

Snibston Heritage
Museum
Ecological Constraints and
Opportunities

Snibston Colliery

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1. Introduction

1.1 Terms of Reference

Atkins Limited (Atkins) was commissioned by Leicestershire County Council to produce a Conservation Management Plan for Snibston former colliery site part of Snibston Discovery Park. As part of this process an ecological appraisal of the site has been undertaken to identify potential ecological constraints to any development or proposed new management on site and any potential opportunities for enhancement of the site through habitat creation or future management. This ecological appraisal report is intended to inform production of the Conservation Management Plan which will be submitted to Leicestershire County Council.

The study area forms the northern boundary of Snibston Discovery Park and Grange Nature Reserve, which is a country park and museum, in Coalville, Leicestershire, at SK418145. The study area encloses part of the former colliery site Snibston former colliery and the boundary for the study area, as indicated by the client, is shown on the sketch map in Appendix 1.

1.2 Scope of Works

The ecological scope of works agreed with Leicestershire County Council included:

- a) An ecological appraisal of the existing site and its buildings;
- b) Identification of potential ecological constraints to future works or changes to the site;
- c) Recommendations for mitigation requirements or further surveys which may be required for future management issues on the site;
- d) Suggestions for management of the site to enhance for both wildlife and visitor enjoyment.

In order to complete these tasks a data gathering exercise and an ecological walkover survey was conducted. This report provides details of:

- a desk study - undertaken to obtain existing records on protected species and designated sites, within the site or adjacent areas;
- an ecological walkover survey undertaken on the 21st November 2008;
- an assessment of the external parts of the buildings for potential and evidence for use by bats and external inspection of the trees on site for potential use by bats;
- an assessment of the site for its potential to provided habitats for other protected or notable species;
- identification of the likely constraints to any changes for the site;
- suggested enhancement to the site;
- further ecological survey work which may be required dependent on future proposals.

2. Methodology

2.1 Desk Study

The Multi Agency Geographical Information for the Countryside (MAGIC) website (www.magic.gov.uk) and the Natural England website (www.natureonthemap.org.uk) were used to identify all statutory designated sites of importance for nature conservation within 1km of the site.

A request was sent to Leicestershire Environmental Resource Centre for information regarding all notable and protected species records within 1km of the site boundary. In addition to these, records were requested for any non-statutory sites of nature conservation importance, designated and protected by planning policies at a county level, within 1km of the site boundary.

Ordnance Survey maps were used to identify the presence of any ponds within 500 m of the site. Great crested newts, a European Protected Species, can use suitable terrestrial habitat up to 500 m from a breeding pond ¹ although latest research suggests that newts are likely to travel no more than 250 m from ponds when suitable habitats for foraging and hibernation exist within this distance around their pond ². As a precaution, the search area for water bodies covered a 500m zone around the study area so that this information could be taken account of during further assessment following the site visit.

Information from previous wildlife surveys on the site was also received from Leicestershire County Council (*Snibston Wildlife Surveys*, A. Fletcher, 1989 to 2007). These had species lists, containing flora and some fauna, for different parts of the study area and other areas of the Snibston Discovery Park and Grange Nature Reserve. The information provided highlights the presence of notable and locally rare lower plants and it should be used for future reference during ecological management decisions.

In addition during the site survey, anecdotal evidence was gained from a Country Park Ranger regarding past wildlife sightings on the site.

2.2 Field Survey

An ecological walk-over survey of the site and its immediate surrounds was undertaken on 21st November 2008 broadly following the 'Extended Phase 1' methodology as set out in *Guidelines for Baseline Ecological Assessment* (Institute of Environmental Assessment 1995). The extended Phase 1 habitat survey provides information on the habitats in the study area and appraises the intrinsic value of the habitats of the site and the immediate adjacent lands and its ability to support notable fauna.

The study area included land within the site boundary as shown on the sketch map in Appendix 1; however a visual appraisal of the adjacent areas which are part of the wider museum and discovery park were also undertaken to identify potential impacts on these from work on site or potential for species movement from these areas on to the site.

(1)Great crested newt mitigation guidelines, English Nature, 2001

(2) English Nature report (ENRR) Number 576, 'An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus*'.

Preliminary investigations were undertaken in respect of the presence of legally protected species:

- A search for evidence of roosting bats and the potential to support roosting bats within buildings, structures and trees within the site. This involved visual assessment as well as the use of torches and binoculars to allow for an external inspection of the buildings, and internal inspections where access was safe;
- visual assessment of the site for its potential to support reptiles and amphibians;
- assessment of habitats for nesting birds including the buildings and vegetation on site;
- potential for the site to support badgers, or other protected and notable species;
- in addition a search was made for evidence of the presence of giant hogweed and Japanese knotweed within and adjacent to the site. These are invasive plant species listed on Schedule 9 of the Wildlife & Countryside Act 1981 and subject to strict legal control.

2.3 Limitations to Survey

Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The ecological survey of this site has not therefore produced a complete list of plants and animals and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. Nevertheless, the results of this ecological survey have allowed an evaluation of the likely use of the site by legally protected species and the requirement for further survey and/or mitigation works for these species.

2.4 Nature Conservation Evaluation

A number of criteria have become accepted as a means of assessing the nature conservation value of a defined area of land which are set out in *A Nature Conservation Review* (Ratcliffe, 1977) and include diversity, rarity and naturalness.

In urban areas, the Ratcliffe criteria are often expanded to bring in 'social criteria' such as wildlife corridors, accessibility for the public, presence or absence of other green spaces in the local area (*Natural Assets: non-statutory sites of importance for nature conservation*, Collis & Tyldesley, 1993).

The nature conservation value of an area of land is usually assessed in terms of:

- international importance (Special Areas of Conservation, Special Protection Areas, Ramsar sites);
- national importance (Sites of Special Scientific Interest);
- regional/county importance (Local Nature Reserves, Sites of Importance for Nature Conservation, ancient woodlands);
- local (parish) importance (significant ecological features such as old hedges, woodlands, ponds);
- the site and immediate environs e.g. habitat mosaic of grassland and scrub;
- negligible importance would usually be applied to areas of built development, active mineral extraction, or intensive agricultural land.

3. Existing Conditions

3.1 Sites of Nature Conservation Importance

There are a number of designated sites within 1km of the study area. Two of these are statutory Local Nature Reserves (LNR): Natures Alive and Snibston Grange. There are also a number of locally designated, non statutory sites on the site and within 1km of it, some of which are synonymous with the LNRs.

The table below lists the designated sites and their distance and direction away from the study area (boundaries study boundary as on Sketch map).

The extent of non statutory designated sites, provisional Local Wildlife Sites, designated by Leicestershire County Council. within the study area boundary are also shown on Sketch map. The boundaries of these are not exact as precise site boundaries were not provided in the desk study information. Provisional Local Wildlife Sites are in the process of being designated as Local Wildlife Sites. In addition there are parish level sites, which is an older level of designation but now not used; these sites have value locally where survey data may be available.

Table 1: Statutory and non statutory sites within 1km of the study area

Site Names (Leicestershire County Council site codes)	Site designation	Distance from site	Notes
Snibston Discovery Park Areas 1, 2, and 3 (058389, 058394, 058399, 0058404, 058409)	Provisional Local Wildlife sites	On site	Covers rail track and immediate surrounds, and some building roofs and concrete below winding gear wheel, which contain rare or notable plants.
Snibston Discovery Park Areas 4, 5, 1 and 7 (058414, 058420, 058456, 058433)	Provisional Local Wildlife sites	Immediately adjacent to study area	These are contiguous with the east boundary of the provisional Local Wildlife Sites present within the site.
Snibston Discovery Park Area 6 (058426)	Provisional Local Wildlife site	400m west	-
Natures Alive (07838, 070843, 062459, 052902, 074857)	LNR, including four provisional Local Wildlife sites and one Parish level site	500m north	-
Pond (018093)	Parish level site	620 north	-
Thornbrough former colliery, scrub, ponds and grassland (068223, 068228, 062744)	Provisional Local Wildlife Site	670m north	-
Snibston grange, Snibston discovery park grassland (052912, 071211, 073608)	Provisional Local Wildlife Sites and Parish level site	700m south	Some of these overlap with Snibston Grange LNR
Snibston Grange	LNR	715 south	-
Coalville scrubby grassland – stream and scrub (071636, 071624)	Provisional Local Wildlife Sites	905m south	-

Five of the provisional Local Wildlife Sites are located within the study area,. These are noted primarily due to the presence of local rare and notable species of lower plants including Leicestershire Red Data book species. : (*Cladonia portentosa* (lichen), *Theleocarpon epibolum* (lichen), *Monodictys* sp. (fungi) and *Phaeospra parasitica* (fungus), (species data from; *Snibston Wildlife Surveys*, A. Fletcher, 1989 to 2007).

3.2 Habitats

The site lies on the edge of Coalville and is bordered on three sides by housing and to the south and south west by the country park. The Country Park is part of a green corridor that runs between all the local villages and towns which to the north and south of the site, linking the two local nature reserves, 500m north and 700 south of the site. The site and one row of houses, on the opposite side of the road forms the only break in green space in this corridor locally.

The sketch map provided in Sketch map (Appendix 1) shows features identified during the walkover survey with target notes (TN).

Buildings

The site contains a number of buildings and features pertaining to its former use as a colliery, including rail tracks and is currently in use as a museum and council offices.

The study area used is the same as that used for the Conservation Mangement Plan. The Buildings have been given a name if known, a Leicestershire County Council Asset Number, or a description of the building if none of these are provided.

The following table lists all the buildings within the site and the gives a description of features present for bats and other protected species e.g. birds. Buildings outside of the study area are not listed below.

Table 2: Buildings description, potential for containing bat roosts and other ecological information

LCC Asset Number	Building Use (if known)	Description	Potential for bats	Notes
B	Office block	Complex of single and double storey office blocks. Brick buildings with felt flat roof and integral guttering on most sections. Metal and plastic windows and doors.	Low potential	-
D	Cable Shop	Tall single storey brick built building with coated metal corrugated roof, which is open to the inside with no loft space. Under the building and its forecourt on the northern aspect there are five open storage units which are about 1.5m tall and less than 2m wide, with gated fronts, these contained machinery but had space around them.	Main building had no features considered suitable for use by bats and is of low potential. The storage areas under the building are considered to be of high potential for use by bats (TN 4,,Appendix 1) as potential entry points are present around the gates and the space around the machines provide potential roost sites.	Area around east of building and flat roofs part of provisional Local Wildlife Site.

E		Flat roofed tall brick built single storey building, with metal windows and flat felt roof. Attached to the south side is a brick water tower with a metal tank. The windows in the tower are mostly missing.	The main building has some crumbled brick work but the mortar is all intact and there are no visible opportunities for bats. The water tower has some holes in the east end and access through the missing windows into the internal space with access also noted to cavity walls This is considered to be of high potential for bats (TN 2, Appendix 1).	Area around east of building and flat roofs forms part of provisional Local Wildlife Site
F		Tall one storey shed building with half brick half corrugated plastic coated metal walls and corrugated pitched roof. On the western edge there is an open end of about 2m deep and full height of the building but separated from the rest of the building by a full height concrete block wall.	Low potential	Bird nests were noted in the open west end section
G	Service sheds	One storey brick built service sheds with flat roof and wooden doors.	No visible roost features noted; some potential for bats to enter internal structure through ventilation slates above doors, although most have cobwebs over them. Low potential	-
H	Pit head	White washed brick one storey building at the base with a concrete tower flanked by two metal towers.	Some potential entry points are present where the cables enter the building. Sarking under tiles provides potential roost location. Medium potential for bats (TN7, Appendix 1).	Some disused birds nests are present on the towers. Area around west and north of building and flat roofs part of provisional Local Wildlife Site
I	Fan house	Part brick flat roofed building with attached tall concrete structure with open topped tall cone for fan.	Open wooden vent on the north of the building and the open vent for the fan provide opportunity for bats to use internal structures. Old bat droppings noted below the open vent (TN 3, Appendix 1). High	Area around west and north of building and flat roofs part of provisional Local Wildlife Site

			potential for bats.	
J		Single storey flat felt roofed brick building with glass brick windows	Low potential	
K		Tall single storey with pitched tiled roof, all in very good maintenance. There are a small number of holes around brick work and a few lifted tiles. Gutter board looks damp.	Some small holes in bricks, look like old pipe holes, have potential for access into building and wall, (TN 5, Appendix 1). Medium potential for bats.	
L	Winding house	Single story building under the machinery. The building under the towers have wooden doors with some panels missing opening into a much changed space with the concrete top of the pit head.	The lower section of the tower provided large area with many nooks and crannies and features inside access through broken door panel and towers. High potential	
M		Single story brick building with tiled roof which is open to the inside. Ventilation caps on the roofs are wide wooden slots with tiled roofs of their own.	High potential for bats to use tiled ventilation shafts on roof (TN 6, Appendix 1).	
Q	Century Theatre	Metal framed wooden prefabricated buildings attached together, raised on jacks and bricks off the ground. A range of metal and plastic doors and windows.	There are a few metal fan vents which have low value for bats.	
U	Signal Box	Wooden three storey signal box with pitched tiled roof. The box has wooden slats with no lifted areas or openings seen, the roof is slate tiled with wooden sarking underneath.	Potential under tiles or between tiles and sarking in the roof. Medium potential for bats (TN8, Appendix 1).	
V		Machinery leading to gantry, with concrete and corrugated material.	Low potential	Lots of open window and gaps providing good bird roosting and nesting potential
Y	-	Has been removed from site	-	-
AB		Brick single storey building with flat concrete slab roof, and open door	No potential roosting sites inside. Low potential	
AC		Brick single storey building with flat concrete slab roof, door and windows boarded on lifted off.	No potential roosting sites inside. Low potential	
AE		Brick single storey building with flat concrete	No potential roosting sites inside. Low	

		slab roof and open door	potential	
AF		Brick single storey building with flat concrete slab roof, and open door	No potential roosting sites inside. Low potential	
AI	Lighting Column	Metal lighting column	No potential roosting sites inside. Low potential	Potential for bird roosting and nesting
AK	Ticket Office	Square single story wooden ticket office with a pitched felt roof.	Low potential	
AL	Lunch car	Railway passenger carriage for picnic lunches, wooden body with rounded felt roof	Low potential	
AJ		Single storey prefabricated building of rendered wood with plastic window frames. Flat roof with slight pitch, wood coated barge boards with gap behind filled with grill.	Low potential	

Hard standing and associated stockpiled materials

Between the buildings on the yards are areas of hard standing concrete and tarmac at different levels. These are partly filled with stock piles of materials and machinery parts. This included log, brick and rubber piles and large pieces of machinery covered by tarpaulin. These tarmac areas have plant species invading, such oxeye daisy, buddleia, Yorkshire fog and broad leaved dock. Two of these areas have been highlighted as provisional Wildlife Sites because of their lichen and fern communities on the concrete and flat roofs and the approximate location of these are marked on the sketch map in Appendix 1.

Stone chipped areas and track

Within the rail tracked areas and adjacent to the north of these areas are loose chipping covered, with developing vegetation. As the site is a disused colliery and the nature of the ground, the floral community which could be present in this area may be of interest due to the presence of disturbed soil and range of chippings of different origin. The track and wider areas are part of a number of proposed local designations and these areas have been surveyed in the past and found to contain some notable species and form part of provisional Local Wildlife Sites (Sketch map, Appendix 1).

Trees and Shrubs

There are very few trees and shrubs on site. Around the south and west side of the Century Theatre (building Q) is an ornamental bed with laurel, ornamental cherry and hebe present. Within the stone chipped areas near the track are a number of self set trees and shrubs developing with buddleia the most common, but silver birch and alder also present.

On the east side of building B is a small formal garden area with a few immature trees and shrubs, a small area of mown grassland and shrubs. Species here include alder, privet, perennial rye grass, ivy, common buttercup, common dandelion and lavender.

Gantry Mound

The gantry mound, is shown on the sketch max, Appendix 1, is the only remaining spoil heap from the colliery on site and it has been planted with trees on the west side and some grass seeding has been undertaken in the past. On the west and east of the mound are a number of silver birch and alder trees with some bramble understory and on the east slope are some silver birch, with bramble understory. In the central section of the mound is a grassland which is being invaded by scrub including bramble, guelder rose, goat willow and silver birch. During the survey herb Robert,

white clover, Yorkshire fog, false oat grass, cats ear, creeping buttercup, broad leaved dock, oxeye daisy and common vetch were also noted in this area. There are patches of bare ground also. Past surveys of the area undertaken by the county council at more appropriate time of year, highlighted the potential for this area to contain interesting species is high, because of its unusual soil structure.

3.3 Species

During the survey, three weathered bat droppings was found in Building I (the Fan House) (see TN 3 on Sketch map, Appendix 1). No other evidence of any protected species was found within the site boundary. However habitat suitable to support roosting bats (within the buildings) and evidence of nesting birds was noted (details given below).

Bats

No records of roosting bats were provided during the records search within 1km of the site, but records of common pipistrelle activity were noted in the general area.

None of the trees on site had features which were suitable to be used as a bat roost.

The buildings on site exhibit a wide range of types and construction with unusual features, and machinery towers providing opportunity for use by bats. Buildings D, E, H, I, K, L, M and U all have features which give them high or medium potential for bats, these are highlighted as Target notes 2 to 8 on Sketch map (Appendix 1). The remainder of the buildings have low potential for use by bats due to lack of suitable features.

The only evidence of bats present on the site during the survey was a few weathered bat droppings under the wooden vent feature on Building I (TN3, Appendix 1). The time of year in which the walkover survey was undertaken (21 November 2008) reduces the likelihood of finding evidence of bats as recent rainfall and high winds may have destroyed droppings that were present and bats are not active at this time of year. Further survey at a more appropriate time of year to establish these droppings can from bats entering the feature or foraging locally.

Anecdotal evidence was given, from the Country Park Ranger, whilst on site, of bats previously being seen using the ventilation shafts on the engine house (Building M) which was assessed during the walk over survey as having high potential for roosting bats (see TN 6, Appendix 1).

Trees on the mound and the gravel and track area provide good feeding and commuting habitat for bats, because of their potential to attract insects. The site sits in a green corridor between the two LNRs north and south of the site, and the greener areas of the site form an important link in this corridor which is severed briefly by the museum and housing directly north across the road.

Nesting Birds

The range of different buildings, old machines, carriages, and trees around site provided a number of opportunities for bird nesting and roosting. While on site, only robins, blackbirds, great tit and house sparrows were observed. However anecdotal evidence from a Country Park Ranger detailed that kestrel and little owl are known to hunt on the site, with long tailed tit, greenfinch and green woodpecker also noted on site, mainly around the gantry mound area.

Amphibians and Reptiles

The stock piles of machinery, rubber, brick and wood around the site as well as the patchy grassland on the mound and loose stone chip and concreted areas provide potential terrestrial habitat for amphibians and reptiles, giving foraging, resting and basking opportunities.

No ponds were noted within 500 m of the site during interrogation of the Ordnance Survey maps and no waterbodies were noted on site. The Leicestershire Environmental Resource Centre provided information regarding a population of great crested newts over 500m away from site but held no records closer to site. It is therefore highly unlikely that great crested newts would make use of this potential terrestrial habitat within the site.

No records were provided for reptiles in the area and the Country Park Ranger noted that none have been found on site. The site does, however, offer potential for species such as grass snake, adder and slow worm and there are potential migration routes for reptiles into site from the surrounding residential areas and green corridor.

Other Mammals

The County Park Ranger noted that the gantry mound supported breeding hedgehogs, which have been recently given priority species status in the UK Biodiversity Action Plan (UKBAP) because of their decline in recent years.

Because of its proximity to the Country Park, the site would be expected to support other small mammals, particularly on the gantry mound such as mice and vole. The fact kestrel and little owl have been seen feeding on site support this assumption. The Country Park Ranger also noted that foxes are known to frequent the site and are believed to use the cable ducts to enter Building AC, where fox cubs have been seen in the past.

There were no signs found of badger using the site or any other signs or evidence of other mammal species.

Invasive Plants

There was no sign of Japanese knotweed or giant hogweed on or immediately adjacent to the site.

4. Ecological Appraisal and Potential Constraints

4.1 Nature Conservation Value

The majority of the habitats within the site boundary are currently of negligible value for wildlife (such as the areas of hard standing). However, the gantry mound, track and loose chipping area and some colonised roofs and concrete area, which includes the provisional Local Wildlife Sites, are of value within the context of the site as they provide resting, nesting and feeding opportunities for birds, and feeding habitat or roosting opportunities for bats, and habitat for insects, and place for rare lower plants within the designated sites.

4.2 Potential Constraints to Works or Maintenance on site

There are no current proposals to alter the existing layout of site. However it is proposed that there will be continued management and maintenance of the site including the potential for future renovation works on the buildings and maintenance of machinery and there is also likely to be an increase in visitor use of the wider site.

The ecological appraisal has highlighted the presence of five provisional Local Wildlife Sites and the study areas potential of the site to support protected and notable species including bats, birds and reptiles as well as notable or locally rare lower plants and plant communities. As there are currently no specific proposals for the site only general constraints can be identified to be taken into account when any future alterations to site or maintenance is being proposed.

- presence of Local Wildlife Sites within the study area which contain notable and locally rare lower plants species;
- potential for bats to roost in certain buildings and machinery;
- potential for breeding birds on buildings and machinery;
- potential for interesting plant communities on the gantry mound;
- potential for reptiles using the site.

Bats

There is high or medium potential that bats could use features of buildings D, E, H, I, K, L, M, U for roosting. The features of highest potential are shown on sketch map as TN 2 to 8, appendix 1.

All British bats and their roosts have full legal protection, details of the relevant legislation is set out in Appendix 3. If any demolition, change in use, renovation or maintenance works are to be undertaken on these buildings there is potential for a breach in legislation if roosting bats are present.

It is recommended that if any works (even minor) are planned at these buildings further more project focused bat survey should be undertaken. Any survey undertaken should follow current guidelines, Bat Conservation Trust, *Bat Surveys - Good Practice Guidelines (2007)*. Surveys are seasonally dependant, with the peak survey season running from May to September inclusive.

Should bats be found then any proposed work may require a licence to be sought from Natural England with appropriate mitigation and compensation put into place to minimise the impact of the proposed works on bats.

Birds

All wild birds and their nests (whilst being built or in use) are protected under law, details of this legislation is available in appendix 3. Any vegetation clearance, or the maintenance of the

buildings, or machinery, in which birds are nesting should be undertaken outside the breeding season. The bird breeding season can be taken to run between 1 February and 31 August (in practice, it is usually March to July and is subject to geographical and seasonal factors).

The moving of machinery around the site should also take into consideration nesting birds in the machinery itself.

If vegetation clearance or the maintenance of buildings or structures is necessary within the bird nesting season, then surveys for occupied nests (or nests being built) should be carried out prior to any works being undertaken. A survey a minimum of 48 hours prior to commencement of works should be undertaken in order to minimise opportunities for nest building between the survey and the start of works. Any nest in use or being built during this survey may need to be left undamaged for the entire nesting period and alternative approaches to the works proposed. As an alternative the building could be netted to prevent birds nesting prior to nesting season to allow work to proceed during the nesting season.

Proposed Local Wildlife Sites

The site contains a number of potential Wildlife Sites noted primarily due to the presence of local rare and notable species of lower plant including Leicestershire red data book species. Advice should be sought from a suitably qualified ecologist prior to any changes to be made in these areas, Consultation should also be sort with Leicestershire Environmental Resource Centre because of the proposed Local Wildlife Site designation.

These areas contain some self set scrub and this may need to be controlled to avoid breaking up of concrete or brick work, or over shading of the lower plants. Any removal of scrub from these areas should be carried out by physical removal the plant and no herbicides should be used on site. The use of herbicides presents two problems. Firstly, that it can impact on non target species such are rare lower plants on site. Secondly, that chemicals in the herbicide could alter the chemical make up of the substrate which will impact upon its ability to support the current floral communities.

Reptiles

Although no records of reptiles have been provided, the potential for the site to support reptile species is considered to be high. There is a risk of disturbing and possibly injuring or killing reptiles if the movement of the stockpiles of machinery, rubber, stone and wood plies around the site is required. All native reptiles are protected against killing and injuring, legislation is set out in appendix 3.

Care should be taken and the piles searched, by a suitably qualified person, to ascertain if there are any reptiles present prior to movement or stacking up of these materials.

5. Opportunities for Enhancement

Not all of the site has value for wildlife, and in some areas management for wildlife may impact on other aspects of running the museum, such as birds nesting in machinery. However, there is ample opportunity to enhance the value of the site for wildlife in ways which will not impact on the running of the museum. Such biodiversity enhancements would also have a positive impact by enhancing the visitor experience and could be used to offer ecological visits for schools as part of the county park.

The main potential biodiversity enhancements are:

- Improved management of the proposed Local Wildlife Site areas and the gantry mound to provide habitats for wildlife;
- Visitor interpretation of the wildlife on the study area and the proposed Local Wildlife Sites;
- Inclusion of bird boxes and bat boxes on the site, possibly with camera links into the Discovery Centre.

Management of Proposed Local Wildlife Sites and Gantry Mound

The management of the proposed Local Wildlife Sites should be undertaken sensitively following consultation with Leicestershire Resources Centre.

These sites are listed as proposed Local Wildlife Sites because of the locally rare or notable species within in them and their general species composition. The sites have taken a long time to establish and therefore intensive management is not required. The main threat to these areas at present is encroaching self set scrub, which is mostly buddleia and birch, which should be limited by selective removal in some areas.

Any management should avoid the use of herbicides and physical removal of plants is preferred (with limited disturbance to ground).

The gantry mound has potential to be a species rich site. The spoil of the mound gives it a tendency to acidity. The open area given the correct management could provide a interesting grassland community. To achieve this, the encroaching scrub including bramble should be removed and a cutting regime designed to improve diversity by limiting the more aggressive grass species. Plants such as yellow rattle which parasitise on grass could be introduced to help maintain a species rich grassland. After scrub removal cutting of the grassland should be undertaken in early April and late September with all arisings removed. It is important to remove arisings because these will increase the nutrients in the grassland which would favour more aggressive species and therefore reduce diversity. No topsoil should be introduced into this area.

The mound area covering of trees could be widened through additional planting of native species at its south end to the with of the study area in order to provide a stronger corridor thought to the county park beyond.

Opportunity exists on the mound area to place log piles and such within the tree covered area, which could be used for educational activities and would provide habitat for reptiles and invertebrates in particular.

Monitoring of these areas during the changes in management should be undertaken on a biennial basis. Base line conditions should be established and a set of key indicators for the desired grassland produced following a detailed survey next year by a suitable qualified person in June or July when most species are visible. Monitoring should be undertaken using simplified quadrat system with plant abundance of positive indicator species dictating success. Management should be altered depending on the outcome of the monitoring.

Interpretation

Interpretation boards of a nature trail for the site could be produced to highlight the value of the former industrial site and how it is being used by wildlife today. This could be linked to school packs the development of the gantry mound into a wildlife have could also be used for school groups for such as mini-beast hunts and such like, providing joint curriculum trips with a industrial heritage and nature studies theme.

Bird and Bat boxes

The range of buildings and the trees on the gantry mound provided opportunity for placement of bird and bat boxes. Simple and relativity cheap technology exists to place cameras in bird and bat boxes which should be shown live in the adjacent Snibston Discovery Centre where visitors could learn more about the site.

6. Conclusions

The study area forms the northern boundary of Snibston Discovery Park and Grange Nature Reserve, which is a country park and museum, in Coalville, Leicestershire. The study area encloses part of the former colliery site and its remaining spoil mound.

The majority of the habitats within the study area boundary are currently of negligible value for wildlife (such as the areas of hard standing).

The gantry mound, track and loose chipping area and some colonised roofs and concrete area, (which includes the proposed Local Wildlife Sites) are of value within the context of the site as they provide resting, nesting and feeding opportunities for birds, and feeding habitat or roosting opportunities for bats, and habitat for insects, and place for rare lower plants within the designated sites.

The study area, its buildings, trees and machinery afford suitable habitat for feeding and breeding bats and birds and foraging and resting areas for reptiles. Bat droppings were found on site on building I (TN3 Appendix 1) and information collected from a Country Park Ranger suggested a bat roost in building M. Old bird nests were numerous around the site on machinery including carriages and engines.

No evidence of reptiles was found at the time of survey. The site does offer potential for species such as grass snake, adder and slow worm and there are potential migration routes for reptiles into site from the surrounding residential areas and green corridor but the habitats are suitable for these species.

The potential of the site to contain protected species does pose some constraints on future maintenance or changes within the site which are:

- potential for bats to roost in buildings and machinery;
- potential for breeding birds on buildings and machinery;
- presence of notable and locally rare lower plants species in proposed Local Wildlife Sites within the site boundary;
- potential for interesting plant communities on the gantry mound;
- potential for reptiles using the site.

Further survey, and advice from an ecologist should be undertaken when maintenance or other works are programmed.

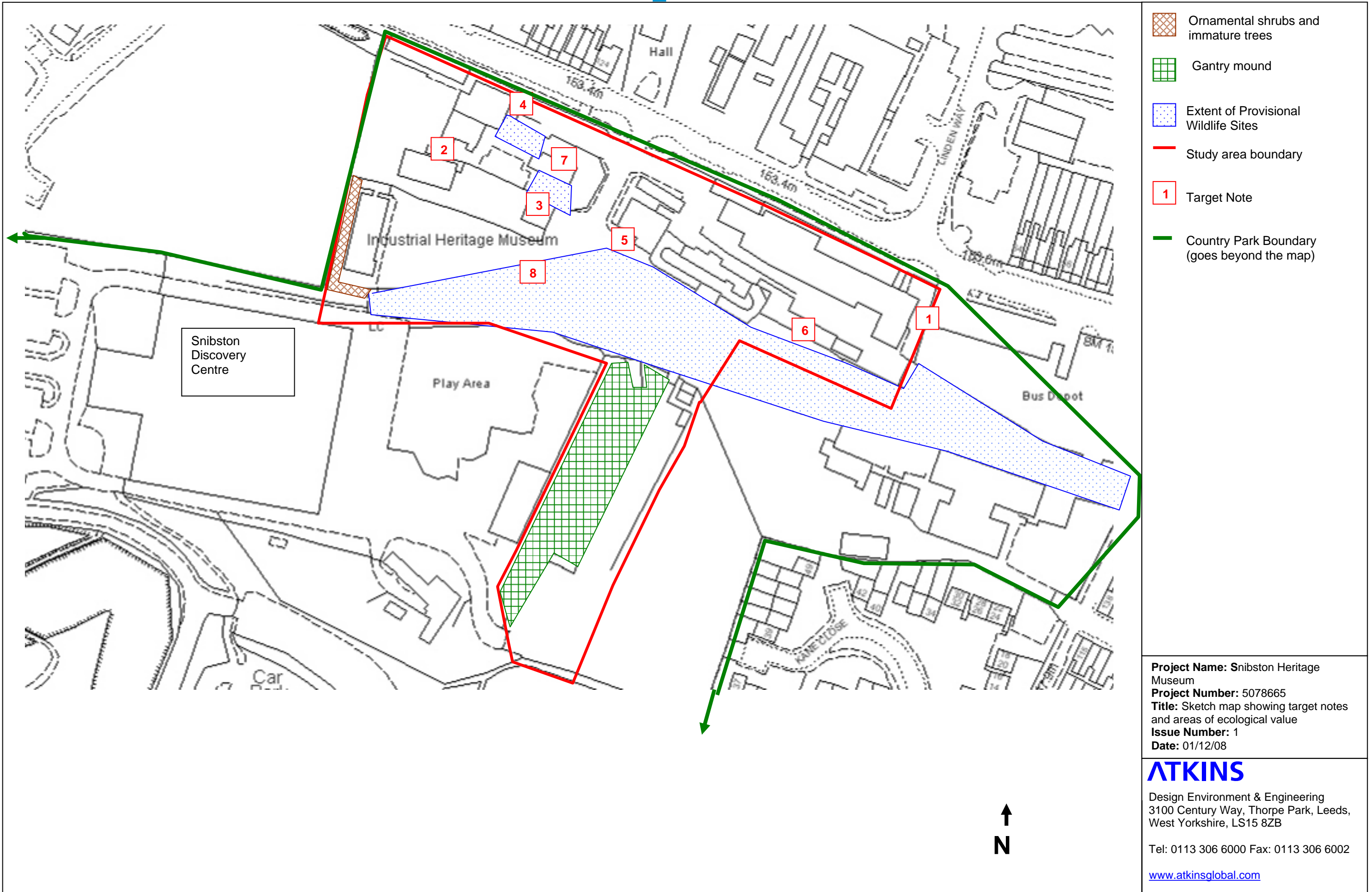
The site is located within a green corridor running between the two LNRs north and south of the study area. Any enhancement made to the site to provide or improve its value to wildlife will in turn consolidate the function of this corridor, for mobile species.







There is opportunity through minor management changes to the site that its value to wildlife could be enhanced. Any enhancement of the site for flora and fauna gives rise to opportunity for enhancement for visitors' experience through inclusion of the wildlife within the interpretation of the site, including visitor activities. This would offer the opportunity to widen the coverage of the curriculum topics for schools by inclusion of nature studies to complement the other topics offered currently by the Discovery Centre..

Appendix 1 – Sketch Map and Target Notes

Table 3: Target notes shown on sketch map (Sketch map in Appendix 1)

TN	Description
1	Garden area for office block, with mowed grass with daisy and dandelion, ivy and immature alder with <i>Mahonia</i> and other ornamental shrubs.
2	Building E, brick area under water tank with many crevices in brick and holes from two sides, good potential to be used by bats.
3	Three Weathered bat droppings found under open wooden vent leading into fan house, Building I. Also open side of stairwell leading to underground service shafts around the site. Both have good potential for use by bats.
4	Three storage areas, of Building D, under the main building and ramp to it, with open fronts with grills and machines inside, opportunity for use by bats.
5	Several holes in brickwork, on Building K, from old pipes could lead into wall. Medium potential for bats.
6	Three ventilation shafts wooden slats with their own slate roofs, of Building M. Verbal record (Country Park Ranger) of use of the west shaft by bats in the past.
7	Some potential entry points are present where the cables enter the building. Sarking under tiles provides potential roost location. Medium potential for bats.
8	Potential under tiles or between tiles and sarking in the roof. Medium potential for bats.



-  Ornamental shrubs and immature trees
-  Gantry mound
-  Extent of Provisional Wildlife Sites
-  Study area boundary
-  Target Note
-  Country Park Boundary (goes beyond the map)

Project Name: Snibston Heritage Museum
Project Number: 5078665
Title: Sketch map showing target notes and areas of ecological value
Issue Number: 1
Date: 01/12/08

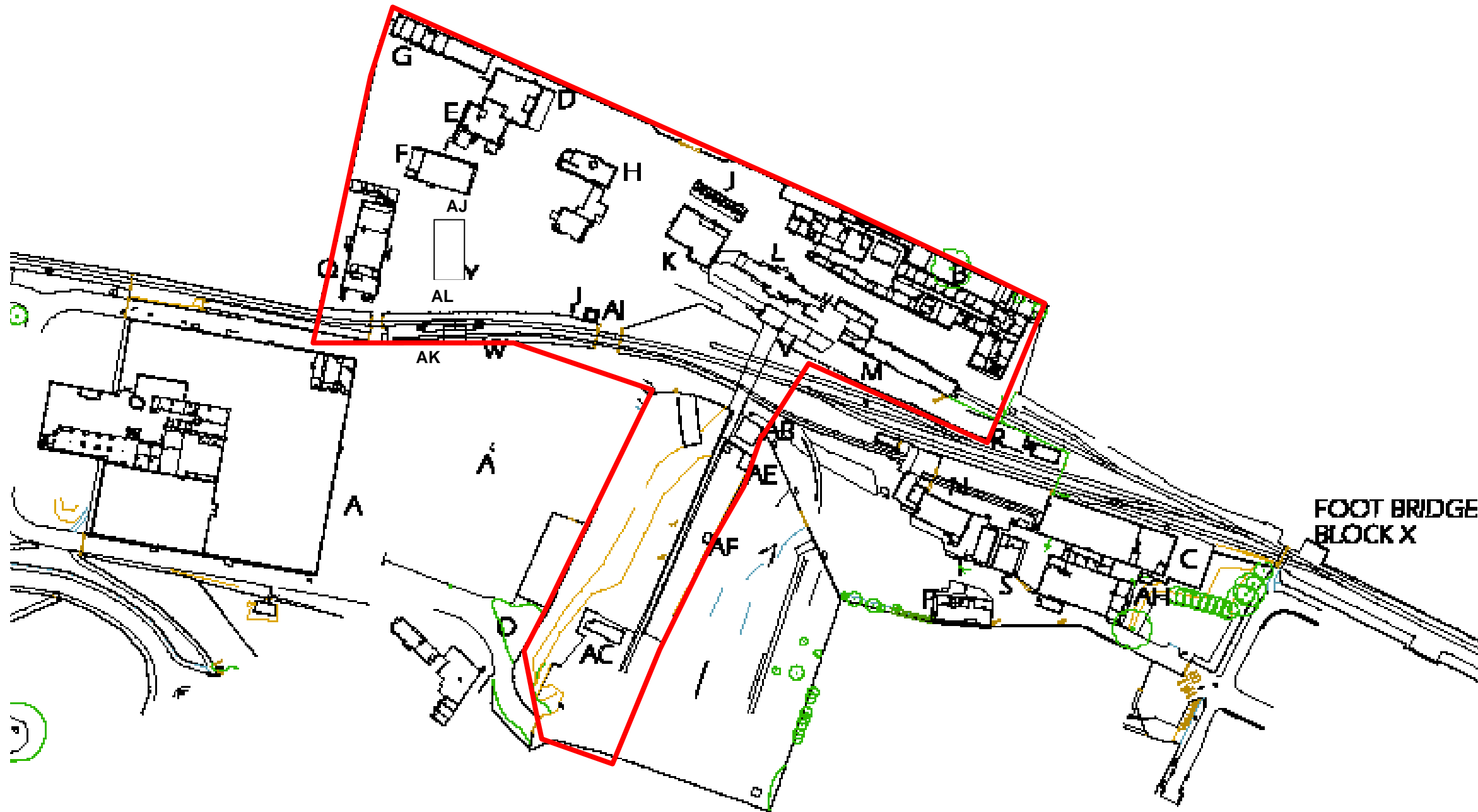
ATKINS

Design Environment & Engineering
 3100 Century Way, Thorpe Park, Leeds,
 West Yorkshire, LS15 8ZB

Tel: 0113 306 6000 Fax: 0113 306 6002

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Appendix 2 – Building Code Map



— Study site boundary

Project Name: Snibston Heritage Museum
Project Number: 5078665
Title: Building Code Map
Issue Number : 1
Date: 01/05/08

ATKINS

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Appendix 3 – Simplified Summary of Relevant Legislation

Species	Legislation (England & Wales)	Offences	Licensing procedures (England & Wales)
Bats European protected species	Conservation (Natural Habitats &c.) Regulations 1994 (as amended) Reg.39	Deliberately ¹ capture, injure or kill a bat; deliberately disturb ² a bat; or damage or destroy a breeding site or resting place used by a bat. The protection of bat roosts is considered to apply regardless of whether bats are present.	A NE licence in respect of development is required in England or licence from CCW in Wales. <ul style="list-style-type: none"> • <i>European Protected Species Guidance Note</i> (NE 2007) • <i>Bat Mitigation Guidelines</i> (English Nature 2004) • <i>Bat Workers Manual</i> (JNCC 2004)
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb ³ a bat in such a place.	Licence from NE or CCW is required for surveys (scientific purposes) that would involve disturbance of bats or entering a known or suspected roost site.
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb ³ a dormouse in such a place.	Licence issued for survey and conservation by Natural England or Countryside Council for Wales.

<p>Breeding birds</p>	<p>Wildlife and Countryside Act 1981 (as amended) S.1</p>	<p>Intentionally kill, injure or take any wild bird; intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; intentionally take or destroy the nest or eggs of any wild bird. Special penalties are liable for these offences involving birds on Schedule 1 (e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover). Intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species.</p>	<p>No licences are available to disturb any breeding birds in regard to development. Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development. General licences are available in respect of ‘pest species’ but only for certain very specific purposes e.g. public health, public safety, air safety.</p>
<p>Adder Common lizard Grass snake Slow worm</p>	<p>Wildlife and Countryside Act 1981 S.9(1) (part); S.9(5)</p>	<p>Intentionally kill or injure any common reptile species.</p>	<p>No licence is required in England or Wales. However an assessment for the potential of a site to support reptiles should be undertaken prior to any development works which have potential to affect these animals.</p>

¹Deliberate capture or killing is taken to include “accepting the possibility” of such capture or killing²Deliberate disturbance of animals of a European Protected Species (EPS) will constitute an offence under the Conservation Regulations if it is likely to significantly affect the ability of any significant group of animals of that species to survive, breed or rear or nurture their young, or affect the local distribution or abundance of the species.³Lower levels of disturbance, not covered by the Conservation Regulations, remain an offence under the Wildlife and Countryside Act, however a defence is available where such actions are the incidental result of a lawful activity.

Habitats & Species	Legislation (England & Wales)	Guidance
<p>Species and Habitats of Principal Importance for the Conservation of Biodiversity</p>	<p>Natural Environment & Rural Communities Act 2006 S.40 which repealed S.74 of the Countryside & Rights of Way Act 2000.</p>	<p>All government departments and public bodies including local authorities have a duty to have regard to conserving biodiversity including restoring or enhancing a population or habitat.</p> <p>These species and habitats of principal importance for conserving biodiversity are listed in Annex C of the joint Circular (ODPM Circular 6/2005 & Defra Circular 01/2005) accompanying <i>Planning Policy Statement 9: Biodiversity and Geological Conservation</i> (ODPM 2005).</p> <p>Ecological impact assessments should include an assessment of the likely impacts to these habitats and species.</p>
<p>Biodiversity Action Plan (BAP) Habitats & Species</p>	<p>No specific legislation.</p>	<p>There are many habitats and species which in decline throughout the UK. Those for which the decline is most serious, 'priority habitats' and 'priority species', are the subject of Habitat Actions Plans and Species Action Plans in the UK BAP and in local BAPs. The purpose of these plans is to guide conservation action for the species concerned.</p> <p>All government departments and public bodies including local authorities have a duty to have regard to conserving biodiversity, including restoring or enhancing a population or habitat, under S.40 Natural Environment & Rural Communities Act 2006.</p> <p>Ecological impact assessments should include an assessment of the likely impacts to these habitats and species.</p>

Leicestershire Environmental Resources Centre County Council

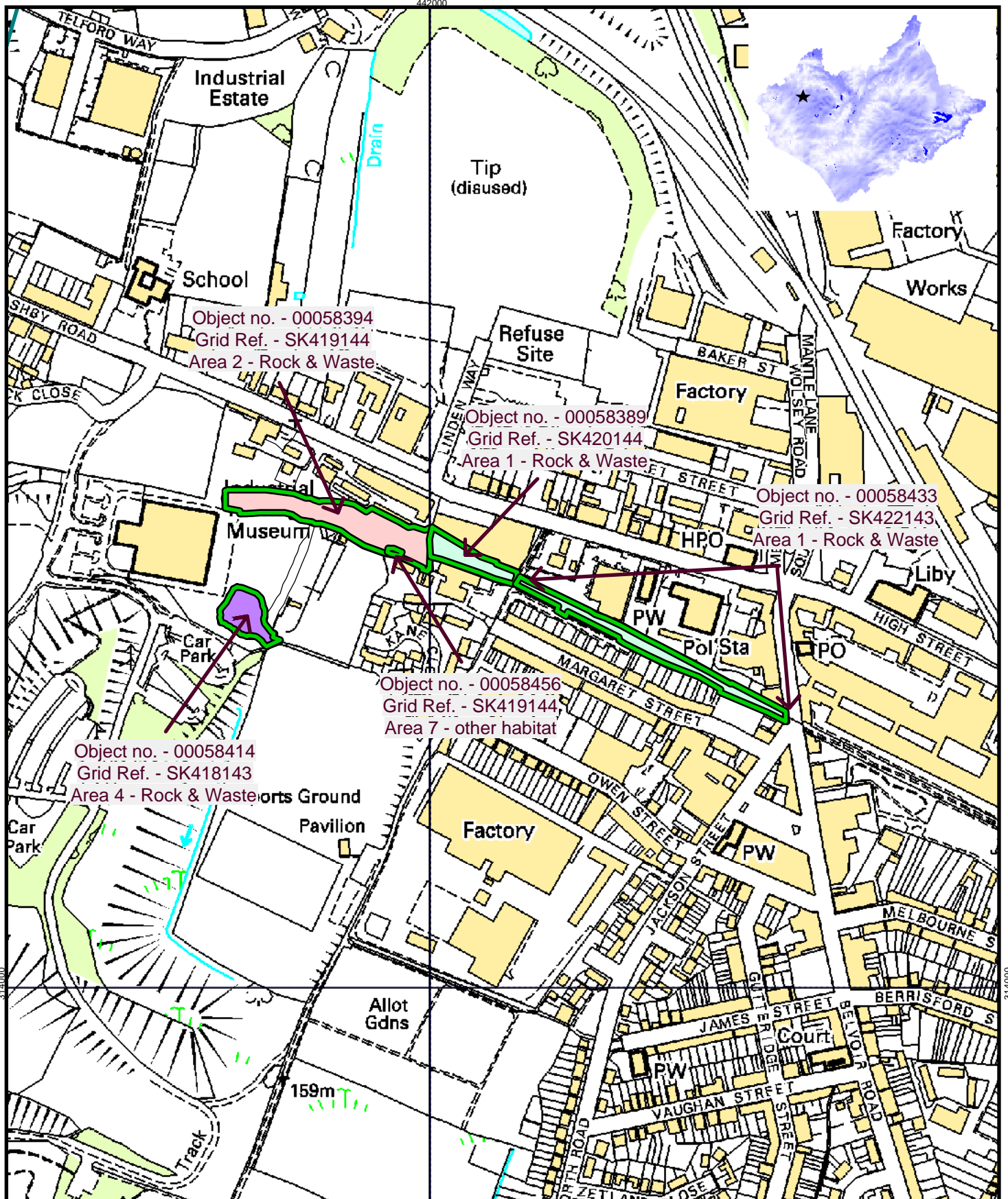
Holly Hayes, 216 Birstall Road, Birstall, Leicestershire LE4 4DG
Fax: 0116 267 7112 Tel 0116 267 0010/0008 (Switchboard 0000)

Snibston Discovery Park, Coalville

Ref no. - 58226

Leicestershire County Council. Licence number LA 100019271

Scale 1:5000



SNIBSTON WILDLIFE SURVEYS

A. FLETCHER, 1989 TO 2007.

Visits made -

- 20th October 1989. Casual visit to 'The Mound', a wasteland of exposed shales, grassed-over, with some concrete pipes bearing lichens. Only lichens were recorded.
- 25th March, 1991. Casual visit to the railway track crossing area beside the Admin. Block to below the Gantry. Only lichens and microfungi were recorded.
- 13th July 2006. The built-up areas, principally the entire railway track and parts adjacent to the museum buildings, including the Wheelwright's shop and 'Bennie'.
- 28th June 2007. All of the site, particularly from the car parks to the Nature Area, including the old Tip (The Mound). The survey concentrated on Plants that were indicative of quality habitat, so there was an emphasis on the scarcer species, the commoner species were often not noted. Some animals were noted in passing.

Further additions were made in casual visits during 2007.

Conclusions.

Considerable changes have occurred since 1989 when the site was being prepared for its current use as a museum and visitor centre. The tip has since been cleared, sown with grasses and planted with trees around its periphery. Much of the lowland area was initially rough ground with exposed shale and coal fragments.

The site offers a variety of habitats suitable for teaching ecological principles. Of particular interest is that it is a post-industrial site that has, in most places, become colonised naturally by wildlife. Some of these habitats are probably remnants of the pre-industrial landscape that existed before it became a mine.

Wildlife Value 2007 - Summary.

Woodland.

The site is maturing and the trees have developed into a closed canopy woodland. Some areas are rapidly developing a crustose lichen cover which is colonising as the air gets cleaner through reduced sulphur dioxide pollution (a consequence of clean-air acts from the 1960's). There is also little evidence of lichens indicating high levels of atmospheric ammonia which probably reflects the low usage in the general area of agricultural fertilizers, intensive animal husbandry and possibly low motor exhaust emissions. In short, it is a site subject to low atmospheric pollution, unlike much of the rest of Leicestershire where agriculture prevails.

None of the trees are old, the oldest are in the Grange area, probably planted in the Victorian era. They are largely uncolonised by lichens because their bark is still impregnated with pollutants. Only the youngest trees at Snibston are lichenized, particularly Ash and Rowan. Bats (protected species) are known in the Grange woodland.

The Grange area has a fungal flora but no scarce species have yet been recorded.

Scrubland.

Leicester, Leicestershire and Rutland Site name: Snibston Discovery Park Railway			Ref: 58226 Amended 2 41 SW 2 Amended MAF 24/11/2006 Amended JHM 13/3/2007
Notification of Site of Importance for Nature Conservation / Wildlife Site			<i>Local authority:</i> North west Leicestershire Coalville
<i>Grid ref.</i> See below.	<i>Date of original notification:</i>	<i>Date of present notification:</i> 25 October 2006	<i>Form completed by:</i> Anona Finch, Historic and Natural Environment Team
Areas of consideration used in notification <i>(sites only need to meet the criteria within one area of consideration, but tick all those met)</i>		Site area 1.17 ha	Landowner consulted? Yes
1	Habitat quality	Y	Main habitats: Rocks and built structures Early successional habitats
2	Habitat diversity	Y	
3	Presence of Red Data book species	Y	
4	Significant assemblages of species		
5	Use as a wildlife resource by communities		
Rationale for notification <i>(List reasons for ticking each of the above)</i>			
1. Habitat Quality			
Snibston Discovery Park Railway meets the primary criteria for selection as a Local Wildlife Site under Rocks and built structures . Area 1, (SK423142 to SK420144) and Area 4 at SK418143.			
Primary criteria: The exposure supports one of the indicator lichens from list C			
Indicator species <i>Cladonia pyxidata</i> is present in the office garden in Area 1.			
Indicator species <i>Cladonia macilenta</i> is present in the area around the 'Wheelwright's shop' Area 4.			
The grassland on the site only has 4 species from plant lists F, G, H and J, and does not meet the primary criteria. Dr Fletcher is concerned that the recorded lichens are fragile and that their habitat as a whole should be conserved, the grassland is therefore important in this context.			
Recommended review period 5 years			
Additional information:			
Site surveyed by Dr Anthony Fletcher, Leicestershire County Council Heritage Services 1991 and 13 July 2006. See Appendix 1 for species listed during 2006 survey.			
Full species list available from Collections and Database Officer, Leicestershire Environmental Resources Centre, Holly Hayes Environment and Heritage Centre, 216 Birstall Road, Birstall, Leicestershire LE4 4DG			

Leicester, Leicestershire and Rutland Site name: Snibston Discovery Park Railway	Ref: 58226 41 SW 2
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2. Habitat Diversity

Snibston Discovery Park Railway meets the criteria for selection as a Local Wildlife Site under Rocks and built structures.

Rocks and built structures: Primary criteria met (see above)
Early Successional Habitats: Secondary criteria met (see below).

Early Successional Habitats

The site contains scattered areas totalling over 200m² of bare ground on nutrient poor substrate and contains at least 3 species from list B. **Area 1** has three species from list B: Early hair-grass, *Aira praecox*; wild mignonette, *Reseda lutea*; and mullein, *Verbascum* sp., not identified to species level.

3. Presence of Red Databook species

The following species is listed in the Leicestershire and Rutland (Vice County 55) Rare Plant Register 3rd edition, compiled by Michael Jeeves January 2005.

Area 1, (SK423142 to SK420144) Meadow thistle (*Cirsium dissectum*) was recorded in Area 1 the railway track, east from admin offices to the level crossing in Coalville town.

Area 2 (SK 420144 to SK418144)

The following species of lichen are listed in 'Leicestershire Biodiversity Action Plan, An Inventory of Key Species in Leicestershire and Rutland pages 57-63'.

Phaeospora parasitica
Taeniolella scripta (now known as *Taeniolina scripta*).

The following species have been discovered and identified as rare lichens since the above publication was produced.

Monodictys lepraria
Thelocarpon epibodum

Area 7 (SK419144)

Listed in 'An Inventory of key species in Leicestershire and Rutland pages 57-63'.

Cladonia portentosa Present on wooden pit props.

Appendix 1

Only areas (sites) 1, 2, 4 and 7 meet Local Wildlife Sites criteria.

Snibston Wildlife 13th July 2006

- Site 1 Railway track, east from admin offices / level crossing
 Site 2 Railway track, west from admin offices / level crossing
 Site 2b Below the winding gear wheel
 Site 2c ditto
 Site 3 Hedge south from gantry
 Site 4 Wheelrights shop area
 Site 5 Ironstone rocks beside Bennie, entrance to main museum building
 Site 6 Railway west from main entrance
 Site 7 Pine timber props in trucks

<i>SPECIES</i>	<i>SITE</i>	<i>Notes</i>
2 spot ladybird	1 rail track	
5 spot burnet moth	6	
Aira praecox	1 rail track	Hot sandy heathland grass, scarce
Arrhenatherum elatius	1 widespread	
Ash	1 rail track, hedges	
Aspen	3	
Greater Bindweed	Widespread	
Birch	1 rail track	
Black medick	1	
Brachythecium velutinum	1	Ground moss
Broad leaved dock	1 rail track	
Buddleia	1 rail track	
Bush vetch	1 rail track, 6	
Caloplaca arcis	1 stone	Lichen
Caloplaca citrina	3 cement wall	Lichen
Caloplaca flavocitrina	3, 5 ironstone rocks beside 'Bennie'	Lichen
Caloplaca holocarpa	3 cement wall	Lichen
Catillaria chalybeia	1 stone	Lichen
Centaury	1	Sand dune and quarry species
Ceratodon purpureus	6	Moss, fire sites
Cetraria chlorophylla	7 Pine pit props	Lichen, scarce, acid bark
Cladonia macilenta	7 Pine pit props	Lichen
Cladonia chlorophaea	5 ironstone rocks beside 'Bennie'	Lichen
Cladonia furcata	7 Pine pit props	Lichen
Cladonia macilenta	4 on wood	Lichen
Cladonia portentosa	7 Pine pit props	<i>Lichen, RED DATA BOOK</i>
Cladonia pyxidata	1 Office 'garden	lichen
Cocksfoot	1,4 rail track	
Cotoneaster sp.	1 rail track	
Creeping cinquefoil	1 rail track	
Crested dogtail	4	Grass, ancient grassland indicator
Dacrymyces stillatus	7 Pine pit props	fungus
Daisy	1	
Common dandelion (Taraxacum officinale)	1	
Dogwood	1, 3 rail track, hedges	
Elder	3 hedges	

Epilobium hirsutum	1 rail track	
Epilobium montanum	1 rail track, widespread	
Equisetum arvensis	1 rail track	horsetail
Eurynchium sp.	1	Moss, ground cover
Evening primrose	1 rail track	
Festuca rubra	1	Grass, ancient grassland indicator
Feverfew	1 Office 'garden	
Field bindweed	1 rail track	
Field Poppy	2b	
Field rose	3, 4	
Fireweed	6	
Gatekeeper butterfly	1 rail track	
Goat willow	1, 3 rail track, hedges	
Goatsbeard	4	Scarce
Grasshopper	1	
Great Skipper butterfly	1 rail track	
Great willowherb	1	
Guelder rose	3 hedge	
Harts tongue fern	2b	Fern, scarce
Hawthorn	1, 3 rail track, hedges	
Hazel	1 rail track hedge	
Hedge mustard	2b	
Holcus lanatus	1 rail track	
Hypnum cupressiforme	1	Moss, ground cover
Hypochoeris radicata	4	Old grassland species
Hypogymnia physodes	7 Pine pit props	Lichen, acid bark
Hypogymnia tubulosa	7 Pine pit props	Lichen, acid bark
Ivy	1 Office 'garden	
Large White butterfly	1	
Lecanora muralis	1, 5 ironstone rocks beside 'Bennie', widespread	lichen
Lecanora polytrypa	1 stone	lichen
Lecidella stigmataea	1 stone	lichen
Leontodon taraxacoides	4	Old grassland
Lolium perenne	6	
Lotus corniculatus	1, 2b, 4,6	Old grassland indicator
Lucerne	6	
Male fern	2b	
Meadow Brown butterfly	1 rail track	
Meadow cranesbill	4	
Meadow thistle	1	
Micarea denigrata	7 Pine pit props	lichen
Mignonette	1	
Mugwort	1	
Mullein	1 rail track	
Nettle	4	
Nipplewort	1 rail track	
Oxeye daisy	2b, 4 rail tracks	Old grassland indicator
Parmelia revoluta	7 Pine pit props	Lichen
Parmelia sulcata	7 Pine pit props	Lichen
Pendulous birch	4	
Pineappleweed	2b, widespread	
Placynthiella icmalea	7 Pine pit props	Lichen
Poa annua	4	
Prickly sowthistle	1	
Pubescent birch	3	
Purple loosestrife	1 rail track	Scarce
Ragwort	1	

58226 Snibston Discovery Park Railway, Coalville 41 SW 2

Red admiral butterfly	1 rail track	
Red clover	4,6	Old grassland indicator
Redcurrant	3	
Red dead nettle	1	
Reseda luteola	2b rail tracks	
Rhytiadelphus squarrosus	4	Moss, Old grassland indicator
Ribwort Plantain	1, 6	Old grassland indicator
Rowan	2b	
Rubus fruticosus	1	
Scentless mayweed	1	
Sedum spurium	6	
Self heal	1	
Small tortoiseshell Butterfly	1 rail track	
Smooth tare	4	
Snowberry	3 hedge	
Soft Brome	1 rail track	
Southern Hawker dragonfly	1 rail track	
Taraxacum erythrospermum agg.	1 Office 'garden	
Thrip	1 rail track	
Tormentil	6	Heathland species
Tortula muralis	1,5 ironstone rocks beside 'Bennie'	moss
Trapelia coarctata	5 ironstone rocks beside 'Bennie'	Lichen
Trapeliopsis flexuosa	7 Pine pit props	Lichen
Trapeliopsis granulosa	7 Pine pit props	Lichen
Usnea hirta	7 Pine pit props	Lichen
White clover	1 Office 'garden, rail track, widespread	
Wild lettuce	1	
Woody nightshade	1 rail track	

Red Data book species = 1
 Old grassland indicators = 6
 Old grassland mosses = 1

Dr A. Fletcher
 Keeper Natural Life
 Leicestershire County Council
 Museums Service
 /sites/snibston wildlife 13-7-06

This is well developed along the E side of the tip. This area is a good haunt for small birds. It also exists on the west side but is much interplanted with trees and is less inhabited by birds.

Grassland.

- (1) Short grassland exists along the entire railway track, the car parks and the Wheelwright's workshop. This is largely maintained by rabbit grazing and human trampling, but some seasonal strimming has recently been introduced. Many species characteristic of old grassland are here, probably originating in the flora that existed before the site became a coal mine. Ie, they are relics of the pre-industrial landscape.

The chief interest lies in the spring and early summer plants and their associated insect life. Four micro-fungi occur in places and are the only known records for Leicestershire & Rutland. These areas need to be protected and, especially, use of herbicides must be avoided.

One Red Data Book lichen occurs on pine logs in a rail truck opposite the Administration block.

- (2) Long grassland is abundant throughout the site but is becoming invaded by scrub. Long grassland is the habitat for the Barn Owl, a declining and Biodiversity Action Plan species. Much of this habitat appears to have been seeded and includes nitrogen-enhancing plants such as Tares and other legumes. There are pockets of heathland and old grassland species but as the long grass deters rabbits it remains ungrazed. It is also unmowed for much of the year.

As this ground is naturally well-leached and tends towards acidity, it could be a candidate for heathland re-creation, as has been done at Beacon Hill. Heathland is a Biodiversity Action Plan (BAP) priority habitat. As coal tips often develop heathland naturally, scarifying and seeding with Heather cuttings could be a cheap and attractive method for recreating it here.

- (3) A meadow has been created in the nature area and another nearby, and contain native meadow plants. Both have introduced species. Most notable are two orchids, one of which is difficult to identify. Both areas have rather thick soils and will tend to become scrubbed over without intervention.

Wetland.

- (1) The Nature area has a small pond and marsh with introduced orchids and some other interesting plants (Yellow and Purple Loosestrife).
- (2) The carp ponds have abundant emergent vegetation, especially the scarce Flowering Rush.
- (3) The Osier beds have further grassland plants including Yellow Rattle. This area seems to be periodically inundated, like a natural flood meadow.

Rare and Noteworthy Species

Leics Red Data book species - Lichens	<i>Cladonia portentosa</i>
	<i>Thelocarpon epibolum</i>
Leics Red Data book species - Fungi	<i>Monodictys</i> sp.
	<i>Phaeospora parasitica</i>

	<i>Taeniolina scripta</i>
Old grassland indicators	Red Fescue,
	Crested Dogstail
	Oxeye Daisy
	Ribwort Plantain
	Red clover,
	Bird's foot trefoil
	Meadow Thistle
Old grassland mosses	<i>Rhytidiadelphus squarrosus</i>

Surveys from 1989-2007.

A survey of The Grange area was made by Leicestershire Museums staff in the late 1980's prior to establishment of the Nature Trail. A copy may be in the Site Records at Holly Hayes.

Snibston Wildlife Survey 20th October 1989.

Mound top, 20 October 1989, mostly on concrete pipes

1. Flat, consolidated shale beside path, facing south, SK417144,
2. East facing grassy slope with some rabbit excavations and exposed soil, on shale. Becoming invaded with Hawthorn and Broom.
3. Top of the tip, no lichens, being bulldozed.
4. Concrete sewer pipe, 5 ft diam., sunny exposed location on hill top among bramble.

Species		Habitat	Notes
Lichen	<i>Cladonia pyxidata</i>	1	All common species
Lichen	<i>Verrucaria muralis</i>	2	
Lichen	<i>Verrucaria nigrescens</i>	2	
Lichen	<i>Candelariella aurella</i>	4	
Lichen	<i>Candelariella medians</i>	4	
Lichen	<i>Caloplaca flavescens</i>	4	
Lichen	<i>Caloplaca saxicola</i>	4	
Lichen	<i>Caloplaca decipiens</i>	4	
Lichen	<i>Lecanora dispersa</i>	4	
Lichen	<i>Phaeophyscia orbicularis</i>	4	
Lichen	<i>Phaeophyscia nigricans</i>	4	
Lichen	<i>Lecania erysibe</i>	4	
Lichen	<i>Lecania turicensis</i>	4	
Lichen	<i>Physcia adscendens</i>	4	
Lichen	<i>Lecidella stigmatea</i>	4	
Lichen	<i>Physcia caesia</i>	4	
Lichen	<i>Protoblastenia rupestris</i>	4	
Lichen	<i>Physcia tenella</i>	4	

25th March, 1991. Casual visit to railway track crossing area beside Admin. Block to below the Gantry. Only lichens and microfungi recorded. Rare species were found on wood chips littering the ballast between the railway lines and wooden sleepers.

Species		Habitat	Notes
Lichen	<i>Monodictys</i> sp.	wood chips	NEW county record
Lichen	<i>Taeniolina scripta</i>	wood chips	NEW county record
Lichen	<i>Thelocarpon epibolum</i>	wood chips	NEW county record
Fungus	<i>Phaeospora parasitica</i>	Parasitic on <i>Lecanora dispersa</i>	NEW county record
Fungus	<i>Athelia arachnoidea</i>	Parsite on <i>Lecanora conizaeoides</i>	
Lichen	<i>Candelariella vitellina</i>	Stones	
Lichen	<i>Cladonia chlorophaea</i>	Soil between stones	
Lichen	<i>Peltigera didactyla</i>	Soil between stones	Not refound 2006
Lichen	<i>Lecanora conizaeoides</i>	Wood sleepers	Not refound 2006 and 2007. Becoming rare due to decline in SO ₂ air pollution
Lichen	<i>Lecanora dispersa</i>	Stones	
Lichen	<i>Lecanora muralis</i>	Stones	
Lichen	<i>Lepraria incana</i>	Stones	
Lichen	<i>Micarea denigrata</i>	On wood chips	
Lichen	<i>Placynthiella icmalea</i>	Wood chips	
Lichen	<i>Trapelia coarctata</i>	Stones	
Lichen	<i>Trapeliopsis granulosa</i>	Stones	
Lichen	<i>Verrucaria dolosa</i>	Stones	
Lichen	<i>Verrucaria muralis</i>	Stones	
Lichen	<i>Verrucaria nigrescens</i>	Stones	

Snibston Wildlife Survey 13th July 2006. The built-up areas, principally the entire railway track and parts adjacent to the museum buildings, including the Wheelwright's shop and Bennie.

Site 1 Railway track, east from admin offices / level crossing

Species	Name	Locality	Notes
Cocksfoot	<i>Dactylis glomerata</i>	rail track	
Bush vetch	<i>Vicia cracca</i>	rail track	
Hedge Bindweed	<i>Calystegia sepium</i>		widespread
False oat grass	<i>Arrhenatherum elatius</i>		widespread
Early hair grass	<i>Aira praecox</i>	rail track	Hot sandy heathland grass, scarce
Ash	<i>Fraxinus excelsior</i>	rail track, hedges	
Birch	<i>Betula pendula</i>	rail track	
Black medick	<i>Medicago sativa</i>		
Broad leaved dock	<i>Rumex obtusifolius</i>	rail track	
Buddleia	<i>Buddleia davidii</i>	rail track	
Centaury	<i>Centaurea erythraea</i>		Sand dune and quarry species
Common dandelion	<i>Taraxacum 'officinale'</i>		
Cotoneaster	<i>Cotoneaster</i> sp.	rail track	
Creeping cinquefoil	<i>Potentilla reptans</i>	rail track	
Daisy	<i>Bellis perennis</i>		
Great Willowherb	<i>Epilobium hirsutum</i>	rail track	
Broad leaved willowherb	<i>Epilobium montanum</i>	rail track, widespread	
Field horsetail	<i>Equisetum arvensis</i>	rail track	horsetail
Evening primrose	<i>Oenothera biennis</i>	rail track	
Red fescue	<i>Festuca rubra</i>		Grass, ancient grassland indicator
Feverfew	<i>Tanacetum parthenium</i>	Office 'garden	
Field bindweed	<i>Convolvulus arvensis</i>	rail track	
Great willowherb	<i>Epilobium hirsutum</i>		
Hare's foot clover	<i>Trifolium arvense</i>		seen 2007

Hazel	<i>Corylus avellana</i>	rail track hedge	
Yorkshire fog (grass)	<i>Holcus lanatus</i>	rail track	
Ivy	<i>Hedera helix</i>	Office 'garden	
Meadow thistle	<i>Cirsium dissectum</i>		
Mignonette	<i>Reseda lutea</i>		
Mugwort	<i>Artemisia vulgaris</i>		
Mullein	<i>Verbascum thapsus</i>	rail track	
Nipplewort	<i>Lapsana commune</i>	rail track	
Prickly sowthistle	<i>Sonchus asper</i>		
Purple toadflax	<i>Linaria purpurea</i>	rail track	Scarce
Ragwort	<i>Senecio jacobaea</i>		
Red dead nettle	<i>Lamium purpureum</i>		
Bramble	<i>Rubus fruticosus aggr.</i>		
Scentless mayweed	<i>Tripleuropermum inodorum</i>		
Self heal	<i>Prunella vulgaris</i>		
Soft Brome	<i>Bromus hordeaceus</i>	rail track	
Dandelion	<i>Taraxacum erythrospermum aggr.</i>	Admin. Block 'garden'	
White clover	<i>Trifolium repens</i>	Office 'garden, rail track,	widespread
Wild lettuce	<i>Lactuca virosa</i>		
Woody nightshade	<i>Solanum dulcamara</i>	rail track	
Lichen	<i>Caloplaca arcis</i>	stone	first described 2006
Lichen	<i>Catillaria chalybeia</i>	stone	
Lichen	<i>Lecanora muralis</i>	ironstone rocks beside 'Bennie',	widespread
Lichen	<i>Cladonia pyxidata</i>	Office 'garden'	
Lichen	<i>Lecanora polytropha</i>	stone	
Lichen	<i>Lecidella stigmatea</i>	stone	
Moss	<i>Tortula muralis</i>	ironstone rocks beside 'Bennie'	
Moss	<i>Brachythecium velutinum</i>		Ground cover
Moss	<i>Eurynchium</i> sp.		ground cover
Moss	<i>Hypnum cupressiforme</i>		ground cover
Butterfly	Gatekeeper	rail track	
Grasshopper		Rail track	
Butterfly	Great Skipper	rail track	
Butterfly	Large White	Rail track	
Butterfly	Meadow Brown	rail track	
Butterfly	Red admiral	rail track	
Butterfly	Small tortoiseshell	rail track	
Dragonfly	Southern Hawker	rail track	
Thrip		rail track	
2 spot ladybird			

Site 2 Railway track, west from admin offices / level crossing

Site 2b Below the winding gear wheel

Site 2c ditto

Species		Habitat	Notes
Oxeye daisy	<i>Leucanthemum vulgare</i>	2b rail tracks	Old grassland indicator
Common poppy	<i>Papaver rhoeas</i>	2b	
Harts tongue fern	<i>Phyllitis scolopodendron</i>	2b	Fern, scarce
Hedge mustard	<i>Sisymbrium officinale</i>	2b	
Male fern	<i>Dryopteris filix-mas</i>	2b	

Pineappleweed	<i>Matricaria matricarioides</i>	2b Widespread	
Weld	<i>Reseda luteola</i>	2b rail tracks	
Bird's foot trefoil	<i>Lotus corniculatus</i>	2b	Old grassland indicator
Rowan	<i>Sorbus aucuparia</i>	2b	
Lichen	<i>Caloplaca crenulatella</i>	2b on flat concrete	

Site 3. Hedge south from gantry

Species		Habitat	Notes
Aspen	<i>Populus tremula</i>		
Elder	<i>Sambucus niger</i>	hedges	
Guelder rose	<i>Viburnum opulus</i>	hedge	
Pubescent birch	<i>Betula pubescens</i>		
Redcurrant	<i>Ribes rubrum</i>		
Dogwood	<i>Cornus sanguinea</i>	rail track, hedges	
Goat sallow	<i>Salix caprea</i>	rail track, hedges	
Hawthorn	<i>Crataegus monogyna</i>	rail track, hedges	
Snowberry	<i>Symphoricarpus</i>	hedge	
Field rose	<i>Rosa arvensis</i>	hedge	
Lichen	<i>Caloplaca flavocitrina</i>		
lichen	<i>Cladonia macilenta</i>	on wood	
Lichen	<i>Caloplaca citrina</i>	cement wall	
Lichen	<i>Caloplaca holocarpa</i>	cement wall	

Site 4 Wheelright's shop area

Species		Habitat	Notes
Oxeye daisy	<i>Leucanthemum vulgare</i>	rail tracks	Old grassland indicator
Crested dogstail	<i>Cynosurus cristatus</i>		Grass, ancient grassland indicator
Dogwood	<i>Cornus sanguinea</i>	rail track, hedges	
Goat sallow	<i>Salix caprea</i>	rail track, hedges	
Goatsbeard	<i>Tragopogon pratensis</i>		Scarce
Hawthorn	<i>Crataegus monogyna</i>	rail track, hedges	
Cat's ear	<i>Hypochaeris radicata</i>		Old grassland species
Meadow cranesbill	<i>Geranium pratense</i>		
Nettle	<i>Urtica dioica</i>		
Pendulous birch	<i>Betula pendula</i>		
Cocksfoot	<i>Dactylis glomerata</i>		
Annual meadow grass	<i>Poa annua</i> /		
Field rose	<i>Rosa arvensis</i>		
Smooth tare	<i>Vicia tetrasperma</i>		
Red clover	<i>Trifolium pratense</i>		Old grassland indicator
Bird's foot trefoil	<i>Lotus corniculatus</i>		Old grassland indicator
Moss	<i>Rhytidiadelphus squarrosus</i>		Old grassland indicator

Site 5 Ironstone rocks beside Bennie, entrance to main museum building

Species		Habitat	Notes
Cocksfoot	<i>Dactylis glomerata</i>	rail track	
Lichen	<i>Trapelia coarctata</i>	ironstone rocks beside 'Bennie'	
Lichen	<i>Cladonia chlorophaea</i>	ironstone rocks beside	

		'Bennie'	
Lichen	<i>Lecanora muralis</i>	ironstone rocks beside 'Bennie',	Widespread on site
Lichen	<i>Lepraria incana</i>		
Lichen	<i>Caloplaca flavocitrina</i>	ironstone rocks beside 'Bennie'	
Moss	<i>Tortula muralis</i>	ironstone rocks beside 'Bennie'	

Site 6 Railway west from main entrance

Species		Habitat	Notes
Bush vetch	<i>Vicia cracca</i>	rail track	
Rosebay willowherb	<i>Chamerion angustifolium</i>		
Perennial ryegrass	<i>Lolium perenne</i>		
Lucerne	<i>Medicago sativa</i>		
Oxeye daisy	<i>Leucanthemum vulgare</i>	rail tracks	Old grassland indicator
Caucasian stonecrop	<i>Sedum spurium</i>		
Tormentil	<i>Potentilla erecta</i>		Heathland species
Ribwort Plantain	<i>Plantago lanceolata</i>		Old grassland indicator
Red clover	<i>Trifolium pratense</i>		Old grassland indicator
Bird's foot trefoil	<i>Lotus corniculatus</i>		Old grassland indicator
Lichen	<i>Lecanora muralis</i>	ironstone rocks beside 'Bennie',	widespread
Lichen	<i>Tortula muralis</i>	ironstone rocks beside 'Bennie'	
Moss	<i>Ceratodon purpureus</i>		Moss, fire sites
Moth	5 spot burnet		

Site 7 Pine timber props in trucks

Species		Habitat	Notes
Field rose	<i>Rosa arvensis</i>		
Ribwort Plantain	<i>Plantago lanceolata</i>		Old grassland indicator
Red clover	<i>Trifolium pratense</i>		Old grassland indicator
Bird's foot trefoil	<i>Lotus corniculatus</i>		Old grassland indicator
lichen	<i>Cetraria chlorophylla</i>	Pine pit props	scarce, acid bark
Lichen	<i>Caloplaca flavocitrina</i>		
Lichen	<i>Cladonia macilenta</i>	Pine pit props	
Lichen	<i>Cladonia furcata</i>	Pine pit props	
Lichen	<i>Cladonia portentosa</i>	Pine pit props	RED DATA BOOK
Fungus	<i>Dacrymyces stillatus</i>	Pine pit props	
Lichen	<i>Hypogymnia physodes</i>	Pine pit props	acid bark
Lichen	<i>Hypogymnia tubulosa</i>	Pine pit props	acid bark
Lichen	<i>Micarea denigrata</i>	Pine pit props	
Lichen	<i>Parmelia revoluta</i>	Pine pit props	
Lichen	<i>Parmelia sulcata</i>	Pine pit props	
Lichen	<i>Placynthiella icmalea</i>	Pine pit props	
Lichen	<i>Trapeliopsis flexuosa</i>	Pine pit props	
Lichen	<i>Trapeliopsis granulosa</i>	Pine pit props	
Lichen	<i>Usnea hirta</i>	Pine pit props	

Suibston Wildlife Survey. 28th June 2007

Sites are numbered on the map.

The survey focusses on plants, particularly those with rarity or habitat indicator value. Many common species will have been missed out. More species will certainly be found if revisited.

Areas West of The Mound, the Blue Car Park and events arena were not covered.

The railway tracks and areas E of the museum were surveyed in Sept. 2006.

Noteworthy species are in bold.

1. **Railway trackside.** Very thin, well-lit, stony soil between sleepers and rails, with abundant wood chippings. Plant cover sparse, in patches among stones. Three are important indicators of old grassland. This area contains four rare fungi, cited in the Leicestershire Red Data Book. It has been designated a Nature Conservation Site. The only management required is strimming to keep it tidy in late summer after the plants have dispersed seeds. Herbicides should not be used.

Species		Site	Notes
Centaury	<i>Centaurea erythraea</i>		Usually on quarry floors, calcareous rocks, in the wild, on sand dunes and chalk/limestone grassland.
Oxeye daisy	<i>Leucanthemum vulgare</i>		Indicator of old grassland
Red Clover	<i>Trifolium pratense</i>		Indicator of old grassland
Birdsfoot trefoil	<i>Lotus corniculatus</i>		Indicator of old grassland
Self heal	<i>Prunella vulgaris</i>		Old grassland, especially very short, Rabbit-grazed turf
Soft brome	<i>Bromus hordeaceus</i>		
Common poppy	<i>Papaver rhoeas</i>		
Field Forget me not	<i>Myosotis arvensis</i>		
Rosebay willowherb	<i>Chamerion angustifolium</i>		
Bramble	<i>Rubus fruticosus</i> aggr.		
Evening primrose	<i>Oenante biennis</i>		
Strawberry	<i>Fragaria vesca</i>		
Butterfly	Meadow Brown		
Moth	Cinnabar		

3. **Brickwork buildings** area with plants on soil-covered roofs and in crevices in concrete. The plants have impressively colonised the entire area and are covering the roofs. Numerous mosses are also on concrete. Ferns are in crevices in shade.

Species		Habitat	Notes
Biting stonecrop	<i>Sedum acre</i>		
Male fern	<i>Dryopteris filix-mas</i>		
Harts tongue fern	<i>Phyllitis scolopodendron</i>		
Lichens	<i>Cladonia pocillum</i>		
	<i>Collema crispum</i>		
	<i>Caloplaca crenulatella</i>		Scarce, recently discovered sp.

4. **Wheelwright's workshop.** Grassland within the fenced area. Very sheltered by hedges on E and S, open to W. Plants are well-grown and abundant, in a thick sward. Management requires strimming in late summer.

Species		Habitat	Notes
Oxeye daisy	<i>Leucanthemum vulgare</i>		Indicator of old grassland
Birds foot trefoil	<i>Lotus corniculatus</i>		Indicator of old grassland, especially short-grazed
Red clover	<i>Trifolium pratense</i>		Indicator of old grassland
Crested dogstail	<i>Cynosurus cristatus</i>		A grass, indicator of old grassland
Field rose	<i>Rosa arvensis</i>		
Birch	<i>Betula pubescens</i>		
Bramble	<i>Rubus fruticosus aggr.</i>		
Ragwort	<i>Senecio jacobaea</i>		
White clover	<i>Trifolium repens</i>		
Broad leaved dock	<i>Rumex obtusifolius</i>		
Black medick	<i>Medicago sativa</i>		
Guelder rose	<i>Viburnum opulus</i>		
Groundsel	<i>Senecio vulgaris</i>		
Bush vetch	<i>Vicia cracca</i>		
Yorkshire fog	<i>Holcus lanatus</i>		
False oat grass	<i>Arrhenatherum elatius</i>		
Annual meadow grass	<i>Poa annua</i>		
Rough meadow grass	<i>Poa trivialis</i>		
Cocksfoot	<i>Dactylis glomerata</i>		
Lichens	<i>Cladonia subulata</i>		(on wood)
Butterfly	Meadow Brown		

5. **Bennie** – the mechanical shovel area. Sandstone rocks with bird perches, lawned below. The rock is naturally nutrient-poor and the rock lichens, all common, are encouraged by nutrients from bird droppings. The grass is close-mowed, resembling rabbit turf. It appears to have been seeded and the habitat is very young.

Species		Habitat	Notes
Self heal	<i>Prunella vulgaris</i>		Indicator of short-grazed, old grassland
Black medick	<i>Medicago sativa</i>		
White clover	<i>Trifolium repens</i>		
Oxeye daisy	<i>Leucanthemum vulgare</i>		Indicator of old grassland
Lichens:	<i>Cladonia chlorophaea</i>		
	<i>Candelariella vitellina</i>		
	<i>Lecanora muralis</i>		
	<i>Lecanora dispersa</i>		
	<i>Lecanora albescens</i>		
	<i>Lecidella stigmatea</i>		
	<i>Porpidia crustulata</i>		
	<i>Xanthoria parietina</i>		
Mosses:	<i>Tortula muralis</i>		
Birds	Indet.		An unknown large species uses the rock for perching, its droppings contain cherry stones.

6. **Path to red car park.** Bordered by mature hedge on N side, of mixed planting, lawned and path to S.

Species		Habitat	Notes
Strawberry	<i>Fragaria vesca</i>		
Elder	<i>Sambucus nigra</i>		
Field maple	<i>Acer campestre</i>		
Bramble	<i>Rubus fruticosus</i>		
Dogwood	<i>Cornus sanguinea</i>		
Catsear	<i>Hypochaeris radicata</i>		
Groundsel	<i>Senecio vulgaris</i>		
Apple	<i>Malus domestica</i>		
Field rose	<i>Rosa arvensis</i>		
White clover	<i>Trifolium repens</i>		

7. **Red Car Park** – (a) lowest tier. Open, stony ground with hedge planting on all sides. Recently mowed, sheltered, with very thin vegetation with open community. These car parks can be cheaply maintained by encouraging occasional car parking in the summer period which would allow seed to be distributed and the ground cover to be kept open by human trampling.

Species		Habitat	Notes
Cut leaved cranesbill	<i>Geranium dissectum</i>	a. lowest tier	Scarce grassland plant and hedge borders
Ribwort plantain	<i>Plantago lanceolata</i>	a. lowest tier	Indicator of old grassland
Self heal	<i>Prunella vulgaris</i>	a. lowest tier	Indicator of old grassland
Lady's mantle	<i>Alchemilla spp.</i>	a. lowest tier	Scarce in Leics
Centaury	<i>Centaurea erythraea</i>	a. lowest tier	Usually on quarry floors, calcareous rocks, in the wild, on sand dunes and chalk/limestone grassland.
Early hair grass	<i>Aira praecox</i>	a. lowest tier	An early-flowering grass of quarries and rock outcrops, on thin, hot soil. Recently added to the Leics. Red Data List
Goat sallow	<i>Salix caprea</i>	a. lowest tier	
Ragwort	<i>Senecio jacobaea</i>	a. lowest tier	
Yorkshire fog	<i>Holcus lanatus</i>	a. lowest tier	
Black medick	<i>Medicago sativa</i>	a. lowest tier	
Hogweed	<i>Heracleum sphondylium</i>	a. lowest tier	
Aspen	<i>Populus tremula</i>	a. lowest tier	
Guelder rose	<i>Viburnum opulus</i>	a. lowest tier	
Great Plantain	<i>Plantago major</i>	a. lowest tier	
Snowberry	<i>Symphoricarpos albus</i>	a. lowest tier	
Groundsel	<i>Senecio vulgaris</i>	a. lowest tier	
Daisy	<i>Bellis perennis</i>	a. lowest tier	
Birch + seedlings	<i>Betula pendula</i>	a. lowest tier	
White clover	<i>Trifolium arvensis</i>	a. lowest tier	
Perennial ryegrass	<i>Lolium perenne</i>	a. lowest tier	
Autumn hawkbit	<i>Leontodon autumnalis</i>	a. lowest tier	
Willow	<i>Salix sp.</i>	b. Second tier	
Coltsfoot	<i>Tussilago farfara</i>	b. Second tier	
Annual meadowgrass	<i>Poa annua</i>	b. Second tier	
Nettle	<i>Urtica dioica</i>	b. Second tier	
Creeping buttercup	<i>Ranunculus repens</i>	b. Second tier	
Self heal	<i>Prunella vulgaris</i>	c. third tier	Old grassland
Crested dogstail	<i>Cynosurus cristatus</i>	c. third tier	Old grassland
	<i>Juncus sp.</i>	c. third tier	
Creeping thistle	<i>Cirsium arvense</i>	c. third tier	
Crested dogstail	<i>Cynosurus cristatus</i>	d. fourth tier	Old grassland indicator

7. Plantation between Red Car Park and The Mound. Sheltered, young trees with abundant lichens. Very shaded but dense cover underfoot. The trees may require thinning soon.

Lichens here are unusually large but have obviously colonised recently since the trees were planted around 1990. They are colonising due to decreased sulphur dioxide air pollution now being experienced since the clean air acts of the 1960's. It is likely that further species will colonise in years ahead and the area should be monitored. Their elliptical shape is because the trees are growing faster in girth than in height. The lichen has to keep pace with an ever-expanding substratum. Their true age can be assessed from their short diameter, about 1.5 cm = 7-8 years age.

Species		Habitat	Notes
Field Maple	<i>Acer campestre</i>		
Ash	<i>Fraxinus excelsior</i>		
Cherry	<i>Prunus avium</i>		
Nettle	<i>Urtica dioica</i>		
Queen Anne's lace	<i>Anthriscus sylvestris</i>		
Field forget me not	<i>Myosotis arvensis</i>		
Lichens:	<i>Lecanora chlarotera</i>		6 cm long diam.)
	<i>Lecidella elaochroma</i>		
	<i>Athelia arachnoidea</i>		
	<i>Buellia punctata</i>		
	<i>Candelariella reflexa</i>		
	<i>Physcia tenella</i>		
Moss	<i>Brachypodium sylvaticum</i>		Woodland grass species
Fungi:	<i>Psathyrella</i> sp.		(on stump)

8. **The Mound.** The reclaimed tip, planted woodland on west, open, seeded grassland on top and east. The coal and shale is showing through on bare parts of the path. The area is endangered by encroachment of Hawthorn and other tree seedlings. Gorse will also encroach from natural seedlings. It would benefit from scarifying to reduce the coarse, 'weedy' grasses and to encourage more native species of old grassland. As the soil is naturally tending towards acidity, and stones and coal are poking through bare patches, it may be worth sowing Heather and Bilberry cuttings to recreate heathland habitat which usually colonises old coalmine tips.

The south-eastern end of the mound beyond the seat becomes notably richer in native species.

Species		Habitat	Notes
Yorkshire Fog	<i>Holcus lanatus</i>		
False oat grass	<i>Arrhenatherum elatius</i>		
Nettle	<i>Urtica dioica</i>		
Elder	<i>Sambucus nigra</i>		
Field maple	<i>Acer campestre</i>		
Field rose	<i>Rosa arvensis</i>		
Goat willow	<i>Salix caprea</i>		
Bramble	<i>Rubus fruticosus</i> aggr.		
Willow	<i>Salix</i> sp.		
Broad leaved dock	<i>Rumex obtusifolius</i>		
Hogweed	<i>Heracleum sphondylium</i>		
Hawthorn	<i>Crataegus monogyna</i>		
Ash	<i>Fraxinus excelsior</i>		
White clover	<i>Trifolium arvensis</i>		
Creeping buttercup	<i>Ranunculus repens</i>		
Lichens:	<i>Buellia punctata</i>		
Butterfly	Meadow Brown		

- 8b. **Lower path, east side of The Mound,** as far as the seat on top path. Dominated by grassland but with occasional small trees and Gorse. The bushes become thick below the path and are a good passerine bird habitat. A patch of water-seepage crossing the path supports rarer plants.

Species		Habitat	Notes
Creeping cinquefoil	<i>Potentilla reptans</i>		In seepage area. usually on heathy soil
Sedge	<i>Carex</i> sp.		In seepage area, a damp grassland plant
Gorse	<i>Ulex europaeus</i>		Heathland and stony soil, useful for small bird cover
Crested dogstail	<i>Cynosurus cristatus</i>		Old grassland
Red clover	<i>Trifolium pratense</i>		Old grassland
Birds foot trefoil	<i>Lotus corniculatus</i>		Old grassland
Sweet vernal grass	<i>Anthoxanthum odoratum</i>		Old grassland
Ribwort plantain	<i>Plantago lanceolata</i>		Old grassland
Groundsel	<i>Senecio vulgaris</i>		
Bullace	<i>Prunus domestica</i>		
Black medick	<i>Medicago sativa</i>		
Crab apple	<i>Malus sylvestris</i>		
Curled dock	<i>Rumex crispus</i>		
Grey poplar	<i>Populus canescens</i>		
Coltsfoot	<i>Tussilago farfara</i>		
Spruce	<i>Picea</i> sp.		
Rowan	<i>Sorbus aucuparia</i>		
Creeping thistle	<i>Cirsium arvensis</i>		
Bush vetch	<i>Vicia cracca</i>		
Aspen	<i>Populus tremula</i>		
Field maple	<i>Acer campestre</i>		
Smooth tare	<i>Vicia tetrasperma</i>		
Cherry	<i>Prunus avium</i>		
Dogwood	<i>Cornus sanguinea</i>		
Goat willow	<i>Salix caprea</i>		
Oak	<i>Quercus robur</i>		
Greater willowherb	<i>Epilobium hirsutum</i>		
Meadow vetchling	<i>Lathyrus aphaca</i>		
Birds:	Pheasant (female)		
	Yellowhammer		

8c. Beside the seat on top path of the Mound. Windswept, open grassland, good view to E of Bardon and Gracedieu skyline.

Species		Habitat	Notes
Birdsfoot trefoil	<i>Lotus corniculatus</i>		Old grassland abundant
Crested dogstail	<i>Cynosurus cristatus</i>		Old grassland
Oak	<i>Quercus robur</i>		
Ash	<i>Fraxinus excelsior</i>		
Cherry	<i>Prunus avium</i>		
Catsear	<i>Hypochaeris radicata</i>		
Meadow vetchling	<i>Lathyrus aphaca</i>		
Sticky mouse-ear	<i>Cerastium glomeratum</i>		
False oat grass	<i>Arrhenatherum elatius</i>		
Cocksfoot	<i>Dactylis glomerata</i>		

9. Steep slope SE end of The Mound. A steep path, bordered by plantation on W, grassland with gorse to E. No plants recorded.

10. **Osier area at S end of mound.** Not permanently wet, with large stone-spoil below.

E side of mound is gorse covered and bramble.

The roadside 'T' junction has a lot of birdsfoot trefoil.

Species		Habitat	Notes
Great Burnet	<i>Sanguisorba officinalis</i>		Scarce old wet grassland indicator, 3 patches noted
Yellow rattle	<i>Rhinanthus minor</i>		Old grassland
Red clover	<i>Trifolium pratensis</i>		Old grassland
Oxeye daisy	<i>Leucanthemum vulgare</i>		Old grassland
Crested dogstail	<i>Cynosurus cristatus</i>		Old grassland
Ribwort plantain	<i>Plantago lanceolata</i>		Old grassland
Coltsfoot	<i>Tussilago farfara</i>		
Catsear	<i>Hypochaeris radicata</i>		
Black medick	<i>Medicago sativa</i>		
White clover	<i>Trifolium arvense</i>		
Rowan	<i>Sorbus aucuparia</i>		
Guelder rose	<i>Viburnum opulus</i>		
Birch	<i>Betula pendula</i>		
Bush vetch	<i>Vicia cracca</i>		
Smooth tare	<i>Vicia tetrasperma</i>		
Osier willow	<i>Salix viminalis</i>		

11. **Upper meadow.** Once used as events area, long, seeded grassland with some wet areas.

This is not species rich but has small patches of interesting plants, especially in damp areas.

SPECIES		SITE	Notes
Birdsfoot trefoil	<i>Lotus corniculatus</i>		(1 patch)Old grassland indicator
Sweet vernal grass	<i>Anthoxanthum odoratum</i>		Old grassland indicator
Hard rush	<i>Juncus cf. conglomeratus</i>		Wet, acid grassland
Yorkshire fog	<i>Holcus lanatus</i>		
Annual meadow grass	<i>Poa annua</i>		
Creeping buttercup	<i>Ranunculus repens</i>		
Cocksfoot	<i>Tussilago farfara</i>		
Black medick	<i>Medicago sativa</i>		
Smooth tare	<i>Vicia tetrasperma</i>		
Meadow foxtail	<i>Alopecurus pratensis</i>		
Daisy	<i>Bellis perennis</i>		
Perennial ryegrass	<i>Lolium perenne</i>		

12. **The Grange arboretum.** Entry by car park, a dense Victorian plantation with luxurious undergrowth.

This area offers a range of common woodland species. The glades are potential habitat for butterflies but more nectar flowers are needed for success (bramble, etc).

Species		Habitat	Notes
Thyme leaved speedwell	<i>Veronica serpyllifolia</i>		Scarce in Leics, on the car park floor.
Dogs mercury	<i>Mercurialis perennis</i>		Old woodland indicator
Wood dock	<i>Rumex sanguineus</i>		Old woodland indicator
Wellingtonia	<i>Sequoiadendron giganteum</i>		Popular Victorian planting, large specimen
'Atlas' cedar	<i>Cedrus atlantica</i>		Popular Victorian planting
Hawthorn	<i>Crataegus monogyna</i>		
Ash (large)	<i>Fraxinus excelsior</i>		
Pineappleweed	<i>Matricaria matricarioides</i>		
Wood avens	<i>Geum urbanum</i>		
Broad leaved dock	<i>Rumex obtusifolius</i>		
Ground elder	<i>Aegapodium podagraria</i>		
Hedge woundwort	<i>Stachys sylvatica</i>		
Wood avens	<i>Geum urbanum</i>		
Hogweed	<i>Heracleum sphondylium</i>		
Sycamore	<i>Acer pseudoplatanus</i>		
Rhododendron	<i>Rhododendron sp.</i>		
Purple leaved Plum	<i>Prunus sp.</i>		
Elder	<i>Sambucus nigra</i>		
Bramble	<i>Rubus fruticosus</i>		
Hazel	<i>Corylus avellana</i>		
Weeping willow	<i>Salix babylonica</i>		
Raspberry	<i>Rubus idaeus</i>		
Foxglove	<i>Digitalis purpurea</i>		
Greater willowherb	<i>Epilobium hirsutum</i>		
Holly	<i>Ilex aquifolium</i>		
Yew	<i>Taxus baccata</i>		
Larch	<i>Larix decidua</i>		
Beech	<i>Fagus sylvatica</i>		
Oregon grape	<i>Mahonia aquifolium</i>		
Cherry laurel	<i>Prunus laurocerasii</i>		
Goosegrass	<i>Galium aparine</i>		
Red campion	<i>Silene dioica</i>		
Mouse-ear	<i>Cerastium fontanum</i>		
Copper beech	<i>Fagus sylvatica</i>		
Sticky mouseear	<i>Cerastium glomeratum</i>		
Ground elder	<i>Aegapodium podagraria</i>		
Butterfly	Red admiral		
Butterfly	Speckled wood		

13. **The Meadow.** A restored grassland with introduced (?) orchids, now maintained by low level mowing and clearing of cuttings. The soil appears to be rich and deep and several further years will be required to deplete it of nutrients and favour the native grassland plants. Already it contains an impressive number of old grassland plants. Day flying moths were abundant.

Species		Habitat	Notes
Red clover	<i>Trifolium pratense</i>		Old grassland indicator
Sweet vernal grass	<i>Anthoxanthum odoratum</i>		Old grassland indicator
Ribwort plantain	<i>Plantago lanceolata</i>		Old grassland indicator
Birds foot trefoil	<i>Lotus corniculatus</i>		Old grassland indicator
Sorrel	<i>Rumex acetosa</i>		Old grassland indicator
Selfheal	<i>Prunella vulgaris</i>		Old grassland indicator
Oxeye daisy	<i>Leucanthemum vulgare</i>		Old grassland indicator
Cowslip	<i>Primula veris</i>		Old grassland indicator
Lady's mantle	<i>Alchemilla</i> sp.		Scarce
Common spotted orchid	<i>Dactylorhiza fuchsii</i>		Probably introduced
Orchid sp.			Probably introduced
Smooth meadow grass	<i>Poa pratensis</i>		
Hogweed	<i>Heracleum sphondylium</i>		
Broad leaved dock	<i>Rumex obtusifolius</i>		
Timothy	<i>Phleum pratense</i>		
Common mouseear	<i>Cerastium fontanum</i>		
White clover	<i>Trifolium arvense</i>		
Bush vetch	<i>Vicia cracca</i>		
Yorkshire fog	<i>Holcus lanatus</i>		
Creeping buttercup	<i>Ranunculus repens</i>		
Moth	5-spot Burnet		
Butterfly	Meadow brown		

14. **Carp lake.** A well-trodden lakeside much used by anglers. The banks are unshaded by trees, favouring waterside plants. A few patches of emergent water plants found near the edges. Yellow water lily is abundant, only one patch of white lily was found. Flowering rush was not refound (recorded Sept. 2006).

Species		Habitat	Notes
Common spike rush	<i>Elaeocharis palustris</i>		Occasional lakeside and pond species
Alder	<i>Alnus glutinosa</i>		
	<i>Juncus</i> sp.		
Yellow iris	<i>Iris pseudacorus</i>		
White water lily	<i>Nymphaea alba</i>		
Yellow water lily	<i>Nuphar lutea</i>		
Ash	<i>Fraxinus excelsior</i>		
Common reed	<i>Phragmites communis</i>		
Lesser bulrush	<i>Typha angustifolia</i>		
Rowan	<i>Sorbus aucuparia</i>		
sedge	<i>Carex</i> sp.		
White bryony	<i>Bryonia dioica</i>		
willow	<i>Salix</i> sp.		

15. **Grange Nature Reserve** – pond and marsh area, used for pond dipping. Rather shaded by large trees and a steep bank.

Species		Habitat	Notes
Gypsywort	<i>Lycopus europaeus</i>		More usual on canal and river banks
Wood dock	<i>Rumex sanguineus</i>		Old woodland indicator
Dogs mercury	<i>Mercurialis perennis</i>		Old woodland indicator
Comfrey	<i>Symphytum officinale</i>		Possibly introduced; a herbal plant (boneset)
Marsh marigold	<i>Caltha palustris</i>		Scarce in Leics, in shaded marshland
Creeping cinquefoil	<i>Potentilla repens</i>		Heathland species
Sweet vernal grass	<i>Anthoxanthum odoratum</i>		Old grassland species
'Southern marsh orchid'	<i>Dactylorhiza praetermissa</i>		Certainly introduced
Greater bulrush	<i>Typha major</i>		
Hedge woundwort	<i>Stachys sylvatica</i>		
Yellow iris	<i>Iris pseudacorus</i>		
Yellow water lily	<i>Nuphar lutea</i>		
Hogweed	<i>Heracleum sphondylium</i>		
Water mint	<i>Metha aquatica</i>		
Red campion	<i>Silene dioica</i>		
Elder	<i>Sambucus nigra</i>		
Apple	<i>Malus domestica</i>		
Nettle	<i>Urtica dioica</i>		
Ivy	<i>Hedera helix</i>		
Sycamore	<i>Acer pseudoplatanus</i>		
Holly	<i>Ilex aquifolium</i>		
Bramble	<i>Rubus fruticosus</i> aggr.		
Ash	<i>Fraxinus excelsior</i>		
Yorkshire fog	<i>Holcus lanatus</i>		
Oak	<i>Quercus robur</i>		
Bush vetch	<i>Vicia cracca</i>		
Hard rush	<i>Juncus</i> cf. <i>effusus</i>		
Purple loosestrife	<i>Lythrum salicaria</i>		
Yellow loosestrife	<i>Lysimachia vulgaris</i>		
Smooth tare	<i>Vicia tetrasperma</i>		
Creeping thistle	<i>Cirsium arvense</i>		
Queen Anne's lace	<i>Anthriscus sylvestris</i>		
Greater willowherb	<i>Epilobium hirsutum</i>		
Creeping buttercup	<i>Ranunculus repens</i>		
Yellow vetchling	<i>Lathyrus aphaca</i>		
Meadowsweet	<i>Filipendula ulmaria</i>		
Damselfly	Common Blue		