
Lady's Bedstraw	<i>Galium verum</i>	15		
Meadow Buttercup	<i>Ranunculus acris</i>	20	25	30
Selfheal	<i>Prunella vulgaris</i>	10	10	
Yellow Rattle	<i>Rhinanthus minor</i>	25		
Harebell	<i>Campanula rotundifolia</i>	1		
Hoary Plantain	<i>Plantago media</i>	10		
Yarrow	<i>Achillea millefolium</i>	4		
Betony	<i>Stachys officinalis</i>	10		
Meadow Sweet	<i>Filipendula ulmaria</i>		24	20
Purple Loosestrife	<i>Lythrum salicaria</i>		5	
Yellow Flag Iris	<i>Iris pseudocorus</i>		30	20
Ragged Robin	<i>Lychnis flos-cuculi</i>		5	18
Devils Bit Scabious	<i>Succisa pratensis</i>		1	2

8.2 Tree and Plant Species List

Plant species found on both sites 2015

Scientific Name	Common Name
<i>Achillea millefolium</i>	Yarrow
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Arrhenatherum elatius</i>	False oatgrass
<i>Centaurea nigra</i>	Common Knapweed
<i>Cerastium fontanum</i>	Common Mouse-ear
<i>Cirsium arvense</i>	Creeping Thistle
<i>Dactylis glomerata</i>	Cock's-foot
<i>Elytrigia repens</i>	Common Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Equisetum arvense</i>	Field Horsetail
<i>Glyceria fluitans</i>	Floating Sweet-grass
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Hordeum murinum</i>	Wall Barley
<i>Juncus inflexus</i>	Hard Rush
<i>Lactuca serriola</i>	Prickly Lettuce
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Lemna minor</i>	Common Duckweed
<i>Lolium perenne</i>	Perennial Rye-grass
<i>Lotus corniculatus</i>	Common Bird's-foot trefoil
<i>Medicago lupulina</i>	Black Medick
<i>Phleum bertolonii</i>	Smaller Cat's-tail
<i>Phleum pratense</i>	Timothy Grass
<i>Picris echioides</i>	Bristly Oxtongue
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Prunella vulgaris</i>	Selfheal

Scientific Name	Common Name
<i>Prunus Spinosa</i>	Blackthorn
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg</i>	Bramble
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Rumex sanguineus</i>	Wood Dock
<i>Salix alba</i>	White Willow
<i>Salix cinerea</i>	Grey Willow
<i>Scrophularia nodosa</i>	Common Figwort
<i>Senecio erucifolius</i>	Hoary Ragwort
<i>Solanum dulcamara</i>	Bittersweet
<i>Sonchus arvensis</i>	Perennial Sow-thistle
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Trifolium dubium</i>	Lesser Trefoil
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Tripleurospermum inodrum</i>	Scentless Mayweed
<i>Typha latifolia</i>	Common Reedmace
<i>Ulmus agg</i>	Elm
<i>Urtica dioica</i>	Stinging Nettle
<i>Vicia cracca</i>	Tufted Vetch
<i>Vicia tetrasperma</i>	Smooth Tare
<i>Quercus robur</i>	Pedunculate Oak
<i>Hedera helix</i>	Common Ivy

Thornhill 1 2015

Scientific Name	Common Name
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Convolvulus arvensis</i>	Field Bindweed
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Festuca ovina</i>	Sheep' Fescue
<i>Festuca rubra</i>	Red Fescue
<i>Galium verum</i>	Lady's Bedstraw
<i>Geranium molle</i>	Dove's-foot Crane's-bill

Scientific Name	Common Name
<i>Myosotis laxa</i>	Tufted Forget-me-not
<i>Phragmites australis</i>	Common Reed
<i>Picris hieracioides</i>	Hawkweed Oxtongue
<i>Potentilla reptans</i>	Creeping Cinquefoil
<i>Silene latifolia</i>	White Campion
<i>Stachys officinalis</i>	Betony
<i>Verbascum spp.</i>	Mullein

Thornhill 2 2015

Scientific Name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Allaria petiolate</i>	Garlic Mustard
<i>Alopecurus myosuroides</i>	Black-grass
<i>Angelica sylvestris</i>	Wild Angelica
<i>Barbarea vulgaris</i>	Winter-cress
<i>Bellis perennis</i>	Daisy
<i>Bromopsis ramosa</i>	Hairy Brome
<i>Carex hirta</i>	Hairy Sedge
<i>Carex otrubae</i>	False Fox Sedge
<i>Centaureum erythraea</i>	Common Centaury
<i>Chenopodium album</i>	Fat-hen
<i>Chenopodium polyspermum</i>	Many-seeded Goosefoot
<i>Cirsium vulgare</i>	Spear Thistle
<i>Cornus sanguinea</i>	DogWood
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Crepis capillaris</i>	Smooth Hawk's-beard
<i>Crepis vesicaria</i>	Beaked Hawk's-beard
<i>Dipsacus fullonum</i>	Wild Teasel
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Euonymus europaeus</i>	Spindle
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Galium aparine</i>	Cleavers
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill
<i>Glechoma hederacea</i>	Ground Ivy
<i>Heraclium sphondylium</i>	Hogweed

Scientific Name	Common Name
<i>Hypericum hirsutum</i>	Hairy St John's wort
<i>Juncus effuses</i>	Soft Rush
<i>Lamium album</i>	White Dead-nettle
<i>Leontodon autumnalis</i>	Autumn Hawkbit
<i>Lythrum salicaria</i>	Purple-loosetrife
<i>Matricaria recutita</i>	Scented Mayweed
<i>Myosotis arvensis</i>	Field Forget-me-not
<i>Odontites vernus</i>	Red Bartsia
<i>Persicaria maculosa</i>	Redshank
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadowgrass
<i>Polygonium aviculare</i>	Knotgrass
<i>Prunus domestica</i>	Wild Plum
<i>Pulicaria dysenterica</i>	Common Fleabane
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus bulbosus</i>	Bulbous Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rorippa nasturtium-aquaticum</i>	Water-cress
<i>Rosa arvensis</i>	Field Rose
<i>Salix caprea</i>	Goat Willow
<i>Senecio jacobaea</i>	Common Ragwort
<i>Silene dioica</i>	Red Campion
<i>Sparganium erectum</i>	Branched Bur-reed
<i>Stellaria holostea</i>	Greater Stitchwort
<i>Taraxacum agg</i>	Dandelion
<i>Trifolium campestre</i>	Hop Trefoil
<i>Viola arvensis</i>	Field Pansy

8.3 Bird species list 2015

Common Name	Scientific Name
Barn Owl	<i>Tyto alba</i>
Blackbird	<i>Turdus merula</i>
Blackcap	<i>Sylvia stricapilla</i>
Blue Tit	<i>Parus cyanus</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Buzzard	<i>Buteo buteo</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Cuckoo	<i>Cuculus canorus</i>
Fieldfare	<i>Turdus pilaris</i>
Greater Spotted woodpecker	<i>Dendrocopus major</i>
Green Woodpecker	<i>Picus viridis</i>
Grey Wagtail	<i>Motacilla cinerea</i>
Hobby	<i>Falco subbuteo</i>
House Martin	<i>Delichon urbica</i>
House Sparrow	<i>Passer domesticus</i>
Kestrel	<i>Falco tinnunculus</i>
Lapwing	<i>Vanellus vanellus</i>
Lesser Redpoll	<i>Carduelis cabaret</i>
Linnet	<i>Acanthis cannabina</i>
Little Egret	<i>Egretta garzetta</i>
Little Owl	<i>Athene noctua</i>
Magpie	<i>Pica pica</i>
Marsh Tit	<i>Poecile palustris</i>
Meadow Pipit	<i>Anthus pratensis</i>
Red Kite	<i>Milvus milvus</i>
Rook	<i>Corvus frugilegus</i>
Sand Martin	<i>Riparia riparia</i>
Siskin	<i>Carduelis spinus</i>
Skylark	<i>Alauda arvensis</i>
Snipe	<i>Gallinago gallinago</i>
Song Thrush	<i>Turdus philomelos</i>
Sparrowhawk	<i>Accipiter nisus</i>
Starlings	<i>Sturnus vulgaris</i>
Swallow	<i>Hirundo rustica</i>
Whitethroat	<i>Sylvia communis</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Yellow hammer	<i>Emberiza citrinella</i>

Appendix III

9.0 Land photographs



Thornhill 2 pond excavations Sept 2003



Thornhill 1 April 2010



Thornhill 2 Hedge 3 and bridge Mar 2005



Thornhill 2 Hedge 1 laid Nov 2006



Thornhill 2 Hedge 2 laid Nov 2007



Thornhill 2 Hedge 2 2007



Thornhill 1 Hedgelaying January 2012



Thornhill 1 Hedgelaying January 2012



Thornhill 2 Hedge 2 July 2015

Appendix IV

10.0 Past Management

10.1 Details of Past management 1996- 2016

Date	Site	Work Carried out
01/03/1996	Thornhill 1&2	Excavation and construction of the site was completed
01/08/2000	Thornhill 1&2	Hay cut on both meadows by Countrycare staff and contractor
01/09/2002	Thornhill 1&2	Contractors cut Thornhill 1 and remainder of 2
26/09/2015	Thornhill 1&2	Annual Grass cut
August/Sep 1999	Thornhill 1	First cut of meadow 0.5 ha cut. Installation of field gate.
01/02/2002	Thornhill 1	120m of hedgerow planted on eastern side. Trees planted include 320 C. monogyna, 40 C. avellana, 20 A. campestre and 20 C. sanguineus.
01/02/2003	Thornhill 1	Tree planting 268 northern boundary next to road, 2 tasks
01/03/2003	Thornhill 1	Planted 160 trees
01/01/2004	Thornhill 1	Replaced dead trees & 15m of hedgerow planted 300 trees
01/03/2005	Thornhill 1	Repaired fence on southern boundary planted 7 trees in 6m gap.
01/03/2006	Thornhill 1	Tree Planting
01/11/2006	Thornhill 1	Tree Planting
01/02/2010	Thornhill 1	Bramble cleared from fence to oak tree
01/03/2010	Thornhill 1	Cleared bramble at far end of site
01/04/2010	Thornhill 1	Put in bollards as a boundary marker
01/05/2010	Thornhill 1	Continued with bollards
01/07/2010	Thornhill 1	Strimmed bramble behind houses and finished bollards. Removed boundary fence
17/02/2011	Thornhill 1	Planted up extension boundary 150 trees removed part of old boundary hedge filled in gaps. At road end cleared bramble around plantings both sides constructed new small fence to fill in gap by field gate.
22/11/2011	Thornhill 1	Cleared bramble Thornhill 1 left and right of field gate
06/01/2012	Thornhill 1	Laid 40 m hedge
28/06/2012	Thornhill 1	Cleared tree guards from houses side hedge cut back bramble.
09/11/2012	Thornhill 1	Laid 45m hedge houses side
23/11/2012	Thornhill 1	Laid 37 m hedge houses side
24/01/2013	Thornhill 1	Bramble clearance + hedge planting by fence
06/08/2013	Thornhill 1	Ragwort pulling.
15/11/2013	Thornhill 1	Hedgelaying house side 30m burnt arisings.
27/02/2014	Thornhill 1	Bramble removal from hedgerow at far end.
30/10/2014	Thornhill 1	Trimmed hedge on houses side by gate strimmed grass cleared around newly planted hedge prep for hedgelaying. Strim end AREA BRAMBLE.
08/12/2014	Thornhill 1	Thornhill 1 annual grass cut!!!
06/02/2015	Thornhill 1	Hedgelaying houses side 30m laid
16/07/2015	Thornhill 1	Pulled Ragwort, raked cut grass at either end cleared around josh's hedge cut bramble at far end on houses side. Looked at repairing gate needs post moving or a smaller gate. Cut laid hedge by gate and field maple along field side in the hedge.
07/09/2015	Thornhill 1	Field side planted up gap in hedge with oak and field maple put replacement tree guards on chewed spindle. Cut bramble from hedge plants.

01/09/1997	Thornhill 2	Hay cut on western half. Field gate and kissing gate installed.
Feb/March 1998	Thornhill 2	250 metres of mixed hedge (1000 trees) planted around Thornhill 2 with volunteers.
July/August 1998	Thornhill 2	Hay cut, appearance of flowers such as Ragged Robin (<i>Lychnis flos - culi</i>) and <i>P. veris</i>
01/02/1999	Thornhill 2	95 metres of hedge planted by Community Service group, volunteers and 20 Brownies from 3rd Theydon Bois group. Trees planted included 225 Hawthorn (<i>Crataegus monogyna</i>), 25 Field Maple (<i>Acer campestre</i>), 25 Hazel (<i>Corylus avellana</i>) and 25 Dogwood (<i>Cornus Sanguineus</i>).
August/Sep 1999	Thornhill 2	Appearance of yellow rattle (<i>Rhinanthus minor</i>). 0.45 ha cut.
01/12/1999	Thornhill 2	75 metres of hedgerow planted alongside metalled road. Trees planted included 150 <i>C. monogyna</i> , 35 <i>A. campestre</i> , 35 <i>C. Sanguineus</i> and 35 <i>C. avellana</i>
01/08/2001	Thornhill 2	Hay cut
01/02/2002	Thornhill 2	Squeeze gaps created at 3 locations and 5.4m bridge installed across ditch at south southern end. Some scrub cleared from eastern side of ditch.
01/07/2002	Thornhill 2	Cut meadow and baled up 111 bales of hay from 0.47ha, took off all tree guards
01/02/2003	Thornhill 2	Coppice blackthorn, hawthorn & willow from central ditch 25m completed one side. 2 tasks
01/03/2003	Thornhill 2	Coppiced ditch & willow around pond layed 15m of hedge.
01/03/2005	Thornhill 2	Planted 20m of hedge on south eastern boundary (Hedge 3) 100 trees repaired fencing around southern meadow put new step in on bridge east side. Cleared blackthorn on northern side of ditch.
01/06/2007	Thornhill 2	Main inlet cleared and willow coppiced
01/05/2008	Thornhill 2	Bridge and steps installed and sign board put in by kissing gate.
01/09/2008	Thornhill 2	Cut bank
01/01/2009	Thornhill 2	Steps installed
01/02/2009	Thornhill 2	Ditch that runs into pond cleared
01/07/2009	Thornhill 2	Hedge cut back and sign mended
01/03/2010	Thornhill 2	Trimmed hedge and burned brash
01/10/2010	Thornhill 2	Strimmed common and around hedge
17/03/2011	Thornhill 2	Trimmed hedge 1, burnt cuttings cleared bramble and blackthorn around plantings at east end of ditch, cleared along ditch, resurfaced footpath.
03/11/2011	Thornhill 2	Trimmed hedge 2 cleared eastern triangle ready for laying trimmed hedge left of gate
26/04/2012	Thornhill 2	New field gate repaired steps cut bramble.
14/12/2012	Thornhill 2	Hedgelaying on PROW by bridge in the rain
18/12/2012	Thornhill 2	Bonfire to clear debris.
05/12/2013	Thornhill 2	installed new sign.
09/04/2015	Thornhill 2	Installed steps up the embankment straightened up the field gate and mended the kissing gate fence trimmed hedge to the north side of the gate burnt arisings plus left over brash from last time. Installed a short lived bench on top of the bund.
22/06/2015	Thornhill 2	Pulled Creeping Thistle from around old bonfire sites dug over the fire site near pond.
1&3/07/2015	Thornhill 2	Started Hedgerow Surveying
29/09/2015	Thornhill 2	Educational day, EFDC planning staff, hedgerow surveying. Trimming Hedge 2

10.2 Thornhill 2 Hedgerow Management Work

	Date laid	Date trimmed	Date for re-trimming
Hedge 1	2006 / 07	Mar 2011, Dec 2012/14	Dec 2016
Hedge 2	2008 / 09	Dec 2013/15	Dec 2017
Hedge 3	2002 / 2012	Jan 2016	Jan 2020
Hedge 4	2009 / 10	Jan 2012	Jan 2019
Hedge 5	2010 / 11	Jan 2015	Jan 2018