Updated Phase 1 Habitat Survey

Land South Of Langford Lane, Kidlington, Oxfordshire.

On Behalf of:

Hill Street Holdings Ltd.

December 2014

www.ses-eco.co.uk

Author	Kate Mann
Technical Review	Ella Barnett BSc (Hons) GradCIEEM
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Ecology, Countryside Management
Professional Service ● Pragmatic Solutions
phone: 01268 711021 email: team@ses-eco.co.uk website: www.ses-eco.co.uk
Address: The Sudbury Stables, Sudbury Road, Downham, Essex, CM11 1LB

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1.1 Introduction and Aims

1.2 Southern Ecological Solutions Ltd. (SES) was commissioned to undertake an updated extended phase 1 habitat survey of the Land south of Langford Lane, Kidlington on behalf of Hill street Holdings Ltd (see Appendix 1).

1.3 The objectives of this extended phase 1 survey were to:

- Map the main ecological features within the site and compile a plant species list for each habitat type;
- Make an initial assessment of the presence or likely absence of species of conservation concern;
- Identify any legal and planning policy constraints relevant to nature conservation which may affect the development;
- Determine any potential further ecological issues;
- Determine the need for further surveys and mitigation; and
- Make recommendations for minimising impacts on biodiversity and providing net gains in biodiversity where possible in accordance with chapter 11: Conserving and Enhancing the Natural Environment, of the National Planning Policy Framework (NPPF) (DfCLG, 2012).

1.4 The extended phase 1 habitat survey was undertaken by suitably qualified ecologist Mark Poynter Bsc (Hons) in November 2014 with all areas of the site accessible at the time of survey.

2.1 Methodology

Desk Study

2.2 Prior to the initial phase 1 habitat survey of the site (undertaken by SES in March 2012) a data search was conducted via Thames Valley Environmental Record Centre (see Appendix 3 for full results). These records detailed protected and notable fauna species as well as statutory and non-statutory designated sites within the proposed development area and up to 2km of the site boundary. SES performed an updated online data search in November 2014 to further inform the ecological knowledge on the site and its surroundings. Due to copyright laws this data cannot be reproduced.

Updated Phase 1 Habitat Survey

2.3 The field survey comprised of an extended phase 1 habitat survey (JNCC, 2010) of the proposed development site. This is a standard technique for obtaining baseline ecological information for areas of land, including proposed development sites, the initial phase 1 habitat survey was carried out in March 2012 by SES using the same techniques.

2.4 The dominant and readily identifiable higher plant species identified in each of the various habitat parcels were recorded and their abundances were assessed on the DAFOR scale (Appendix 2):

- D Dominant
- A Abundant
- F Frequent
- O Occasional
- R Rare

2.5 These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (1997).

2.6 Incidental records of fauna were also made during the survey and the habitats identified were evaluated for their potential to support legally protected species and other species of conservation concern, including Biodiversity Action Plan (BAP) and Natural Environment and Rural Communities Act 2006 (NERC) species of principle importance.

3.1 Constraints

3.2 Desktop data searches are a valuable tool in evaluating a site's potential to hold rare and protected species, it is not however an absolute in confirming presence or absence of noted species due to the nature of how the records are collected.

4.1 Results

Desk Study

4.2 Results from the initial data search undertaken in 2012, are available in full as follows. The updated online data search informed the report's findings but cannot be reproduced due to copyright law.

Non-Statutory Designated Sites

4.3 No LWS (Local Wildlife Sites) are located onsite. LWS found within the wider landscape include: Langford Meadows found approximately 442m north east of the proposed development site, grid ref: SP 480 153, cited habitat -coastal and floodplain grazing marsh (neutral grassland); fen. Bladon Heath found approximately 1460m south west of the site, grid reference SP 455 138, cited habitat- lowland deciduous woodland. Begbroke Wood is found approximately 1509m south-west of the site, grid reference SP 465 132, cited habitat- lowland mixed deciduous woodland.

Statutory Designated Sites

4.4 Rushy Meadows can be found approximately 220m to the south-east of the site (grid reference: SP 481 143). The sites consists of a series of unimproved alluvial grasslands alongside the Oxford Canal, in which low-intensity, traditional management has produced rich meadow and fen communities containing several uncommon species. Meadow habitats of this type are now both rare and under threat in Britain. Rushy Meadows represents one of the few surviving sites in a district where such grasslands have declined in area following agricultural improvement and urban development.

4.5 Potential adverse effects from recreational pressure upon the SSSI and LWS identified within 5km of the site should be considered. It is recommended that the open space provision within the development be sufficient to mitigate for any potential adverse effects from recreational pressure upon these sensitive habitats, in particular Rushy Meadows SSSI which is situated 220m to the site's south-east boundary adjacent to the Oxford Canal. Additional measures could be implemented to increase awareness of the sensitive nature of the site such as education/information boards. These would provide information for visitors regarding species on site and measures to reduce impacts/disturbance to this SSSI. These should include actions to reduce the impact by dog walkers by keeping dogs on leashes, particularly due to the presence and importance of the site for Otters *Lutra lutra*, Water Voles *Arvicola amphibius* and Birds. Impacts could be further reduced by restricted access through the south of the site from the development area.

Protected Species

4.6 A number of protected fauna species were recorded within the wider landscape, particularly associated with the LWS/SSSI. These include species protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. Protected species include Bats, Great Crested Newt *Triturus cristatus*, Grass Snake *Natrix natrix*, Common Lizard *Zootoca vivipara*, Otter *a*nd Water Vole.

Updated Extended Phase 1 Habitat Survey

4.7 The updated phase 1 habitat map of the site is shown within Appendix 1 and the plant species recorded per habitat type are tabled in Appendix 2.

4.8 The site is 8.45ha in size and is located to the North-West of Kidlington. An industrial estate bounds the site to the east with Langford Lane and Oxford Airport to the North. The Oxford Canal is located approximately 300m west of the site. Immediately beyond the western boundary an immigration detention centre and Ambulance Station can be found which is linked to Langford Lane by Evenlode Crescent which runs parallel to this boundary. Beyond the sites southern extent arable farmland dominates with the town of Begbroke located further south.

4.9 The site is dominated by improved grassland and tall ruderal vegetation with other semi-natural habitats – largely limited to the site boundaries. The following habitats were observed and are discussed in further detail below:

- Improved grassland
- Dense scrub
- Scattered scrub
- Tall ruderal
- Dry ditch
- Scattered trees
- Spoil
- Earth Bund
- Defunct species-poor hedgerow
- Bare ground

4.10 Each habitat type is described below and their distribution shown within Appendix 1.

Improved grassland

4.11 Improved grassland forms the dominant habitat type on site, with tall ruderals also present. Typical rank species include Cocksfoot *Dactylis glomerata,* Red Fescue *Festuca rubra* and False Oat-Grass *Arrhenatherum elatius* with bare areas characterised by species such as Ground-Ivy *Glechoma hederacea*, Ribwort Plantain *Plantago lanceolata* and Mosses.

Dense Scrub

4.12 Dense scrub, in part, forms the understorey of the scattered trees found lining the western boundary. A thick area of dense scrub can also be found to the site's eastern boundary. Typical species include Hawthorn *Crataegus monogyna*, Apple *Malus Sp.,* Bramble *Rubus Sp.* and Blackthorn *Prunus Spinosa*. Within areas of dense scrub it is typical to find scattered trees.

Scattered Scrub

4.13 Scattered scrub has become more prevalent throughout the site, but predominantly in the southern half of the site with the dominant species being bramble.

Tall Ruderal

4.14 Adjacent to the northern boundary tall ruderal species including Creeping Thistle *Cirsium arvense*, Dock *Rumex sp.* and Common Nettle *Urtica dioica* have encroached upon habitats that were previously classified as bare ground in the initial phase 1 survey. Within the improved grassland patches of tall ruderal dominated vegetation persists in the form of Creeping Thistle, Common Nettle and occasional Dock.

Dry Ditch

4.15 A small dry ditch is located along the south-eastern boundary; this ditch was devoid of aquatic vegetation and contained rank grasses, tall ruderals and small patches of scattered scrub.

Scattered Trees

4.16 A number of scattered trees can be found lining the site's boundaries, with the length of the western and northern boundaries being lined with trees (including deadwood) including intermittent specimens found within the dense scrub along the site's eastern boundary. Species present include Sycamore *Acer pseudoplatanus*, Apple *Malus sp*., Elm *Ulmus Sp.*, Elder *Sambucus nigra* and a large Hybrid Black Poplar p*opulus x canadensis*.

Spoil

4.17 Spoil piles can be found onsite; these piles are situated in close proximity of the site's northern and southern boundaries. Smaller spoil piles containing a mixture of building debris can also be found in proximity of the site's boundaries.

Defunct species-poor hedgerow

4.18 A defunct species-poor hedgerow can be found running the length of the site's southern boundary, separating the site from arable farmland. In the previous survey this hedgerow was found to be heavily managed with 'skinny legs' meaning its base was woody in nature with a lack of floral diversity. The hedgerow was found to be in a similar condition in 2014 and was dominated by Hawthorn with rarely recorded Elder and Bramble.

Earth Bund

4.19 The site contains a number of earth bunds that are limited to the site's north-eastern and eastern boundaries, these earth bunds contain grasses, Bramble and tall ruderals such as Dock *Rumex sp.*

Bare Ground

4.20 Areas of bare ground are confined to the north-east corner of the site and are sparse in vegetation. However some tall ruderals such as Dock and other grasses have begun to colonise this habitat through natural succession.

5.1 Findings and Recommendations

Habitats

Habitats of Principle Importance to UK Biodiversity

Hedgerow

5.2 The hedgerow running along the site's southern boundary is considered to fall under the category as a habitat of principle importance listed under s41 of the Natural Environment and Communities (NERC) Act (2006). Although this hedgerow is listed under s41 its structure (defunct) and management dictate that its biodiversity value is limited. Should this hedgerow be retained it is recommended that it is planted with native woody species to form a species-rich hedgerow (5 or more species within a 30m length) 'filling' the gaps within the defunct section (see Appendix 5 for species list). A grassland/ tall ruderal buffer of between c.0.3–1m wide should also accompany this hedgerow. This buffer provides valuable protection against 'edge' effect degradation of the hedgerow and also provides transitional habitat capable of supporting a wide variety of noteworthy plant and animal species. If the hedgerow is lost; a species-rich hedgerow should be included within the development plan to enhance biodiversity and compensate for the loss of this habitat within the developable area. This will ensure that the requirements of section 11 (conserving and enhancing the natural environment) of the NPPF (DfCLG, 2012) are met.

Oxford Conservation Target Areas (CTA)

5.3 CTA's are the primary method for delivering the targets of the Local Biodiversity Action Plan (BAP) habitats. CTAs identify the most important areas for wildlife where targeted conservation work will have the greatest benefits, looking for opportunities to link other areas of BAP habitat. The site does not fall within an area designated as a CTA, which are areas that have habitat targets. Oxfordshire operates its biodiversity targets through this spatial strategy; the nearest CTA to the application site is the Lower Cherwell which covers Kidlington.

Species of Conservation Concern

Plants

5.4 All plant species recorded onsite are common and widespread throughout the UK.

Bats

5.5 All bat species are legally protected under s9 of the Wildlife and Countryside Act 1981 (as amended) and regulation 41 of the Conservation of Habitats and Species Regulations 2010.

5.6 The boundary habitat (hedgerow, tree belts) around the site provides potential foraging and commuting opportunities for bat species.

5.7 All trees were inspected from ground level for signs of roosting bats. Table 1 below is reproduced text from the Bat Conservation Trust (BCT) Guidelines 2nd Ed. (Hundt, 2012) highlighting features assessed from ground level (where appropriate).

Table 1: Features and signs indicating bat roosting features.

Features of trees used as bat roosts	Signs indicating possible use by bats
Natural holes	Tiny scratch around entry point
Woodpecker holes	Staining around entry point
Cracks/splits in major limbs	Bat droppings in, around or below entrance
Loose bark	Audible squeaking at dusk or in warm weather
Hollows/ cavities	Flies around entry point
Dense epicormic growth (bats may roost within)	Distinctive smell of bats
Bird and bat boxes	Smoothing of surfaces around cavity

5.8 All trees onsite displayed negligible bat roosting potential apart from a large black poplar hybrid (T1). This tree was assessed in 2012, using bat conservation trust guidelines as being a category 1 tree, as such it displayed definite potential to support roosting bats (albeit from ground level). Since the previous survey, a large section of the tree has been lost to adverse weather and as such the value of this tree for bats has been reduced, however it does still hold suitable features for use by bats. It is therefore recommended that if this tree is to be lost to development or indirectly affected via light pollution, an aerial inspection is undertaken to look for signs of roosting bats and guide whether further survey is necessary.

5.9 Following BCT guidance the site is assessed as 'medium' size and is considered to offer 'low' value habitat for bats. Following the aforementioned guidance bat activity surveys are recommended, the aim of these surveys is to determine the usage of the site by roosting and/or foraging bats in order to assess its value and potential direct and indirect (such as lighting) impacts the proposed development may have on bats. These surveys will consist of transect surveys with one visit each season (spring, summer and winter). Automated data loggers should also be used at one location per transect on three consecutive nights each season.

5.10 The recommended surveys will provide data sufficient to guide the required mitigation associated with the redevelopment.

Birds

5.11 The versatility of most bird species means they can utilise almost any habitats encountered and the site's field boundary habitats provide good foraging and nesting opportunities for many bird species including the scrub and trees found onsite.

5.12 All breeding birds are protected under the Wildlife and Countryside Act 1981 (as amended). Therefore, if any nesting bird habitat is to be lost (hedgerows, scrub and trees) it should be cleared outside of the nesting season (which is generally March to August) or after an ecologist has confirmed active nests are not present.

5.13 The provision of bird boxes onsite could see an increase in bird activity onsite; they would also provide mitigation for the loss of nesting habitat if any scrub and/ or trees were to be removed during the construction phase. Boxes would be fixed to retained trees and proposed buildings at a height avoiding the likelihood of predation from domestic cats and other animals. These boxes should be placed out of direct sunlight and away from harsh winds. There are many designs available on the market, these vary according to the requirements of each species i.e. open fronted, entrance hole size etc. Log piles and grass/ tall ruderal buffers creating transitional habitats, as described within section 5.18- 5.21 below, will also provide additional foraging habitat for birds.

Badgers

5.14 No badger setts or significant field signs such as latrines were recorded onsite. Other badger field signs such as snuffle marks were difficult to verify due to the heavy use of the site by rabbits. It is likely that the site is used by badgers for occasional foraging and dispersal purposes; the development of the site is unlikely to affect a badger's ability to disperse due to the ubiquitous nature of the surrounding landscape. Thus the development of the site is not thought to affect the conservation status of any badger group in the area. However badgers are prolific sett builders and the bunds onsite are sheltered with dense scrubby vegetation constituent potential sett-building habitat and therefore an inspection of these areas using hand tools to penetrate the scrub is recommended before the site is cleared.

Great Crested Newts

5.15 GCN are legally protected under S9 of the Wildlife and Countryside Act (1981) regulation 41 of The Conservation of Habitats and Species Regulations (2010) thus making GCN a material consideration of the planning process.

5.16 The site does contain terrestrial habitat that is associated with noted amphibians including great crested newts *Triturus Cristatus*. However, the site and the wider landscape (walkover and aerial photography) does not contain aquatic habitat that is essential to form the mosaic of terrestrial and aquatic habitat necessary for this species. No further works are required for this species.

Invertebrates

5.17 The site does not contain a density of quality micro-habitats suitable to support valuable assemblages of noted invertebrates. Therefore no further survey work regarding invertebrates is recommended.

5.18 In accordance with the NPPF (DfCLG, 2012) it is recommended that habitat features and suitable planting is employed to provide mitigation and potential enhancement for invertebrates. Log piles could be installed within shaded areas in proximity to retained or created green infrastructure, these piles would provide essential habitat for many invertebrates.

5.19 Including invertebrate friendly varieties within a planting scheme could also enhance the site for a broad range of invertebrates including bees, wasps, beetles, moths and butterflies. The creation of flower-rich areas can be achieved in three ways:

- Planting alongside the boundaries,
- In new natural and semi-natural green space,
- Within any proposed formal ornamental planting.

5.20 Rough margins interspersed with scrub can provide key forage plants and also provide overwintering sites, such as rough grass tussocks and overwintering stems and seed-heads. Key forage plants include species of longer grass swards and competitive herbs, additionally including:

- Umbellifers, such as Hogweed *Heracleum sphondylium*, Cow Parsley *Torilis japonica*, Parsnip *Pastinaca sativa*, Willowherb *Chamerion* and *Epilobium* species,
- Labiates, particularly Black Horehound *Ballota nigra* and White Dead-Nettle *Lamium album.*

5.21 These margins could be associated with retained boundary habitats and any additional green infrastructure. Associations with other habitat areas should create gradual gradients and transitions rather than sharp boundaries.

Reptiles

5.22 During the initial survey in 2012 the site was found to be lacking the required thermally diverse mosaic of habitats needed to support a viable assemblage of reptiles, during the updated survey the habitats recorded have matured and their value increased for reptiles. However, the ongoing management regime of the site means that the habitats onsite are not sufficiently mature or suitable enough to support a population of reptiles, thus reptiles are likely absent from the site. Should this regime change for a period of time the site has potential, although limited, to be colonized by reptile populations in the wider landscape in the future.

Conclusions

6.0 The site, an old sports field, is approximately 8.45Ha in size and is located to the south of Langford Lane. Sparse improved grassland and tall ruderal dominate the site with scattered encroaching scrub noticeable from the initial phase 1 survey (SES 2012), with hedgerow and scattered trees partially lining the site boundaries.

6.1 The site was initially found to contain 'habitats largely of low ecological value' (SES 2012), and given the managed nature of the site, it can be seen that more structurally diverse habitats have not become established to date.

6.2 However, to adhere to planning policy and relevant wildlife legislation further works are recommended for the following ecological receptors:

- Badgers (inspection for setts and field signs can be completed as site works proceed by monitoring sett building activity on site)
- Bats (activity surveys; aerial inspection of potential roosts on site if to be impacted upon)

6.3 The following precautionary methods are also recommended:

- Removal of nesting bird habitat such as hedgerows, trees and scrub should be completed outside of the nesting bird season (March – August) or after a suitably qualified ecologist has completed a nesting bird survey and confirmed absence.
- Design of proposed development to include sufficient green space to avoid recreational pressure on surrounding sites.
- Precautionary lighting and construction techniques sensitive to bats, badgers and other species (if applicable to site).

6.4 It is considered that any potential adverse impacts from the proposed development upon specific protected species/habitats/designated sites will likely be able to be mitigated for in line with relevant wildlife legislation and planning policy. It should be noted that an opportunity exists for the proposed development to make a positive contribution to biodiversity. With appropriate onsite mitigation and targeted enhancements, a positive change in the biodiversity could be achieved, in line with chapter 11: *Conserving and Enhancing the Natural Environment*, of the NPPF (DfCLG, 2012).

7.1 References

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Appendix 1: Updated Habitat Map

Appendix 2: Species List and Relative Abundance

Common Name	Latin Name	Improved Grassland	Dense Scrub	Scattered Scrub	Dry Ditch	Earth Bund	Scattered Trees	Bare Ground	Spoil	Tall ruderal	Defunct species poor hedgerow
Ash	*Fraxinus excelsior*			R			R				
Blackthorn	*Prunus spinosa*		O	O							
Box	*Buxus sempervirens*			R							
Bramble	*Rubus fruticosus*		D	D							R
Burdock	*Arctium Sp.*					R					
Cleavers	*Galium aparine*				R	O					
Cinquefoil	*Potentilla sp.*					R					
Cock's-Foot	*Dactylis glomerata*	O					O				
Common Poppy	*Papaver rhoeas*					R					
Common Dog-violet	*Viola rivinana*					R					
Cow Parsley	*Anthriscus sylvestris*					R					
Apple	*Malus sp.*		O				O				
Dandelion	*Taraxacum officinale*					R					
Daffodil	*Narcissus pseudonarcissus spp pseudonarcissus*					R					
Dock	*Rumex sp.*										
Elder	*Sambucus nigra*			R			O				R
Elm	*Ulmus Sp.*						O				
False Oat-Grass	*Arrhenatherum elatius*	O			O						
Green Alkanet	*Pentaglottis Sempervirens*					R					
Field Maple	*Acer campestre*						R				
Garlic Mustard	*Alliaria petiolata*	R									
Ribwort Plantain	*Plantago lanceolata*	O									
Red Dead-nettle	*Lamium purpureum*	R									
Ground-Ivy	*Glechoma hederacea*	O									
Hawthorn	*Crataegus monogyna*		O	O			F				D
Forget- me -not	*Myosotis spp.*	R									
Hound's-tongue	*Cynoglossum officinale*	R									

Common Name	Latin Name	Improved Grassland	Dense Scrub	Scattered Scrub	Dry Ditch	Earth Bund	Scattered Trees	Bare Ground	Spoil	Tall ruderal	Defunct species poor hedgerow
Hybrid Black-poplar	*Populus x canadnsis*						R				
Ivy	*Hedera helix*						O				
Leylandii	*Leylandii*						R				
Lords-and- Ladies	*Arum maculatum*	O				R					
Lesser Celandine	*Ranunculus ficaria*	R									
Common Nettle	*Urtica dioica*	O			O	O					
Periwinkle	*Vinca sp.*	R				R					
Red Fescue	*Festuca rubra*	O				R					
Rose	*Rosa sp.*			R							
Sycamore	*Acer pseudoplatanus*			R			O				
Speedwell	*Veronica Sp.*	R									
Teasel	*Dipsacus sp.*	R				R					
Creeping Thistle	*Cirsium arvense*	O									
Timothy	*Phleum pratense*	O									
Wavy Bitter-cress	*Cardamine flexuosa*					R					
Garden Grape-hyacinth	*Muscari armeniacum*					R					
Yorkshire Fog	*Holcus lanatus*	R				O					

D= Dominant A= Abundant F = Frequent O = Occasional R = Rare

Appendix 3: Legislation Relating to Bats

The following is an interpretation of the law and as such has not been prepared by a legal professional and therefore should be viewed as a guide only.

All bat species are legally protected under section 9 of the Wildlife and Countryside Act 1981 and regulation 41 of The Conservation of Habitats and Species Regulations 2010. Taken together it is illegal to:

- Deliberately kill, injure or capture any wild animal of European protected species;
- Deliberately disturb wild animals of any European protected species in such a way to be likely to significantly affect:
    - The ability of any significant groups of animals of that species to survive, breed, rear or nurture their young; or
    - The local distribution of that species.
- Recklessly disturb a European protected species;
- Damage or destroys breed sites or resting places of such animals;
- Deliberately takes or destroys the pups of such an animal;
- Possess or transport or any part of a European protected species, unless acquired legally;
- Sell, barter or exchange any part of a European protected species.

The maximum fine per offence is £5000 the Countryside and the Rights of Way Act 2000 (CROW) amendment contains a provision for a custodial sentence of up to 6 months instead of, or in addition to, a fine. Along with a lengthy development delay until an appropriate mitigation programme has been agreed and completed.

Natural Environment and Rural Communities Act 2006 (NERC) also lists bats/ great crested newts as a species of principle importance under Section 41 and Section 40 requires every public body in the exercising of its functions (in relation Section 41 species) 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'; therefore making bats/ great crested newts a material consideration in the planning process and requiring a detailed ecological survey before planning permission can be granted.

Appendix 4: Plant Species of Known Benefit to Bats

Plant species	Common name	Native (N)	Type	Benefit	Soil	Aspect	Extensive Green roofs	Living Walls	Rain gardens	Hedge/Trees	Beds/Borders
Acer campestre	Field maple	N	T/S	C	Any	Sun/Shade				Y	
Acer platanoides	Norway maple		T/S	S	Well drained/ alkaline	Sun/Shade				Y	
Acer saooharum	Sugar maple		T/S	S	Any	Sun/Shade				Y	
Achillea millefolium	Yarrow	N	HP	C,F	Well drained	Sun/Shade				Y	
Ajuga reptans	Bugle	N	HP	C,F	Any	Sun/Shade	Y		Y		
Anthyllis vulneraria	Kidney Vetch	N	HP	F	Well drained	Sun	Y				
Aubrieta deltoidea	Aubretia		H	F	Well drained	Sun/Shade		Y			
Betula pendula	Silver birch	N	T	C	Sandy/Acid	Sun				Y	
Cardamine pratensis	Cuckoo-flower	N	HP	F	Moist	Sun/Shade			Y		Y
Carpinus betulus	Hornbeam	N	T	C	Clay	Sun				Y	
Centaurea nigra	Common Knapweed	N	HP	C,F	Dry/ not acid	Sun	Y				Y
Centranthus ruber	Red valerian		HP	F	Well drained	Sun	Y				Y
Clematis vitalba	Old man's beard	N	C	F	Well drained/ alkaline	Sun				Y	
Corylus avellana	Hazel	N	S	C	Any dry	Sun/Shade		Y		Y	
Crataegus monogyna	Hawthorn	N	S	S,C	Any	Sun/Shade				Y	
Daucus carota	Wild carrot	N	Bi	S,C,F	Any	Sun	Y				Y
Dianthus spp.	Pinks	N	A-Bi	F	Well drained	Sun	Y	Y			Y
Digitalis purpurea	Foxglove	N	Bi	C	Well drained	Shade/ partial shade				Y	Y
Erica cinera	Bell heather	N	S	F	Sandy	Full sun					Y
Ersimum cherira	Wallflower		Bi-P	F	Well drained	Sun		Y			Y
Eupatorium	Hemp agrimony	N	H	F	Moist	Sun/Shade			Y		Y
Fagus sylvatica	Beech	N	T	C,R	Well drained alkaline	Sun/Shade				Y	
Foeniculum vulgare	Fennel		H	F	Well drained	Sun					Y
Fraxinus Excelsior	Common Ash	N	T	C,R	Any	Sun/Shade				Y	
Hebe spp.	Hebe species		S	F	Well drained	Sun/Shade				Y	Y
Hedera Helix	Ivy	N	C	F,C	Any	Sun/Shade		Y	Y	Y	Y
Hesperis matrionalis	Sweet rocket		H	F	Well drained/dry	Sun/Shade					Y

Hyacinthoides non-scripta	Bluebell	N	B	F	Loam	Shade/ partial shade		Y		Y	Y
Ilex aquailfolium	Holly	N	T	C	Any	Sun/Shade				Y	
jasmine officinale	Common jasmine		C	F	Well drained	Sun		Y			Y
Lavandula spp.	Lavender species		S	F	Well drained/ sandy	Sun		Y			Y
Linaria vulgaris	Toadflax	N	HP	C	Well drained/alkaline	Sun	Y				Y
Locinera periclymenum	Honeysuckle	N	C	F	Well drained	Sun		Y		Y	
Lotus corniculatus	Bird's foot trefoil	N	HP	F	Well drained/dry	Sun	Y				Y
Lunaria annua	Honesty		Bi	F	Any	Sun/ partial shade	Y				Y
Malus spp.	Apple		T	C	Any	Sun				Y	Y
Matthiola longipetala	Night-scented stock		A-Bi	F	Well drained/ moist				Y		Y
Myosotis spp.	Forget-mt-not species	N	A	F	Any	Sun	Y	Y			Y
Nicotiania alata	Ornamental tobacco		A	F	Well drained/ moist	Sun/ partial shade			Y		Y
Oneothera spp.	Evening primrose		Bi	F	Well drained	Sun	Y				Y
Origanum vulgare	Marjoram	N	HP	F	Well drained/dry	Sun				Y	
Populus alba	White poplar	N	T	C	Clay loam	Sun				Y	
Primula veris	Cowslip	N	HP	F	Well drained/ moist	Sun/ partial shade	Y				Y
Primula vulgaris	Primrose	N	HP	F	Moist	Partial shade	Y	Y		Y	Y
Prunus avium	Wild cherry	N	T	C	Any	Sun				Y	Y
Prunus domestica	Plum		T	C	Well drained/ moist	Sun				Y	Y
Prunus spinosa	Blackthorn	N	S	C	Any	Sun/ partial shade				Y	
Querois petraea	Sessile oak	N	T	C, R	Sandy loam	Sun/ shade				Y	
Quercus robur	Common oak	N	T	R	Clay loam	Sun/ shade				Y	
Rosa canina	Dog rose	N	S	C	Any	Sun			Y	Y	Y
Salix spp.	Willow species	N	S	S, C	Moist	Sun/ shade			Y	Y	
Sambucus nigra	Elder	N	T	C	Clay loam	Sun				Y	
Saponaira officinalis	Soapwort	N	HP	F	Any	Sun					Y
Saxifraga oppositifolia	Saxifage	N	HP	C	Well drained	Sun	Y	Y			Y
Scabiosa columbaria	Small scabious	N	HP	F	Well drained/ alkaline	Sun	Y				Y
Sedum spectabile	Ice plant		HP	F	Well drained/ dry	Sun	Y				Y
Silene dioecia	Red campion	N	HP	F	Any	Shade/ partial shade		Y	Y	Y	Y
Sorbus aucuparia	Rowan	N	T	C	Well drained	Sun				Y	

Stachys lanata	Lamb's ear		HP	F	Well drained/ dry	Sun					Y
Symphotrichum spp.	Michalemas daisies		HP	F	Any	Sun					Y
Tages patula	French marigold		A	F	Well drained	Sun					Y
Thymus serpyllum	Creeping thyme	N	HP/S	F	Well drained/ dry	Sun	Y	Y			Y
Tilia x europaea	Common lime		T	C	Any	Sun/ shade				Y	
Trifolium spp.	Clover species	N	H	F	Any	Sun	Y				Y
Valerina spp.	Valerian species	N	HP	F	Moist	Sun/ partial shade			Y		Y
Verbascum spp.	Mulliens	N	Bi/ HP	C	Well drained	Sun					Y
Verbena bonariensis	Verbena		HP	F	Well drained/ moist	Sun					Y
Viburnum lantana	Wayfaring tree	N	S	C	Any	Sun/ shade				Y	Y
Viburnum opulus	Guelder rose	N	S	C	Moist	Sun/Shade			Y	Y	
Viola tricolor	Pansy	B	A	F	Well drained/ moist		Y	Y			Y

Type		**Benefit**	
HP	Herbaceous perennial	C	Moth caterpillar food plant
Bi	Biennial	S	Sap sucking insects (e.g. whiteflies)
BiP	Biennial perennial	F	Flowers attract adult moths
T	Tree	E	Good roost potential
S	Shrub		
H	Herb		
A	Annual		
B	Bulb		
C	Creeper/ climber		

Plates

Plate 1: Poplar Tree

Plate 2: View of Improved Grassland (south west aspect)

Plate 3: crushed concrete piles in North East Corner

Plate 4: Felled brush heap

Plate 5: Bare ground and earth banks