- APPENDIX 1 –

Swaines Green Management Plan *3rd Draft*

Buffer Lands: Compartment 63

Summary and Rationale

This management plan aims to identify areas of scrub, grassland and developing woodland to establish a management regime to restore areas of grassland currently being encroached by scrub and to increase the structural and species diversity of the grassland, scrub and woodland habitats.

Key objectives

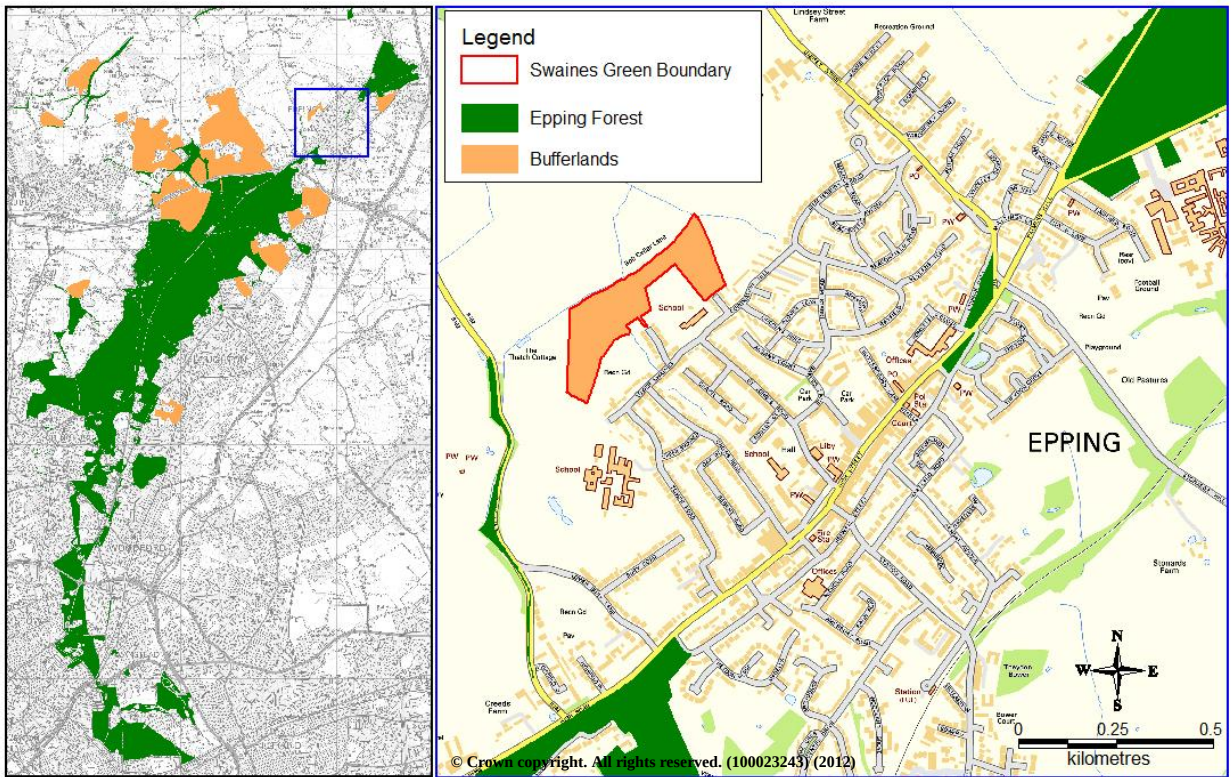
- Maintain the area as a public open space for the enjoyment of local residents
- Maintain and enhance the biodiversity of Swaines Green through creating a mosaic of habitats with good vegetation structure
- Establish a green corridor linking areas of Epping Forest to the south and north.

General information

Ownership: City of London

Location: North-west of Epping Town in the district of Epping Forest, Essex

Site Centroid: TL 45462 02518



Map 1. Location of Swaines Green in relation to the rest of Epping Forest and the Buffer Lands.

Designation

Local Wildlife Site (G40). Site designated based on Habitat Criterion 8, Hedgerows and Green Lanes, and Habitat Criterion 9, Lowland Meadows.

In addition to the area of Swaines Green owned by the City of London (depicted by the boundary in Map 1) the Wildlife Site also includes Lovelocks field to the north-west and the rest of Forties Field, (Appendix 1).

Tree Preservation Order EPF/8/9. Covers all trees present on Swaines Green.

Site Description

Swaines Green covers 5.64 hectares of rough grassland, scrub and developing woodland providing a green corridor between the main section of Epping Forest and the Lower Forest to the north. To the north the site is bordered by a mature, ancient hedgerow along Bolt Cellar Lane and farmland, with Lower Swaines Green recreation ground, housing and a primary school to the south. To the north-east is Lovelocks Field, which is owned and managed by Epping Town Council. The western boundary cuts through Forties Field and is difficult to determine on the ground. The reminder of the Forties Field is privately owned. Swaines Green comprises of three fields: Lower Lincolns, Middle Lincolns and Forties Field.

Lower Lincolns Field	TL 45586 02649	1.72 hectares
Middle Lincolns Field	TL 45477 02615	1.06 hectares
Forties Field	TL 45286 02435	2.86 hectares

Topography

Forties Fields is generally a south-facing slope whilst Middle and Lower Lincolns fields are more northerly facing.

Geology and Soil

The regions geology is London clay with occasional gravel beds. The soils of the area are typically neutral varying from a slowly permeable seasonally wet slightly acid but base rich loamy and clayey soil to a lime-rich loamy and clayey soil with impeded drainage.

Access

Swaines Green has full open, public access via a number of points around the site. Access can be gained from a gated entrance off Coronation Hill, three points from the bridleway along Bolt Cellar Lane, two points from Lower Swaines recreation ground and one from Lovelocks Field. There are a number of footpaths and desire lines running across the site, the main ones are identified in Map 2 along with the main access points. There is no formal car park.

Recreational Use

Being in close proximity to Epping the site is extensively used for recreation, particularly by dog walkers. Annual events are organised by the Friends of Swaines Green group including the annual May Fayre which attracts over 1500 people.

Map 2. Boundaries of Swaines Green and the threes fields, showing the locations of the main access points and footpaths.

Site History and Past Management

Swaines Green is made up of three former agricultural fields which are thought to date back to approximately 1200AD. Until 1869 the fields were part of the larger Copped Hall Estate.

With the possible exception of Middle Lincolns the fields were ploughed between 1939 and 1945 for the war effort. Until the 1970's the site was in agricultural use. During the 1970's the site was extensively used for turf production however, in 1986 commercial activity on the site ceased. Since this date the fields have largely been left untouched, leading to trees and scrub beginning to develop over the grassland. In 1992 Epping Forest District Council placed a blanket Tree Preservation Order on Swaines Green.

In 1994 an agreement was signed between the landowner, Epping Town council and Epping Forest District Council to allow access and management of the site. In 1995 the first management plan for the site was produced by Countrycare (the Countryside Management Service of Epping Forest District Council). This was followed by the start of conservation work undertaken by local volunteers and Countrycare, leading to the establishment of the Friends of Swaines Green group. The name Swaines Green was given to the site in 1997 after consultation with the neighbouring Epping County Infant School. In August 1998 Swaines Green was designated as a Local Wildlife Site (G40) by the Essex Wildlife Trust. Between 1999 and 2002 management on the site included annual hay cutting of grassland areas and blackthorn clearance. Since this date management across the site has been limited with the exception of Lower Lincolns Field where the front half of the field is cut annually in accordance with ELS (Entry Level Stewardship Scheme)

The City of London purchased the area incorporating Lower and Middle Lincolns Field and part of Forties Field in June 2005, incorporating the site into the Buffer Lands.

Species of Conservation Concern

The following species of conservation concern have been recorded at Swaines Green:

Amphibians

Bufo bufo	Common Toad	2007 BAP species

Birds

Carduelis cannabina	Linnet	Red BOCC, 2007 BAP species
Passer domesticus	House Sparrow	Red BOCC, 2007 BAP species
Phylloscopus trochilus	Willow Warbler	Amber BOCC
Picus viridis	Green Woodpecker	Amber BOCC
Prunella modularis	Dunnock	Amber BOCC, 2007 BAP species
Pyrrhula pyrrhula	Bullfinch	Amber BOCC, 2007 BAP species
Sturnus vulgaris	Starling	Red BOCC, 2007 BAP species
Turdus philomelos	Song Thrush	Red BOCC, 2007 BAP species

Invertebrates

Anaglyptus mysticus	Beetle	Notable B
Anobium inexspectatum	Spider	Notable B
Blaesoxipha plumicornis	Fly	Notable
Chlorops laetus	Fly	Notable
Lasiamba brevibucca	Fly	Notable
Lissodema cursor	Beetle	Notable A
Longitarsus parvulus	Flax Flea Beetle	Notable A
Lucanus cervus	Stag beetle	2007 BAP Species Local BAP Species* Notable B
Madiza pachymera	Fly	RDB – Rare
Nephus quadrimaculatus	Beetle	RDB – Vulnerable
Odinia maculata	Fly	RDB – Rare
Phloiophilus edwardsi	Beetle	Notable B
Periscelis annulata	Fly	Notable

*Waltham Forest and Essex Local BAP Species

Important Habitats

Hedgerows	UK Biodiversity Habitat Action Plan
Lowland Meadows	UK Biodiversity Habitat Action Plan

Field Descriptions

Lower Lincolns Field

Lower Lincoln's Field is a mosaic of open, tussocky grassland with small areas of scrub which are encroaching into the grassland. There are a number of single Pedunculate Oaks and coppiced Hawthorn as well as larger, denser areas of scrub consisting largely of Blackthorn, Bramble, Hawthorn with occasional Oak and Ash trees. Surrounding these areas Bramble and Blackthorn saplings are frequently present within the grassland habitat, as well as adjacent to the sites boundary scrub. The grassland contains a diverse number of species including Bugle, Pepper Saxifrage, Agrimony, Tormentil and Knapweed. Along the boundary of this field are areas of dense scrub dominated by Blackthorn and Bramble as well as more open areas of Blackthorn and Hawthorn beneath mature Oak and Ash trees. This field is identified as permanent grassland with very low inputs under the ELS and therefore half of this grassland is currently cut annually.

In 2010 a pond was dug near the gate to Lovelocks Field. Above the pond is a natural flush containing a large willow tree and several rush and sedge species. Two well used pathways run through this area creating areas of short grass and bare ground.

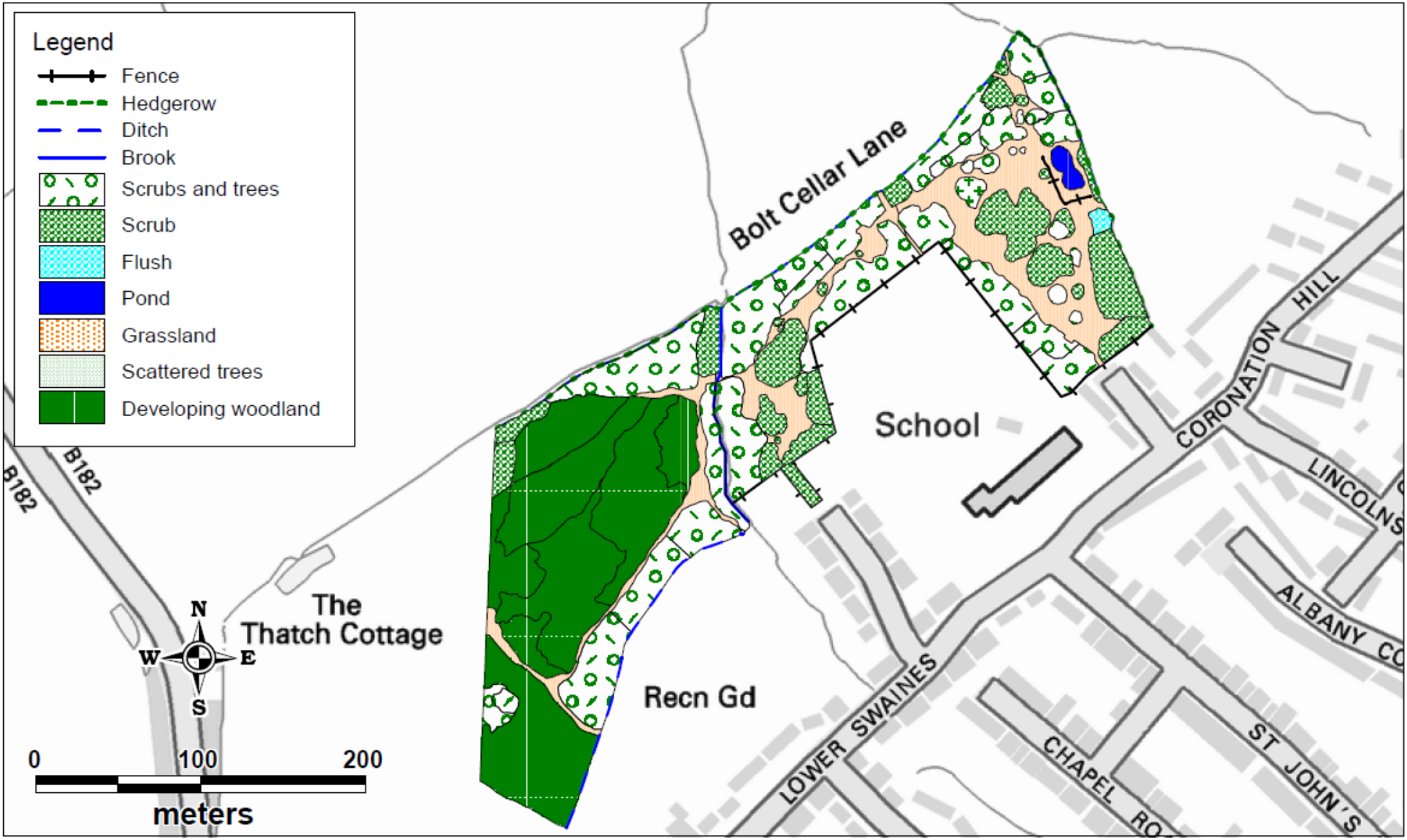
Middle Lincolns Field

Middle Lincolns Lane is thought to be an unimproved area of grassland with areas of scrub which are encroaching into the grassland. The grassland contains areas of rank and tussocky grassland with some areas of more fine grasses present. Towards the brook is an area of wet grassland containing sedge and horsetail species. Adjacent to the main pathway leading from the boardwalk is an area of dense, uniform Blackthorn, beyond which is a more open area of mainly Pedunculate Oak. The grassland in this area is largely being encroached by Bramble and Blackthorn saplings with occasional Ash saplings, from the clumps and boundary scrub. The larger area of grassland towards Forties Field is almost entirely covered by Blackthorn saplings and dense areas of Bramble. Short grass and bare areas are present along the well-used footpath.

Forties Field

Forties Field is an area of developing woodland with large thickets of scrub. The area consists of abundant Pedunculate Oaks with areas of dense understorey of Hawthorn and Blackthorn. A number of other species are also present increasing the sites diversity including Ash, Beech, Field Maple and Silver Birch. A number of ant hills present within and around the developing woodland indicates this area was previously more open. A small brook borders the north-eastern boundary of this field, which is heavily shaded by scrub and several large, mature trees. Along the boundary to Bolt Cellar Lane are more dense areas of scrub dominated by Blackthorn and Bramble. Three well used paths/rides surround the centre area of developing woodland.

Swaines Green Habitat Map



Habitat Descriptions

Grassland

The main areas of grassland found in Lower and Middle Lincolns fields represent typical boulder clay grassland. Both contain a rich species composition, particularly Middle Lincolns, which is thought to be an area of unimproved grassland. The presence of occasional anthills further indicates that this area of grassland has been undisturbed and unimproved. Small areas of grassland are also present within the developing woodland in Forties Field. Across the site the grassland is threatened by encroaching Blackthorn suckers and Bramble, as well as locally frequent Oak and Ash saplings.

Scrub

Scrub is the most widespread habitat on the site with patches within the grassland areas and along the site's boundaries. This scrub is predominantly comprised of Blackthorn, Hawthorn and Bramble which are encroaching into the surrounding grassland habitat and rides. The seed source for the scrub is thought to come from the ancient hedgerow along Bolt Cellar Lane. The scrub is very dense in areas and is of a similar age and structure. To enhance the value of this scrub selective cutting/thinning and coppicing is required to improve its value for biodiversity, and control is required to prevent it from encroaching further over the grassland.

Developing woodland

The main area of developing woodland is located in the centre of Forties Field. Other small areas of mature trees are also present around the site's boundaries. The seed source for these trees is again thought to come from the Bolt Cellar Lane hedgerow. Many of these trees are around 20 years old with some of the Ash and Pedunculate Oaks being approximately 25 - 30 years old. The creation of rides and glades as well as coppicing some areas of dense scrub would break up the woodlands uniformity increasing its structural complexity and promoting the growth of ground flora.

Water Features

A small brook runs along the boundary between Forties Field and Middle Lincolns Field, whilst ditches run along the site's boundaries with Bolt Cellar Lane and the recreation green.

In 2009 a pond was excavated in Lower Lincolns Field. This pond was re-designed in 2010 to create two smaller ponds connected by a channel with the intention of the higher pond drying out in the summer and the lower pond retaining water throughout the year. This pond currently contains very little aquatic vegetation therefore it may require planting with suitable, native aquatic species. Surrounding the pond is an area of mud from when the pond was excavated, enclosed by a damaged fence.

Boundary Features

The boundaries of Swaines Green typically comprise of ditches and mature hedgerows, which are developing into linear scrub habitats with standard trees. The hedgerow along Bolt Cellar Lane has been identified as an ancient species-rich hedgerow dating back 800 years.

Ideal & Operational Management Objectives

The *Ideal Management Objectives* are the Long-Term Objectives (often very long-term) for the site without constraints (money, labour, time, other priorities). Through a process of evaluation of the constraints (below) and the rationale for the current plan cycle the *Operational Management Objectives* are arrived at. These Operational Objectives are summarised in the Map on page 12 below.

The main management objective for Swaines Green is to create a mosaic of habitats to enhance the sites value for biodiversity and recreation, in particular retaining the scarcer species of the open grassland habitat. This can be achieved by implementing the following management prescriptions to maintain areas of open, tussocky grassland and increasing the structural diversity of the scrub and developing woodland.

Lower Lincolns Field

- Remove the encroaching Bramble and Blackthorn to maintain open grassland
- Selectively remove scrub and small trees to maintain the open grassland
- Rotationally cut the grassland to maintain enhance its species composition and value to invertebrates
- Leave areas with a good tussocky structure uncut to benefit invertebrates and small mammals
- Rotationally coppice areas of dense scrub to increase the structural diversity of the scrub to benefit ground flora, invertebrate and bird species
- Plant the pond with suitable native species to provide food and shelter for aquatic species
- Plant up the area of bare ground around the pond with a wild flower mix
- Repair the fence surrounding the pond until the plants have become established
- Maintain the scrub along the boundary to the primary school and Trueloves.

Middle Lincolns Field

- Remove the encroaching Bramble and Blackthorn to maintain the open grassland and footpaths
- Rotationally cut the grassland to control scrub encroachment and to enhance its botanical species richness and retain the area of wet meadow
- Maintain dense and tall scrub around the sites boundary to screen the adjacent houses
- Selectively thin/coppice areas of dense scrub to increase its structural diversity to benefit ground flora, invertebrate and bird species.

Forties Field

- Create a mosaic of habitats such as coppice, scrub thickets and glades within the developing woodland
- Create pollards from suitable sized Pedunculate Oak, Ash and Field Maple
- Around the developing woodland create scalloped edges through removing dense areas of bramble to open up the rides and increase the structural diversity
- Create a coppicing rotation over a period of twenty years to open up areas of dense scrub and improve this habitats structural diversity, starting with areas adjacent to the rides
- Remove all sycamore from within the developing woodland
- Thin trees and scrub to create open areas to benefit ground flora and associated species such as butterflies.

Rationale

Scrub

Scrub management is required on Swaines Green to increase the current scrub area's structural complexity and age range to benefit as many species as possible. This will be achieved through coppicing small areas of Hawthorn and Blackthorn in rotation over a period of twenty years, particularly in the developing woodland in Forties Field. Not all scrub will be put into rotation so as to maintain areas of maturity which will benefit fungi, moss and invertebrate species, particularly where it contains deadwood. Some of the removed wood and brash material from coppicing/thinning should be piled in shaded areas to benefit saproxylic fungi and beetle species. The remainder should be taken off site to prevent nutrient enrichment and shading of ground flora.

Although scrub is an important habitat on this site it is encroaching over the grassland, which is the most threatened habitat on the site supporting locally scarce species such as Ringlet butterflies and Glaucous Sedge. The main species encroaching onto the grassland, and therefore in need of control, are Blackthorn and Bramble.

Grazing is not a current option for scrub control or grassland management on Swaines Green due to the combination of a lack of infrastructure (e.g. stock fencing and water troughs) and the limited area of grassland on the site, as well as the number of users, particularly dog walkers. Mechanical control will therefore be used. The limited vehicle access to most of the site will restrict the use of larger machinery on most areas at the moment and so cutting will be undertaken by mini-machines and volunteers.

Annual mowing may reduce the encroachment of scrub into the surrounding grassland especially of bramble. Alternatively small-stemmed plants/saplings can be hand-pulled or cut with hand tools, although in the latter option regrowth will occur. In Middle Lincolns Field where the encroachment of scrub is extensive the Blackthorn and Bramble should be removed before the grassland is cut.

Options to achieve the control of scrub in Middle Lincolns Field include:

- cut the grassland on rotation to control the scrub
- coppice the scrub on a short 3-5 year rotation.

Larger Blackthorn and Hawthorn scrub can be managed through coppicing selected areas in rotation. Additionally, in Lower Lincolns Field some areas of scrub and individual trees will be removed to increase the area of open grassland and to enable the grassland to be cut more efficiently.

Ideally this work should be carried out in winter whilst the trees are dormant, as well as being outside of the bird breeding season, between March and the end of July.

Hedgerows

The most important hedge is the ancient one that bounds the Bolt Cellar Lane to the west of the site. Currently, this does not require management but this should be reviewed within 5 years to review the status of the scarcer species and examine if there are any issues with invasive species.

Grassland

Unimproved grassland is now very rare in Essex and therefore in Middle Lincolns Field this habitat should be maintained and enhanced. Scrub, particularly Bramble and Blackthorn, has encroached over large areas of this grassland therefore annual mowing may reduce the extent of this scrub over the grassland. An annual cut will also benefit the grasslands botanical species diversity and prevent

the establishment of more widespread, robust and competitive grasses which may otherwise dominate.

However, the tussocky nature of the grassland at Swaines Green is beneficial to many species including small mammals and over-wintering invertebrates. The grassland in Lower Lincolns Field should therefore be cut less frequently to maintain the tussocks, whilst controlling the encroachment of scrub. Ideally this grassland should be cut on a biennial rotation with half the field cut one year and the other half cut in the following year. Cutting this grassland on a two year rotation will always leave some tussocky areas to benefit invertebrates whilst increasing the botanical species diversity through preventing the establishment of rank grasses and vigorous species which will otherwise out-compete wildflowers.

Cutting should be carried out in late summer, allowing the flowering plants to set seed, providing a seed source to maintain the grassland sward. When cutting the grassland care must be taken to avoid damaging the anthills of the Yellow Meadow Ant. Cut and collect machines, or manual raking up after cutting, should be used to prevent increasing the nutrient content of the soil and to avoid smothering plants, both of which may result in reducing species richness. On Forties Field and Middle Lincolns Field where there is no vehicle access a pedestrian operated mowing machine or scythes (if suitably trained volunteers available) will be used to cut the grassland areas, and the cuttings consequently collected by raking up and removing. The use of scythes or mini machines is particularly necessary in Middle Lincolns Field to prevent damaging the anthills.

Developing Woodland

To improve the structural diversity of the developing woodland within Forties Field a mosaic of habitats should be created. These will include areas of coppice on rotation over a period of twenty years to benefit both species associated with young and more mature coppice habitats, leaving the more mature oaks as standards; more open areas with a wood pasture structure through thinning to promote the growth of ground flora; and areas where the thorn thickets will be left to mature. Additionally suitable Pedunculate Oak, Ash or Field Maple trees could be selected to create pollards, if resources become available, allowing veteran tree characteristics to develop and extending the interest from the older hedgerow trees, especially for saprotrophic fungi and invertebrate species.

Coppicing should initially be targeted adjacent to the footpaths around the developing woodland to open up these rides, allowing better access for people. Areas of thick bramble along these rides should also be cut to create scalloped edges providing sheltered, warmer areas to benefit botanical and invertebrate species diversity. Ideally the width of the rides will be equal or greater than the height of the adjacent woodland trees to ensure species requiring open, sunny conditions also benefit, with the exception of the ride ends which will retain their narrowness to prevent the rides acting as a wind tunnel.

When coppicing, high stumps should be left so that more vigorous re-growth is produced due to the greater abundance of developing buds being present. Some of the logs and brash material from these operations can be piled to create habitat for fungi and invertebrates, the rest should be removed from the site.

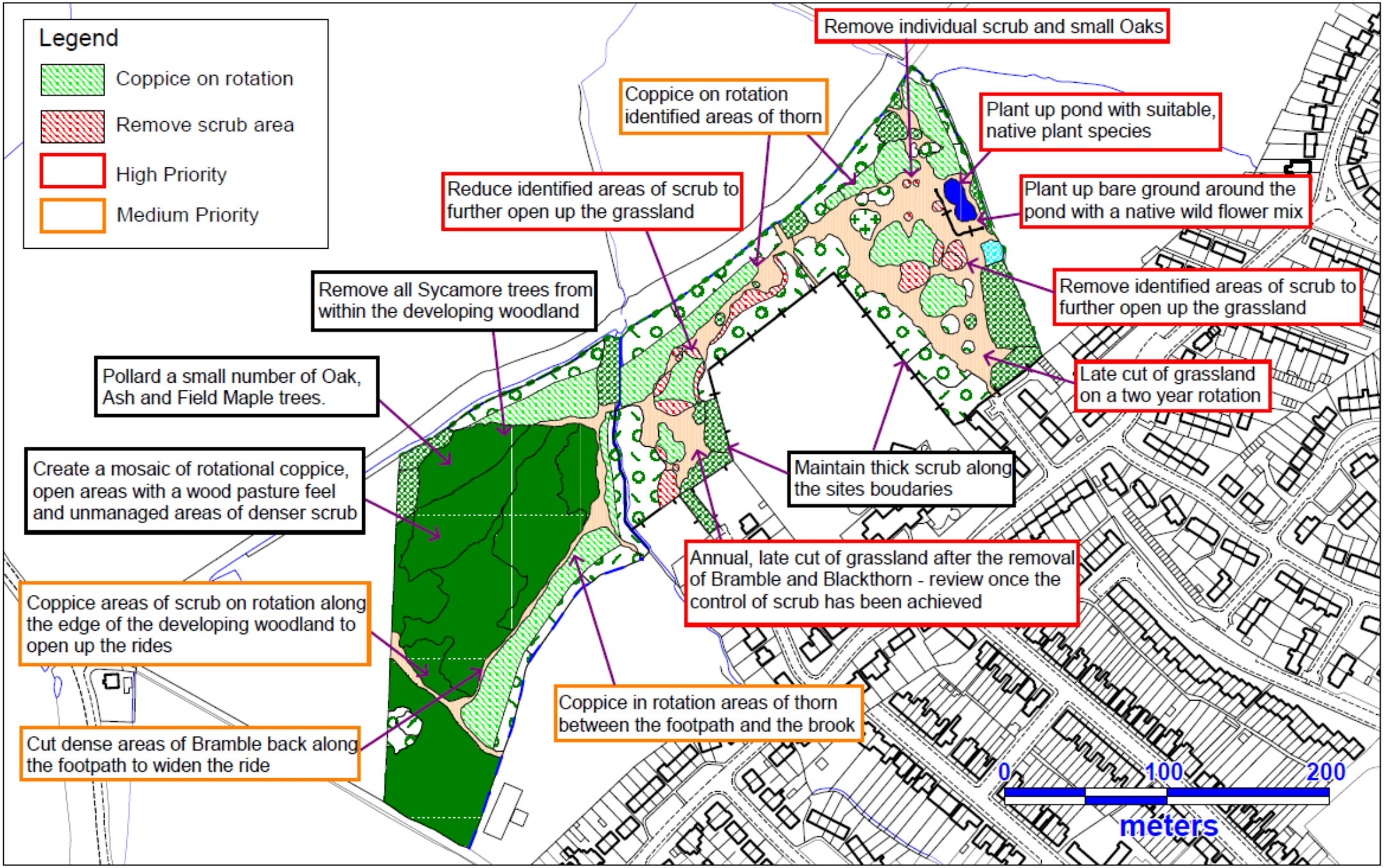
Pond

The following table lists native aquatic plant species which can be used to plant up the pond as they can be found in the Forest and they provide food, shelter and oxygen for amphibians and aquatic invertebrates:

Amphibious bistort	*Persicaria amphibia*	Marginal, emergent
Common Water-crowfoot	*Potamogeton crispus*	Submergent, emergent, floating
Common Water-starwort	*Callitriche stagnalis*	Submergent, emergent, floating
Curled Pondweed	*Myriophyllum verticillatum*	Submergent, emergent
Rigid Hornwort	*Ceratophyllum demersum*	Submergent, emergent
Water-forget-me-not	*Myosotis scorpioides*	Marginal
Water Mint	*Mentha aquatica*	Marginal
Water Plantain	*Alisma plantago-aquatica*	Marginal, submergent, emergent

Ideally no more than 60% of the pond shoreline or 25% of the ponds surface should be shaded, especially along the southern side, to provide warmth for invertebrates and amphibians. The bare ground surrounding the pond, from when the pond was dug, should also be planted up with a native, wild flower mix containing species such as Wild Cowslip and Ragged Robin. The damaged fence currently surrounding the pond should be repaired to protect the plants whilst they become established.

Swaines Green Management Map

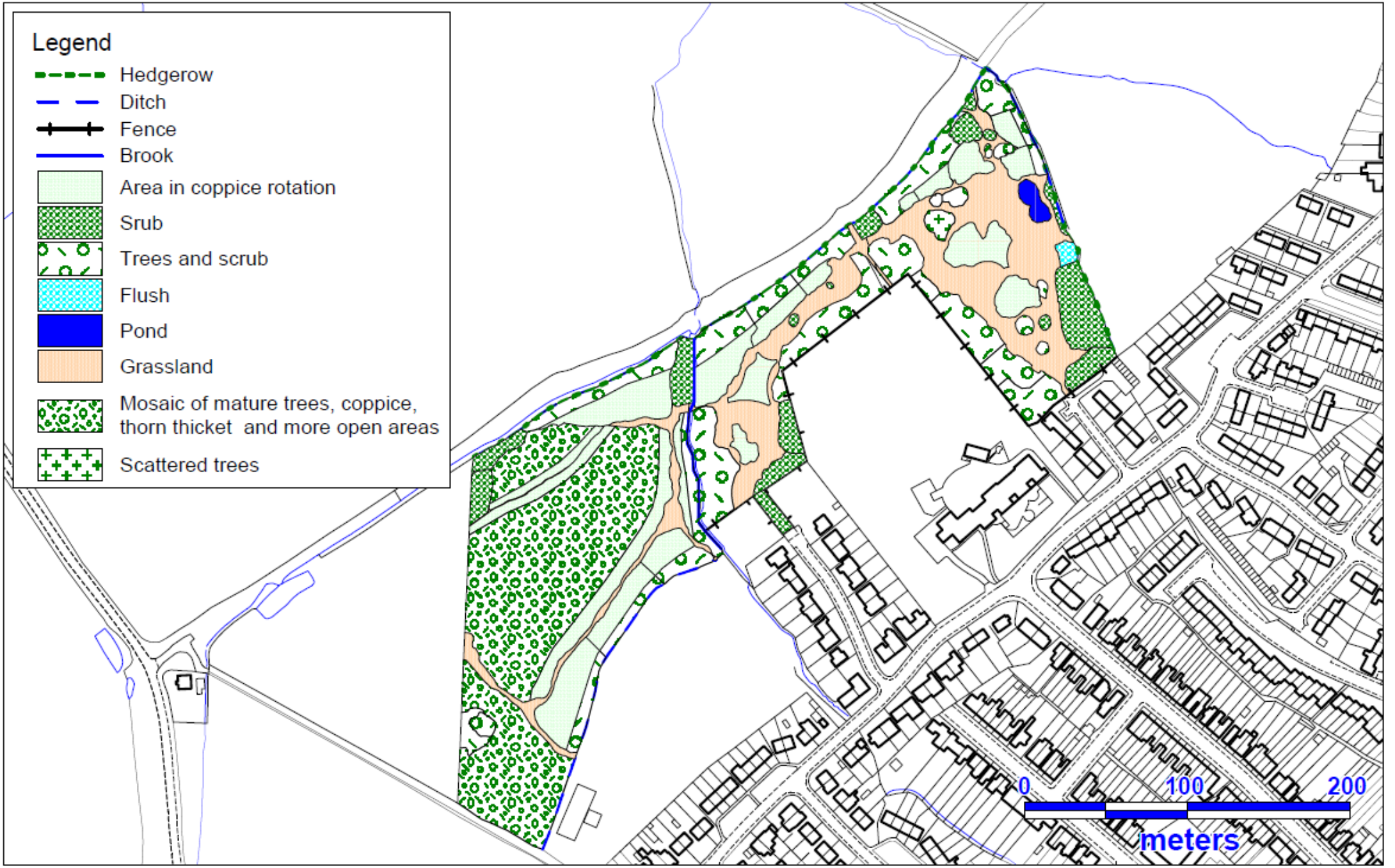


Management Table

Location	Feature	Management action	Objective/benefits	Priority
Lower Lincolns Field	Grassland Encroaching scrub	Late summer cut of half the grassland on a two-year rotation. Leave grassland areas with a good tussock structure.	• Maintain the tussocky nature of the grassland • Increase the grasslands species diversity • Control the encroachment of Bramble and Blackthorn	**High**
Middle Lincolns Field	Grassland Encroaching scrub	Options: Cutting of scrub in summer followed by a rotational annual late summer cut of the grassland using mini-machines. Coppice scrub on a 3-5 year rotation. Review once scrub encroachment is under control.	• Increase the grasslands species diversity • Control the encroachment of Bramble and Blackthorn	**High**
Lower Lincolns Field Middle Lincolns Field	Scrub	Remove identified areas of scrub. See map.	• Increase the amount of open grassland • Open up the footpaths across the site	**High**
Lower Lincolns Field Middle Lincolns Field Forties Field	Scrub	Coppice on rotation identified areas of scrub. See map.	• Improve the structural diversity of the scrub	**Medium**
Lower Lincolns Field Middle Lincolns Field Forties Field	Boundary scrub	Maintain the trees and thick scrub around the boundaries of the site.	• To provide a screen to the school and residential buildings	**Low**

Lower Lincolns Field	Pond	Plant up pond with suitable, native botanical species. Plant up surrounding bare ground with native, wild flower mix.	• Provide food and cover to enhance the pond for aquatic species • Monitor to ensure invasive aquatic species do not become established	**High**
Forties Field	Woodland rides	Coppice scrub on rotation adjacent to the rides around the developing woodland.	• Create wide rides to promote the growth of ground flora and benefit associated species	**Medium**
Forties Field	Scrub within developing woodland	Coppice on rotation small areas of Blackthorn and Hawthorn scrub between October and February. Leave other areas of scrub thickets untouched to mature.	• Improve the developing woodlands structural diversity • Benefit bird, invertebrate, fungi and lichen species associated with different aged scrub	**Low**
Forties Field	Developing woodland	Thin to create a mosaic of habitat. Remove all Sycamore trees.	• Create open grassland areas to benefit ground flora and associated species	**Low**
Forties Field	Developing woodland	New pollard creation from suitable sized Pedunculate Oak, Ash and Field Maple trees	• Create ancient tree characteristics to benefit associated fungi and invertebrate species	**Low**
Forties Field	Dead wood	Where possible standing and fallen dead wood should be left. Increase the dead wood habitat by creating habitat piles of logs and brash in shaded areas.	• Create dead wood habitat to benefit fungi and invertebrates	**Medium**
Lower Lincolns Field Middle Lincolns Field Forties Field	All	Monitor and review the effects of the management prescriptions applied.	• Ensure the management prescriptions are benefiting the sites wildlife and local residents • Improve the knowledge of wildlife using the site	**Medium**

Swaines Green Future Habitat Map



Additional Recommendations

- Put up a red box for dog waste at the main gated entrance off Coronation Hill

Management constraints

There is no vehicle access to Forties Field or Middle Lincolns Field. The majority of management will therefore need to be undertaken with hand-tools. Wood material that is not being kept on site will need to be carried to the nearest vehicle access point and be chipped off site.

A gas pipe runs along the western boundary of Lower Lincolns Field.

During the winter and after heavy rain the footpaths, and the site in general, can become very waterlogged.

Threats

There may be some threat of browsing to coppiced scrub from deer (evidence of Muntjac and Fallow Deer has been recorded on the site) and Rabbits. However, this may be limited due to the number of dog-walkers using the site during the day.

Many Common Ragwort individuals, scattered at medium density were recorded during the 2009 Ragwort Survey and these may need control in future years. This area should be monitored by Forest officers to record the extent of the Ragwort cover at least every two years and in line with the Forest's Ragwort Policy.

Monitoring

Recording and monitoring of the species on Swaines Green will be carried out to ensure that the management prescriptions put in place are appropriate, and that they meet the management plans objectives of enhancing the site for biodiversity and recreation.

Review

A review of the management plan will be undertaken after five years.

Glossary

BAP Species	UK Biodiversity Action Plan Species.
BOCC	Bird of Conservation Concern. Assessment of the conservation status of the birds that regularly occur in Britain and placed on to one of three lists - Red, Amber or Green. Red listed species are those that are Globally Threatened or whose populations or range have suffered severe declines in recent years in the UK. Amber listed species are those with unfavourable conservation status in Europe and have suffered moderate population decline and range contraction in the UK.
ELS	Entry Level Stewardship Scheme is a grant support for farmers and land managers to provide simple and effective environmental management.
Notable A	Species estimated to occur in 16-30 10km squares across the UK.
Notable B	Species estimated to occur in 31-100 10km squares across the UK
Notable/nationally scarce	Species estimated to occur in 16-100 10km squares across the UK.
RDB	IUCN Red Data Book of Threatened Species (International Union for Conservation of Nature).
Pollard	A tree where the top branches have been cut back to the trunk to encourage a dense growth of new shoots.
Saproxylic	Organisms which are dependent on dead or decaying wood for some part of their life cycle.

References

Baker, J., Beebee T., Buckley, J., Gent, A. and Orchard, D. (2011). Amphibian Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.

Cranfield University National Soil Resources Institute (Accessed 2012). http://www.landis.org.uk/soilscapes/

D., Bayfield, N., Ward, L.K. (2000) The Nature Conservation Value of scrub in Britain, JNCC Report No. 308, JNCC Peterborough.

Eaton, M.A., Brown, A.F., Noble, D.G., Musgrove, A.J., Hearn, R., Aebischer, N.J., Gibbons, D.W., Evans, A. and Gregory, R.D. (2009) Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds 102, pp296–341.

English Nature (1999) The Lowland Grassland Management Handbook. www.naturalengland.etraderstores.com/NaturalEnglandShop/Grassland

English Nature (2003) *The Scrub Management Handbook.* English Nature, Peterborough. ISBN 185 716 745 7

Fuller, R.J. and Warren, M.S. (1993) Coppice woodlands: their management for wildlife. Peterborough, JNCC. http://jncc.defra.gov.uk/pdf/pubs93_Coppicedwoodlands.pdf

Ismay, J.W. and Ismay, B. (2006) Report on the invertebrate survey at Swaines Green and Lovelocks.

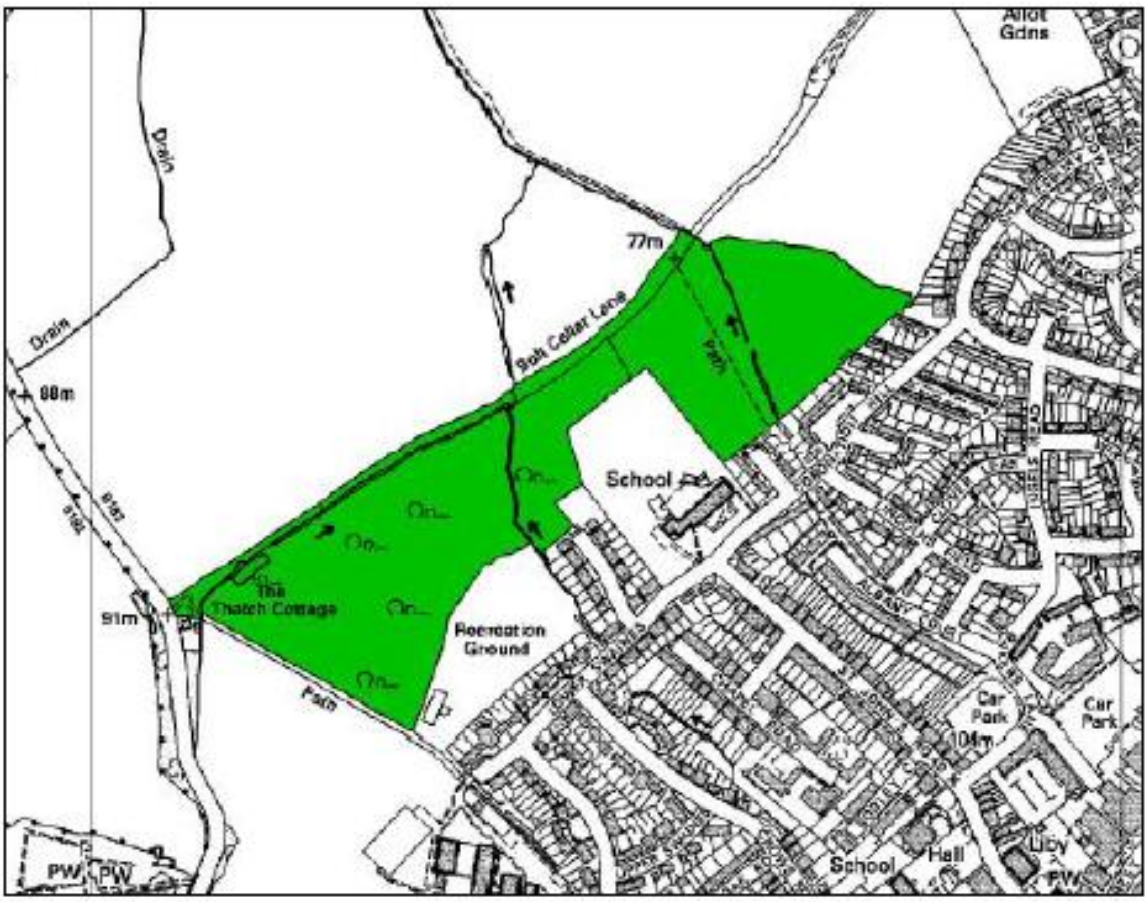
Joint Nature Conservation Committee. The UK Biodiversity Action Plan (UK BAP). http://jncc.defra.gov.uk/default.aspx?page=5155

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook. Froglife, Halesworth.

Stephens, P.C. (2005) Managing woodland open spaces for wildlife. Forestry Commission. http://www.forestry.gov.uk/pdf/ewgs-on011-ride-mangt.pdf/$FILE/ewgs-on011-ride-mangt.pdf

Warren, M.S. and Fuller, R.J. (1993) Woodland rides and glades: their management for wildlife. Peterborough, JNCC.

Appendix 1 – Swaines Green Wildlife Site Designation



Ep82 Swaines Green (10.2 ha) TL 455026

Swaines Green is a mosaic of grassland, scrub, young broad-leaved woodland, hedgerows and the adjacent length of an ancient green lane (Bolt Cellar Lane). Some of the site's grassland has been lost to scrub, with both dense and scattered scrub occurring.

In the grassland, the most widespread grasses include Meadow Foxtail (*Alopecurus pratensis*), Red Fescue (*Festuca rubra*), Smooth Meadow-grass (*Poa pratensis*), Cock's-foot (*Dactylis glomerata*) and Crested Dog's-tail (*Cynosurus cristatus*). An indication of its age and relatively unimproved state is the abundance of Pignut (*Conopodium majus*), particularly to the east of the adjacent school. Other species of interest include Pepper-saxifrage (*Silaum silaus*), Common Spotted-orchid (*Dactylorhiza fuchsii*), Bee Orchid (*Ophrys apifera*), Lady's Bedstraw (*Galium verum*), Cuckooflower (*Cardamine pratensis*) and Common Knapweed (*Centaurea nigra*). The presence of ant hills provides a further indication of the undisturbed, unimproved nature of the remaining grassland.

Bolt Cellar Lane and the other hedgerow features around the site add to the habitat diversity. Several plants of ancient woods and green lanes have been recorded: Spindle (*Euonymus europaeus*), Bluebell (*Hyacinthoides non-scripta*), Dog's Mercury (*Mercurialis perennis*) and Wood Anemone (*Anemone nemorosa*). Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*) are the dominant scrub species and Pedunculate Oak (*Quercus robur*) is dominant in the young woodland and also present in hedgerows. There is no mature woodland on the site.

BAP Habitats: Hedgerows, Lowland Meadows (UK) Ancient/Species-rich Hedgerows and Green Lanes, Species-rich Grasslands (Essex)

Selection Criteria: HC8 – Hedgerows and Green Lanes HC9 – Lowland Meadows

Rationale: The grassland vegetation falls within the MG5 *Centaureo-cynosuretum* NVC grassland type covered by the Lowland Meadows UK BAP habitat definition. In common with other green lanes in the district, Bolt Cellar Lane is likely to be an ancient feature.

Review Schedule **Site Selected:** 1998 **Reviewed:** 2009

Appendix 2 – Species Management Recommendations

Species	Designation	Requirements	Management recommendations
Amphibian			
Bufo bufo Common Toad	2007 BAP species	Requires relatively open water to breed. Found in rough grassland and woodland terrestrial habitat where damp places are present for resting and hibernation. Feeds on invertebrates, particularly slugs and earthworms.	• Ensure there are damp locations across the site for resting toads and their invertebrates prey, such as dead wood and tree stumps • Keep some areas of the pond open of vegetation.
Coleoptera (Beetles)			
Anaglyptus mysticus Longhorn Beetle	Notable B	Found in woodland and woodland edge habitat. Associated with the dead wood of several deciduous species.	• Maintain and create areas of dead wood habitat in appropriate areas
Anobium inexspectatum	Notable B	Found in woodland, pasture woodland and where Ivy is present. Larvae feed within the wood of mature Ivy.	• Maintain areas of mature Ivy in Lower Lincolns Field and within the developing woodland
Lissodema cursor	Notable A	Associated with dead wood above the ground, usually from Ash.	• Maintain and create areas of dead wood habitat in appropriate areas, particularly of Ash
Longitarsus parvulus Flax Flea Beetle	Notable A	Found in chalk grassland, field margins and on disturbed ground. Feeds on Perennial Flax which is associated with disturbed ground and dry calcareous grassland.	• Create areas of disturbed ground to provide areas suitable for Perennial Flax
Lucanus cervus Stag beetle	2007 BAP species Notable B	Found in broad-leaved woodlands, parks and gardens. Larvae feed on decaying wood which is in contact with the ground, especially of Oak species.	• Leave standing deadwood in-situ wherever possible • Maintain and create areas of dead wood habitat in appropriate areas, particularly of Oak

Species	Designation	Requirements	Management recommendations
Nephus quadrimaculatus	RDB – Vulnerable	Thought to be particularly common on Ivy.	• Maintain areas of Ivy in Lower Lincolns Field and within the developing woodland
Phloiophilus edwardsi	Notable B	Found in ancient broad-leaved woodland and wood pasture Associated with dead wood and tree fungi, such as Wrinkled Crust *Phlebia merismoides*	• Maintain and create areas of dead wood habitat in appropriate areas to provide habitat for the beetle and for the fungi it is associated with
Dipteria (True flies)			
Blaesoxipha plumicornis	Notable	Found on heaths and commons. The larvae are parasitoids of grasshoppers.	• Create suitable habitat to benefit grasshoppers with a variety of long grasses and some damp areas
Chlorops laetus	Notable	Found in calcareous grassland. Associated with not too dense flower-rich grassland of medium height. Larvae thought to develop within grass stems.	• Cut grassland on rotation to ensure grassland of medium height is available • Cut late to ensure larvae have emerged from the stems
Lasiamba brevibucca	Notable	Found in old broad-leaved woodland and parkland where there are old or diseased trees. Larvae develop in rotting wood or in association with sap runs, rot holes or fungi.	• Leave standing deadwood in-situ wherever possible • Retain the mature and ancient trees along Bolt Cellar Lane
Madiza pachymera	RDB – Rare	Found in broad-leaved woodland. Associated with sites with a long continuity of dead wood as needs rotten wood debris.	• Leave standing deadwood in-situ wherever possible • Maintain and create areas of dead wood habitat in appropriate areas, particularly of Oak
Odinia maculata	RDB – Rare	Found in ancient woodland and parkland. Larvae associated with beetle borings in trees.	• Retain the mature and ancient trees along Bolt Cellar Lane

Species	Designation	Requirements	Management recommendations
Periscelis annulata	Notable	Found in broad-leaved woodland and parkland. Larvae develop in the sap of a range of trees including Beech, Elm and Ash.	• Retain some of the Ash trees to provide sap for the larvae
Volucella inanis	Notable	Found in lowland meadows, roadside verges, hedgerows, open areas of woodland and scrub. Adults feed on flower species including Yarrow and Thistles. Larvae are ectoparasites of social wasp larvae, and have been found in association with German Wasp *Vespula germanica* and Hornet *Vespa crabro*.	• Maintain and enhance the grassland habitat to increase the abundance of wildflowers and the botanical species diversity. • Create suitable habitat to benefit social wasps
Lepidoptera (Butterflies)			
Aphantopus hyperantus Ringlet		Found in woodland edges and rides, meadows, hedgerows and road verges. Associated with damp and sheltered areas. Larval food plants include Cock's-foot, Meadow-grasses and Tufted Hair-grass. Adult food plants include Bramble, Ragwort and Thistle species.	• Leave some areas of grassland uncut to maintain areas of coarse grasses • Retain areas of Bramble to provide a nectar source for adult butterflies
Gonepteryx rhamni Brimstone		Found in many habitats. Adults feed on numerous species including Thistles, Bugle, Dandelion, Knapweed, Sealfheal and Vetches. The larvae feed primarily on Alder Buckthorn and Buckthorn.	• Retain the Buckthorn on the site • Maintain and enhance the grassland habitat to increase the abundance of wildflowers
Neozephyrus quercus Purple Hairstreak		Found in woodland, lanes and parks where Oak species occur. The primary larval food plants are Pedunculate Oak, Sessile Oak and Turkey Oak. Adults feed primarily on Bramble and Hogweed.	• Retain the majority of mature Oak trees across the site, particularly within the developing woodland in Forties Field

Species	Designation	Requirements	Management recommendations
Birds			
Carduelis cannabina Linnet	BOCC Red 2007 BAP Species	Nests within thick thorny hedgerows, scrub and Bramble areas in grassland. Adults and young feed on grass and wildflower seeds.	• Management and retention of scrub and hedgerows to provide suitable nesting habitat • Maintain and enhance the grassland habitat to provide grass and wildflower seeds
Passer domesticus House Sparrow	BOCC Red 2007 BAP Species	Nest in concealed places such as thick vegetation and tree holes. Adults feed on seeds shoots and berries, young however require invertebrates.	• Retain areas of dense scrub to provide nesting habitat and berries. • Leave mature trees and standing dead wood to provide holes for nesting • Maintain and enhance the grassland habitat to provide grass and wildflower seeds and provide habitat for a wide diversity of invertebrates
Phylloscopus trochilus Willow Warbler	BOCC Amber	Prefer young, open, scrubby woodland with small trees, including coppice up to 10–20 years old. Thicket forming scrub such as Blackthorn and patches of low bramble provide nesting cover. Feed on insects and spiders as well as berries in autumn.	• Rotationally coppice areas to provide future nesting habitat • Maintain areas of thick blackthorn and bramble to provide nesting habitat
Picus viridis Green Woodpecker	BOCC Amber	Usually found in semi-open landscapes with small woodlands, hedges and scattered old trees. Uses holes within old deciduous trees for nesting. Require nearby grassland for foraging, particularly where ants are present.	• Leave mature trees and standing dead wood to provide holes for nesting • Create a mosaic of woodland, scattered trees and open grassland
Prunella modularis Dunnock	BOCC Amber 2007 BAP Species	Feeds on seeds and insects. Nest in dense shrub and hedges.	• Management and retention of scrub and hedgerows to provide suitable nesting habitat • Maintain and enhance the grassland habitat to provide grass and wildflower seeds and provide habitat for a wide diversity of invertebrates

Species	Designation	Requirements	Management recommendations
Pyrrhula pyrrhula Bullfinch	BOCC Amber 2007 BAP Species	Nests within mature stands of scrub such as Bramble and Hawthorn, in hedgerows and trees. Adults feed mainly on seeds and the buds of fruit trees. Ash and hawthorn are particularly favoured in autumn and early winter. Chicks require a mixture of soft seeds and small invertebrates.	• Management and retention of mature scrub and hedgerows to provide suitable nesting habitat • Maintain and enhance the grassland habitat to provide grass and wildflower seeds and provide habitat for a wide diversity of invertebrates • Retain the *Malus* trees within the developing woodland, as well as Hawthorn and Ash
Sturnus vulgaris Starling	BOCC Red 2007 BAP Species	Nest in holes and cavities in trees and buildings, and in nest boxes. Feed on insects, fruit and seeds, mostly on ground. The chicks are fed entirely on insects, spiders and earthworms for first 12 days.	• Leave mature trees and standing dead wood to provide holes for nesting • Maintain and enhance the grassland habitat to provide grass and wildflower seeds and provide habitat for a wide diversity of invertebrates
Turdus philomelos Song Thrush	BOCC Red 2007 BAP Species	Found in gardens and parkland, woodland and hedgerows. Feeds on invertebrates, particularly earthworms, and fruit/berries.	• Management and retention of scrub and hedgerows to provide suitable nesting habitat and berries • Maintain and enhance the grassland habitat to provide habitat for a wide diversity of invertebrates, including wet areas to provide foraging areas when the ground is dry
Flowering plants			
Hyacinthoides non-scripta Bluebell	W&CA Sch. 8.	Native?	