PENNINE ecological

- BAE SYSTEMS SAMLESBURY -

EXTENDED PHASE 1 HABITAT SURVEY OF THE PROPOSED CAR PARK EAST OF 3A16

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A report for:

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July 2014

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PART 1 INTRODUCTION:

1.1 REASONS FOR STUDY:

PENNINE *Ecological* have been commissioned by Wilson Mason to undertake an Extended Phase 1 Habitat Survey of land affected by the proposed new car park extension, east of 3A16 on the BAE Samlesbury site, near Preston, Lancashire. (Project Reference 6025).

The survey is required in association with the re-development of part of the site as an Enterprise Zone.

1.2 LOCATION:

The land surveyed is located on the north side of the Samlesbury site between the 3A16 building to the west and the 3A gate at the terminus of Myerscough Road to the east. The survey area is shown on the habitat map (Map 1) in the appendix.

1.3 SURVEY METHODOLOGY AND TIMING:

(Refer to the Extended Phase 1 Habitat Survey Map in the Appendix for all locations of habitats / target notes)

An Extended Phase 1 Habitat Survey *(Nature Conservancy Council 1990)* of the site was undertaken on the 30th July 2014, an optimum time for undertaking this type of survey on grasslands and other habitats present on the site.

The sites habitats were mapped and species were recorded within compartments and/or habitat types within the site. Each plant species recorded was given an abundance value according to the standard DAFOR scale, where:

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

These values can be prefixed by the letter V (very) or L (locally), to provide more subtle biogeographical data.

Full species lists and abundance scores are given in the form of Target Note descriptions. All species nomenclature follows Stace, C. (1997).

Several other surveys were undertaken at the same time as the Phase 1, these include the following.

- Evaluation of bat roost potential.
- Badger survey.
- Evaluation of great crested newt potential.
- Evaluation of breeding bird potential.

PART 2 SURVEY RESULTS:

2.1 EXTENDED PHASE 1 HABITAT SURVEY:

2.1.1 List of Phase 1 Habitats Present:

A1.1.2 Broad-leaved plantation woodland (immature)
A2.2 Scattered scrub
B2.2 Semi-improved neutral grassland
C3.1 Tall ruderal herb
J1.2 Amenity grassland
J2.4 Fence
J3.6 Buildings

2.1.2 General Description:

The area surveyed forms a simple series of semi-natural habitats adjacent to the existing car park east of the 3A16 building.

Most of the area is composed of semi-improved grassland and is managed by annual mowing. The other main habitat type is immature broad-leaved woodland estimated to be approximately 15-20 years old.

Other habitats include minor areas of tall ruderal herb and linear mown strips of amenity grassland.

Target Notes describing specific parts of the study area are provided below.

2.1.3 Target Notes:

Target Note 1:

A semi-improved neutral grassland dominated by a mixture of meadow foxtail and red fescue at the eastern end, with locally dominant stands of soft-rush at the western end. The grassland is rank locally and is managed (at most) by at most a single annual cut. In addition a peripheral strip of amenity grassland forms the boundary to much of the area particularly at the interface of footways.

The semi-improved grassland is probably the precursor vegetation to the amenity grassland, albeit modified by regular mowing.

A good range of common meadow herbs are present in the sward, and the western end is the most consistently floristically rich, however interest over the whole grassland is patchy.

Species:	**Abundance:**
Meadow foxtail	D
Red fescue	D
Soft-rush	LD
Common sedge	VLD

Target Note 1 Continued.

Hairy sedge	VLD
Creeping buttercup	A
Creeping cinquefoil	LA
Common knapweed	VLA
Selfheal	VLA
Lesser stitchwort	VLA
Yarrow	VLA
Greater bird's-foot-trefoil	VLA
Common bird's-foot-trefoil	VLA
Meadow vetchling	VLA
Glaucous sedge	VLA
Common sorrel	F
Yorkshire-fog	F
Ribwort plantain	F
Timothy	LF
Curled dock	LF
Great burnet	VLF
Compact rush	VLF
Oval sedge	VLF
Cock's-foot	VLF
Creeping bent	VLF
Northern marsh-orchid	VLF
Common ragwort	O
Tufted hair-grass	O
Hogweed	O
Rosebay willowherb	O
Mugwort	O
Spear thistle	O
Marsh thistle	R

Target Note 2:

A stand of even-aged, immature plantation woodland estimated to be <20 years old. There is no single dominant species and the woodland is composed of a mixture of broad-leaved tree/shrub species.

The woodland is too young to have formed a definable understorey.

The ground flora is rank and mostly supports species possibly associated with the pre-cursor vegetation that existed prior to planting, however several common fern species have become established.

The small 'triangular' stand of trees to the south shares the same habitat characteristics except it also has introduced shrubs on its southern edge.

The species list and abundance values are provided on the following page.

Species:	**Abundance:**
Canopy:	
Grey willow	VLD
Alder	A
Hazel	A
Field maple	A
Lime	F
Hawthorn	F
Swedish whitebeam	F
Silver birch	LF
Goat willow	O
Oak sp.	O
Ground flora:	
Common bent	LA
Yorkshire-fog	LF
Common nettle	LF
Wood dock	VLF
Tufted hair-grass	O
Colt's-foot	O
Male-fern	O
Rush sp.	O
Broad buckler-fern	O
Lady fern	R

Target Note 3:

A stand of even-aged, immature plantation woodland, that judging by its species composition and age is estimated to have been planted at the same time as the woodland described in Target Note 2.

Again there is no single dominant species and the woodland is composed of a mixture of broad-leaved tree/shrub species including non-native species. In addition the southern and eastern edges of the woodland are intermixed with stands of dogwood sp. Other non-native shrub species are also present here.

The woodland is also too young to have formed a definable understorey, however there is some very minor regeneration of small hazel, field maple and dogwood sp.

The ground flora is very sparse and consists of very locally frequent creeping soft-grass.

Species:	**Abundance:**
Canopy:	
Dogwood sp.	VLD
Grey willow	LA

Target Note 3 Continued.

Goat willow	LA
Swedish whitebeam	F
Alder	LF
Hazel	LF
Field maple	LF
Hawthorn	LF
Silver birch	LF
Norway maple	R
Holly	R

Ground flora:

Creeping soft-grass	VLF

2.2 EVALUATION OF BAT ROOST POTENTIAL:

2.2.1 Survey Methods and Results:

The bat roost survey was undertaken in conjunction with the Phase 1 Survey

The trees, shrubs and building in the study area were individually searched for holes and fissures that could potentially be used as bat roosts. The search was undertaken from ground level using close-focusing binoculars where required. There were no constraints to the search.

The survey was undertaken by an experienced preliminary assessor of bat roosts in conjunction with consultation with the licensed bat ecologist for the site.

Bat Roosts:

The roost search revealed an absence of potential roosts in all of the immature trees, shrubs and woodlands within the study area.

A substation building within the BAE factory site (see Map 1 for location) provides no bat roost potential, and whilst there is a means of ingress by means of louvres in the exterior door panels, the louvres have a coating of gloss paint which reduces bats ability to gain purchase on the louvre surfaces and enter the building.

Internally the building has smooth concrete walls with no potential roost sites.

No droppings or other sign of bat use was recorded in or outside of the building during the visit.

Foraging Areas:

Foraging potential is seriously limited to the edge of the immature plantings. Parts of this area are lit at night thus reducing the site's value for bats further.

An evaluation of bat potential in the wider area indicates that bat roosts will be centered on the village of Mellor Brook where by virtue of the age and varieties of buildings present, roosts for

both crevice and loft dwelling species will be present. In addition good foraging habitat is present in immediate proximity to the east of these properties and are predicted to be the areas favoured by foraging bats locally.

In addition the extensive wooded valleys and sloping hedged fields to the north of the A59 will undoubtedly support roosts for tree dwelling bats, and the individual houses and farmsteads roosts for crevice/loft dwelling bats. These features are integral with the prime foraging habitats along ancient valley woodlands in this area.

There is also good linkage to the River Ribble and other good foraging habitat beyond.

2.3 BADGER SURVEY:

2.3.1 Survey Methods and Results:

The badger survey employed standard techniques to establish if badgers are present on site or use the site for foraging/commuting.

The following searches were undertaken.

- Searches for setts on site.
- Searches for foraging signs and pathways.
- Boundary searches for runs, pathways and latrines.

The survey results are outlined below.

Sett Search:

The survey found no setts within the study area.

Therefore it can be concluded that there are no badger setts on the site.

Search for Foraging Signs and Pathways:

The site was searched by walking across the grasslands for badger pathways or signs of foraging.

No sign of badger activity was found therefore it can be concluded that the species is not using this area for foraging or commuting.

Boundary Search:

All of the boundaries of the site were walked and examined for potential runs, pathways and latrines. The search found no evidence to suggest badger activity along any of the site boundaries.

The absence of any obvious means of ingress indicates that badgers are not entering the site. The absence of latrines indicates a lack of territorial activity in the near vicinity of the site.

2.3.2 Survey Conclusions:

The survey found no evidence of historic, recent or current use of the site by badgers for foraging, commuting or occupation and the species is considered to be absent.

2.4 EVALUATION OF GREAT CRESTED NEWT POTENTIAL:

2.4.1 Survey Methods and Results:

The evaluation employed a scoping study to identify all ponds within 250m of the study area that are not separated by significant barrier effects. Therefore all ponds north of the A59 were discounted on the grounds of the major barrier effect generated by the presence of a busy trunk road.

The study used a combination of a site visit, online aerial images and Ordnance Survey maps to identify pond features south of the A59.

The study identified the presence of a single waterbody only which was subject to a Habitat Suitability Index (HSI) Survey. (See below)

Habitat Suitability Index (HSI) Survey:

The waterbody identified during the survey is an artificial water tank located to the east of the security office at the 3A gate and is thought to be a former emergency water supply. The location of the tank is not shown on the Phase 1 Habitat Map.

A Habitat Suitability Index (HSI) survey* was undertaken to assess general suitability for the species in the on-site pond, which is also the only waterbody within 250m of the site. HSI cannot be used instead of standard 'Presence/Absence' survey, however it is a useful tool for assessing the likelihood of GCN being present in a pond and to determine whether or not a presence/absence survey is required.

*(Oldham et al. 2000)

HSI Calculation Table:

Pond ref	Water Tank
SI1 - Location	1
SI2 - Pond area	0.2
SI3 - Pond drying	0.9
SI4 - Water quality	0.01
SI4 - Shade	1
SI6 - Fowl	1
SI7 - Fish	0.67
SI8 - Ponds	1
SI9 - Terr'l habitat	0.33
SI10 - Macrophytes	0.3
HSI	**0.41**

Categorisation of HSI Scores:

HSI Pond suitability.

<0.5 = poor
0.5 – 0.59 = below average
0.6 – 0.69 = average
0.7 – 0.79 = good
> 0.8 = excellent

The HSI score for the pond is 0.41 which rates as 'poor' in the HSI. However other factors not accounted for by the HSI need to be considered in respect of this 'pond' and include the following.

- The pond is a square brick/concrete built tank that stands above the surrounding ground by approximately 0.7m.

- The bitumen (or similar) liner extends out of the tank on to the top of the retaining wall and down the outer edge of the wall forming an overhang of approximately 10mm.

- The vertical sides of the tank combined with the 10mm overhang reduces GCN suitability further due to the increased difficulty of GCN entering the structure.

Therefore based on the HSI and additional factors outlined above, the pond is considered to represent very poor breeding habitat for GCN. Nevertheless if there are any proposals to remove the tank then some precautions in respect of amphibians generally should be employed. (See section 3.7 Recommendations)

2.5 EVALUATION OF BREEDING BIRD POTENTIAL:

2.5.1 Survey Methods and Results:

Due to the late season the site wasn't subject to a formal bird survey. Instead the site has been evaluated by considering the range, size and configuration of habitats present in the study area and their relationship to current land use observed during the Phase 1 Survey. Although specific bird surveys were not undertaken, incidental sighting/aural registrations were listed during the survey visit.

Ground-nesting Birds:

Breeding bird potential is restricted to tree-shrub nesting species only and is considered unsuitable for ground-nesting species such as skylark and lapwing for the reasons outlined below.

The grasslands are of very limited extent and lie immediately adjacent to stands of trees and fences, which provide cover and perches for predatory species. A busy car park is also situated in the 'core' of the site.

Skylark and lapwing are known to generally avoid nesting close to such tall features and areas subject to regular pedestrian disturbance due to a real and/or perceived risk of predation.

Donald in his Poyser monograph *The Skylark* states that,

'*Predator avoidance clearly has such a strong impact on the distribution of skylarks that it can overrule the quality of the habitat itself. Even the best habitats can be completely unused if they occur too close to trees*.'*

*(See Donald P.F. *The Skylark* 2004)

However in this instance the grasslands themselves are also considered to be unsuitable due to the general sward height which exceeds 25cm. Tall grassland swards have limited nesting potential for both lapwing and skylark due to the vigour of the grasslands which will naturally limit the ability of these birds to nest, and in the case of lapwing for chicks to feed in.

Skylarks have a preference for shorter vegetation and are often unable to raise more than a single brood where the sward height becomes advanced early in the summer. '*a mosaic of sward heights with a sward height greater that 15cm in summer (Wakeham-Dawson & Aebischer 1997) ranging from bare ground to longer grass up to 25cm is ideal to meet both nesting and feeding requirements*.'†

In addition,

'*Lapwing breed in a variety of habitats, all of which have short vegetation and bare ground for feeding*.'†

†The Lowland Grassland Management Handbook 2nd Edition (English Nature et al.)

Non Ground-nesting Birds:

The stands of woodlands within the study area have the potential to support a range of common birds. Given the limited extent of the habitats available, numbers of breeding birds would not be expected to be high, and several pairs of several common species would be as much as the site would be likely to attract and support.

The following species were recorded during the survey and would also be the type of species expected to nest at the site.

Blackbird
Chaffinch
Woodpigeon
Magpie

It should be noted that other common species not observed during the survey might also breed on the site.

PART 3 ECOLOGICAL EVALUATION & RECOMMENDATIONS:

3.1 EVALUATION OF HABITATS:

The following section discusses the significance of the plants and habitats recorded during the survey. It should be noted that this part of the evaluation relates to vegetation only and includes reference to the following statutory/non-statutory instruments.

- The Wildlife and Countryside Act 1981 (and later amendments), with particular reference to protected species listed in Schedules 1, 5 and 8 of the above act.

- Section 41 Habitats and Species of Principal Importance in England. Natural Environment and Rural Communities (NERC) Act 2006.

- Reference to any relevant Red Data List/Book species and Nationally Scarce species not covered by the above or any other lists / schedules of species rarity or importance.

- Use of the *Biological Heritage Site Guidelines for Site Selection* (LCC, LWT 1998) has been made. This document is an invaluable tool for assessing the significance of species / habitats in Lancashire, since it sets out the minimum ecological requirements for species/habitats to be selected as a Biological Heritage Site. Biological Heritage Sites (BHS) are by definition considered to be of Lancashire County significance for their ecological interest. By implication, sites that fail to meet these guidelines would not be of County ecological significance, but may be of significance at a more local scale e.g. Borough / Parish etc. The use of this method of site evaluation is in effect application of the Ratcliffe (1977) Criteria at a more specific local County level.

- Lancashire Biodiversity Action Plan. (LBAP)

The evaluation is based on the commissioned surveys only.

The following statements are relevant in respect of the above.

3.1.1 Wildlife and Countryside Act 1981:

There are no plant species on site that are specifically protected under the Wildlife and Countryside Act 1981.

3.1.2 Section 41 NERC Act 2006 Habitats & Species:

These are Species and Habitats of Principal Importance for the Conservation of Biodiversity in England under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006.

There are no S41 species or habitats within the study area.

3.1.3 Nationally Scarce/County Red Data List Species:

There are no Nationally Scarce/County Red Data list plant species on the site.

3.1.4 Biological Heritage Sites:

The study area has no known BHS designation and none of the habitats/species appear to qualify for BHS status under the various guidelines for selection.

The semi-improved grassland on the site displays some floristic diversity although the area affected is not expected to meet any guidelines for selection as a BHS.

3.1.5 Lancashire Biodiversity Action Plan:

There are no habitats or plant species included within the Lancashire Biodiversity Action Plan.

3.2 BATS

The survey found that there are no potential roost sites in the substation within the BAE site.

No potential roosts were found in the immature woodlands of the study area.

Bat foraging potential is considered to be poor on account of the limited size of the site, the effects of factory lighting and the presence of prime foraging areas in near vicinity of the predicted concentrations of off-site roost sites.

3.3 BADGER:

The survey found no evidence of any badger setts or other sign of activity within the study area and the species is not considered to be currently using the area.

3.4 GREAT CRESTED NEWT:

The survey identified one pond within 250m not separated by significant barrier effects. The pond is an industrial water tank that was subject to a HSI survey scoring as ‘poor’. Likelihood of GCN presence is reduced further due to specific physical characteristics of the pond preventing ingress by GCN.

3.5 BREEDING BIRDS:

The assessment has shown that the site isn’t suitable for ground-nesting species such as skylark or lapwing due to a lack of suitable breeding habitat.

Breeding birds are expected to include small numbers of common birds, similar but not restricted to those recorded during the survey.

3.6 SUMMARY EVALUATION:

The survey and evaluation has revealed the following information.

Habitats:

- There are no plant species on site that are specifically protected under the Wildlife and Countryside Act 1981.
- There are no Nationally Scarce/County Red Data list/endemic species on the site.
- There are no plants/habitats listed on the Section 41 (NERC Act) list present on site.
- The area affected has no BHS status and is not expected to meet any of the guidelines for selection.

Consequently the habitats of the study area are collectively considered to be of 'site-local' value only.

Bats:

There are no potential bat roosts in the immature woodlands of the study area.

There is no bat roost potential or any sign of bat habitation in the adjacent substation.

Bat foraging is very limited and poor due to the prevailing on-site conditions.

Badgers:

No sign of badger occupation or use was found during the survey and species is currently considered to be absent.

Great Crested Newt:

A single waterbody, an artificial water tank, was the only pond found within 250m of the site. The pond is rated as having 'poor' suitability for GCN due to the prevailing conditions.

Birds:

The site is capable of supporting small numbers of several species of birds common to the area only. There is no ground-nesting bird potential.

3.7 RECOMMENDATIONS:

The following section considers any measures or future survey required in light of the findings of this survey, these are outlined below.

Habitats:

No further surveys required.

Bats:

No further survey required.

To avoid light spillage into the woodland edge areas retained on the site, the document *Bats and Lighting in the UK* (Bat Conservation Trust) will be followed in respect of the lighting proposals for the site.

Badger:

No further surveys required.

Great Crested Newt:

No specific precautions are advised for GCN as the water tank is off site and there are no proposals that will affect it.

Birds:

A bird survey of the site is considered likely to reveal low numbers of common birds only, therefore further surveys are not recommended. However the following precautions are advised.

- All trees and shrubs scheduled for removal must be felled outside of the breeding season i.e. within the period September-February inclusive.

- All brash must be chipped on site or removed before the onset of the breeding season to prevent secondary colonisation by breeding birds.

- If it is not possible to remove the trees and shrubs outside of the breeding season, then the trees must be inspected by an ecologist prior to their removal.

- If breeding birds are found then a buffer zone of 5m around the nest site must be implemented to prevent disturbance until the young have fledged and left the nest. The buffer zone must be fenced off temporarily until the nest is unoccupied. The trees/shrubs containing the nest site can only be felled once the ecologist has declared the site clear of nesting birds.

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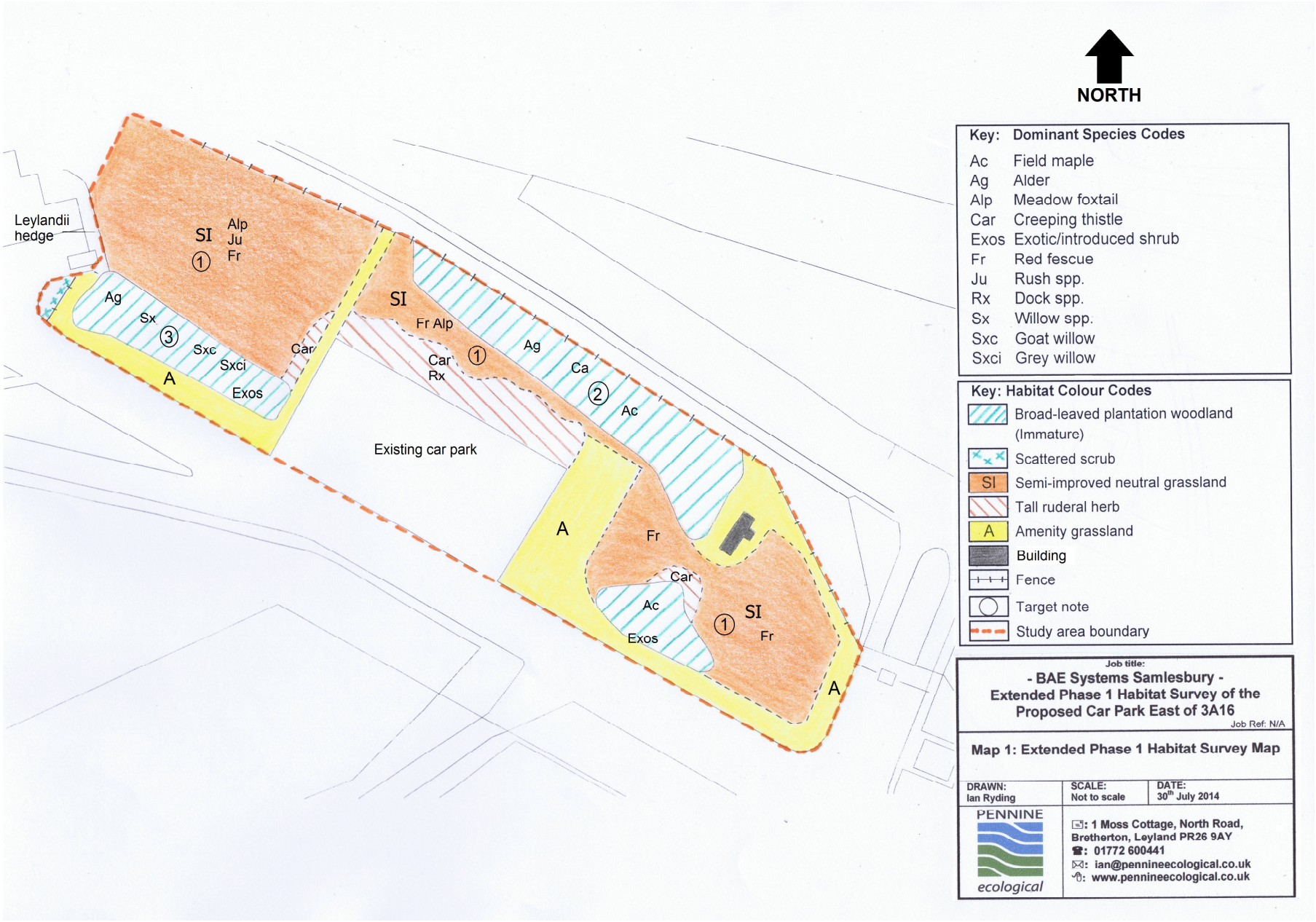
APPENDIX:

Map 1: Extended Phase 1 Habitat Survey Map


NORTH
Leylandii hedge
SI
Alp
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Exos
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Fr Alp
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1
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Ca
2
Ac
Existing car park
A
Fr
Car
Ac
Exos
1
SI
Fr
A
Key: Dominant Species Codes
Ac Field maple
Ag Alder
Alp Meadow foxtail
Car Creeping thistle
Exos Exotic/introduced shrub
Fr Red fescue
Ju Rush spp.
Rx Dock spp.
Sx Willow spp.
Sxc Goat willow
Sxci Grey willow
Key: Habitat Colour Codes
Broad-leaved plantation woodland (Immature)
Scattered scrub
SI Semi-improved neutral grassland
Tall ruderal herb
A Amenity grassland
Building
Fence
Target note
Study area boundary
Job title:
- BAE Systems Samlesbury -
Extended Phase 1 Habitat Survey of the Proposed Car Park East of 3A16
Job Ref: N/A
Map 1: Extended Phase 1 Habitat Survey Map
DRAWN: Ian Ryding
SCALE: Not to scale
DATE: 30th July 2014
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