Ecological Appraisal

Land at Barnsley Business and Innovation Centre.
Wilthorpe Road, Barnsley.

Date: March 2013

Report written and checked by Sheaf Ecology Ltd

Sheaf Ecology Ltd. **Registered Office:** 54 Carter Knowle Rd, Sheffield, S7 2DX
Email: info@sheafecology.co.uk, **Web:** www.sheafecology.co.uk, **Telephone:** 07828 582985.
Registered in: England, **No.** 7117260, **VAT No:** 984 2493 80.

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1.0 Non-technical summary

1.2 An ecological appraisal and potential for protected species survey was conducted on a site at Barnsley Business and Innovation Centre (BBIC) off Wilthorpe Rd. Barnsley to provide ecological information for a planning application. There is a proposal to develop the site for the development of a new business unit with additional car parking spaces throughout.

1.2 The main area of the site is a piece of land approximately 0.25ha contained within the north-western corner of the BBIC, a medium sized business park. To the north is highway with residential properties beyond. To the west is a residential area and to the south and east is the main part of the BBIC. The site which is subject to the development proposal comprises amenity grassland, tree planting and hard standing with access roads. There is also the requirement for some additional car parking provision at the south and eastern sides of the site.

1.3 A habitat and protected species survey was carried out as a means of appraising the site in respect of the presence of protected species and the ecological value of the existing habitats. There are records of amphibians to the north-west of the site. No evidence of protected species were observed on-site at the time of survey. The trees present on-site would be expected to support a range of small birds as nesting and feeding habitat

1.4 The development of the small business unit will occupy an area currently occupied by a small group of trees, amenity grassland and surfaced access road. Although these features would be lost the impact would be low as these are poorly growing trees and poor grassland and replacement planting will compensate by the use of native species and planted to a high specification which are well managed.

2.0 Introduction

2.1 Background and aims

The ecological survey was required as supporting information for a proposed development of the site for business development purposes. The details of the proposed development have been finalised and the aim of this appraisal is to provide ecological information to inform the Local Planning Authority of any ecological constraints that may exist on the site and that would have to be taken as material considerations in assessing the application. It will also inform the developer of the type and location of mitigation measures as a means of protecting and enhancing biodiversity on the site and form the basis of a BREEAM process required through the planning process.

2.2 The aims of the survey were:

- Carry out a desk-top study to collect existing information about the site and the surrounding area in terms of wildlife and nature conservation interest.
- Determine the wildlife interest of the site, including what habitats are present and the potential and/or presence for protected species.
- Enable an assessment of potential impacts of the proposed development in terms of nature conservation, habitats and species and to provide recommendations to enhance the biodiversity value of the site.
- Provide baseline information for the LE section of the BREEAM assessment

2.3 Site description and context

2.3.1 The site is situated off Wilthorpe Road on the north-western side of the Barnsley conurbation and approximately 2km from the town centre (SE 329078).

2.3.2 The main part of the site proposed for development (Area A) is approximately 0.25ha in area and comprises a mix of amenity grassland, planted ornamental trees and shrubs and hard surfaces which serve as access roads and service areas. There is also a requirement for some additional car parking provision at the southern and eastern parts of the site (Areas B, C, D & E). The trees have been subject to a tree survey within a separate report. This provides detailed data on individual trees and tree groups. The site layout and proposed development is shown in Appendix A. Photographs of the site are shown in Appendix B.

2.3.3 The main area of ecological value on the site are the areas of woodland screening on the northern boundary of the site. The trees appear to have been planted as part of a screening feature in the late 1970's early 1980's and are located in two distinct blocks. The woodland blocks are predominantly planted with native species with alder (*Alnus glutinosa*) dominating. However, there is a significant number of black pine (*Pinus nigra*) which would have been planted to provide screening throughout the year from a fast growing tree cover throughout. Surrounding the site is residential development to the west and north and to the east and south the continuation of the BBIC.

3.0 Extended Phase 1 survey methodologies

3.1 Desk study

3.1.1 A desk top study was conducted to collect existing wildlife data and records for the site and the surrounding area including sites with nature conservation designations and species records. A search of such records was conducted for the site and for a 1km radius surrounding the site. The following sources were consulted:

- The Barnsley Biological Records Centre
- Multi-agency geographic information for the countryside (MAGIC)

3.1.2 The Barnsley Biological Records Centre ecological data search included checking the following data sets

- Presence of protected species. This includes water vole, otter, great crested newt and reptiles.
- Statutory and non-statutory sites and species records.

A records search map of the site and associated records can be found in Appendix C.

3.2 Phase 1 habitat survey and protected species surveys

3.2.1 The initial ecological appraisal of the site is based on the standard JNCC Phase 1 habitat survey methodology (1990). A phase 1 survey classifies and maps the habitats present in a given area using a standard technique and allows for features and findings of particular interest to be highlighted using target notes. For each habitat type the dominant plant species are also recorded as well as noting any other wildlife detected on-site, including the presence or potential for protected species based on the habitats present.

3.2.2 The ecological assessment / extended Phase 1 habitat survey was conducted on 7th January 2013 and 16th March 2013 by experienced and qualified Sheaf Ecology surveyors Martin Nowacki BA MSc MIEEM and Martin Derbyshire BSc MSc AIEEM who are members of the Institute of Ecology and Environmental Management (IEEM) and follow species specific survey guidelines and the IEEM code for professional conduct for ecological work.

3.2.3 There are no buildings within the proposed development footprint therefore no building inspection for bats was carried out.

3.3 Constraints

3.3.1 There were no constraints in access to the site. Though outside the botanical survey season the experience of the surveyors and the very limited range of habitats was enough to allow for vegetative identifications and habitat assessments.

4.0 Results

4.1 Results of the desk study

4.1.1 Designated Sites

There are no statutory sites within 1km of the site. There are two non-statutory Local Wildlife Sites (LWS) within the 1km radius of the site: Barnsley Canal at Wilthorpe No 633 which is approximately 800m to the north-east and Redbook Pastures No 639. The former is designated as a LWS by virtue of the wetland and associated habitats in the disused canal corridor. The latter site is designated by virtue of its wet grassland habitats.

4.1.2 Protected Species

As shown in Appendix C there are records of great crested newt (*Triturus cristatus*) in Wilthorpe in the area of the Barnsley Canal at Wilthorpe LWS within the canal corridor. This site contains a range of good aquatic and terrestrial habitats suitable for this species. Also within this area are records of water vole (*Arvicola amphibious*), which would find suitable habitats on this site. Water vole are also recorded further to the north-west of the survey site at Low Barugh ponds an undesignated area.

A range of bats: Pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus)*, Daubenton's (*Myotis daubentonii*), noctule (*Nyctalus noctule*) and Leislers bat (*Nyctalus leisleri)* have been recorded within the data search area. No records identify bats within 500m of the survey site.

4.2 Results of the field study - Habitat descriptions

4.2.1 Overview

The overall site is predominantly a man made landscape with a range of office buildings. In area A amenity grassland dominates the vegetation with the plantation woodland, planted as a screen occurring in two large areas with three smaller patches of trees. There is a small area of introduced shrub and tall ruderal occurring in small liner patches on boundary areas. Areas B, C & D all comprise introduced, ornamental shrub, amenity grassland and occasional young and semi-mature trees. Area E is exclusively amenity grassland with one tree. See site photographs in Appendix B.

4.2.2 Area A

Amenity grassland

This has been planted as a low maintenance grassland area as part of an overall landscape scheme that would have been established when the site was developed as a business centre. Species range is very limited to amenity grasses such as rye grass (*Lolium perenne*), common bent (*Agrostis capillaris*) and cock's-foot (*Dactylus glomerata*). Close to the planted woodland areas Yorkshire fog (*Holcus lanatus*)has become established. Other common herb species such as daisy (*Bellis perennis*), dandelion (*Taraxacum officinalis agg.*)

and creeping buttercup were identified as species that had become established in the grassland.

Tall ruderal

This habitat was limited in its occurrence and was present along the western boundary, on the edges of the plantation woodland and adjoining the introduced shrub. Uncut grasses from the amenity grassland plus cleavers (*Galium aparine*), nettle (*Urtica dioica*), cow parsley (*Anthriscus sylvestris*) and bramble (Rubus fructicosus agg.) were identified in this habitat. Willowherb (*Epilobium palustre*) and the moss *Philonotis fontana* are evident and the range of species may increase as the season develops.

Introduced shrub

This habitat occurs as very restricted boundary feature that extends from the largest area of plantation woodland. Ornamental non-native varieties of cotoneaster, firethorn and barberry dominate this habitat with tall ruderal occurring in very restricted patches around the edge

Plantation woodland /Scattered trees

This habitat occurs mainly within two larger areas which are dominated by alder (*Alnus glutinosa*) and black pine (*Pinus nigra*). Other species such as London plane (*Plantanus acerifolia),* birch (*Betula pendula*), larch (*Larix decidua*) and ornamental cherry (*Prunus* var.) and ornamental Sorbus (*Sorbus* var.) are within. Three smaller areas of trees plus a small number of individual trees along the western boundary amenity grassland area and centrally in a small verge have been identified as scattered trees as they are not as closely planted as a screening belt. Beech (*Fagus sylvatica*) and alder dominate these areas with black pine, birch, Sorbus, oak (*Quercus robur*) and hawthorn (Crataegus monogyna) occurring occasionally.

4.2.3 Area B

This comprises a semi mature *Sorbus x thurungiata* Fastigiata which is growing well and is in good condition. Beneath this is a shrub bed of ornamental species including Forsythia and Cornus. Native ground flora is growing within the shrub bed such as dandelion (*Taraxacum officinalis agg.*), Meadow grass (*Poa sp.)* and chickweed (*Stellaria media*).

4.2.4 Area C

This is similar to area B in that it comprises trees within an ornamental shrub bed. There are four standard trees within the area comprising two native alders, one Norway maple (*Acer platanoides*) and a sycamore (*Acer pseudoplantanus*). The Acers have a covering of ivy on the stem which is very leafy but is not substantial. As with area B there is a shrub area with a small range of common ground flora as above.

4.2.5 Area D

This part of the site lies close to the adjoining highway and along that boundary a dense area of shrubs is growing which then leads in a small area of close mown amenity grassland. A single semi-mature Norway maple grows in this through the shrub bed and has a dense but not substantial covering of ivy on the stem.

4.2.6 Area E

An area of amenity grassland with two trees planted as isolated standard trees. The smaller of the two is a silver birch which is a poor specimen and seems to be suffering in isolation. A larger ornamental Salix sp. also grows within the grass verge and may be stunting the silver birch by it's characteristic water uptake which can cause desiccation of surrounding soils. The grassland is closely mown and dominated by bent, rye grass and moss.

4.2.7 Summary of habitat types recorded on and close to the site:

- **Amenity grassland**
- **Tall ruderal**
- **Introduced shrub**
- **Plantation woodland**

A Phase 1 habitat map, photographs and species lists are presented in Appendix B, D and E.

4.3 Evidence of fauna and potential for protected species

4.3.1 Birds

The following species were seen or heard during the survey:

- Blue tit (*Parus caeruleus*)
- Blackbird (*Turdus merula*)
- Robin (*Erithacus rubecula*)
- Goldfinch (*Carduelis carduelis*)
- Magpie *(Pica pica*)
- Jackdaw (*Corvus monedula*)

The existing habitats provide limited opportunities for nesting or feeding by birds.

4.3.2 Badger

The habitat could be considered of limited value to badgers (*Meles meles*) as a foraging site, particularly the grassland. No evidence was found of use by badgers.

4.3.3 Water vole

There was no evidence of water voles being present and there are no suitable habitats on site for water voles.

4.3.4 Bats

As the surveys were conducted in January and March and during daylight hours there was no sightings or evidence of bats using the site. No suitable roosting sites were identified but the existing habitats could provide potential for feeding bats to use as a foraging site, although only in a limited way.

4.3.5 Reptiles

No reptiles were recorded during the survey. There are no compost heaps or suitable areas of rubble on the site. there is very little foraging habitat suitable for reptiles.

4.3.6 Amphibians

No amphibians were recorded during the survey and the development site offers a very low potential for this group in respect of foraging, refuge and breeding opportunities.

4.3.7 Invertebrates

No invertebrates were recorded during the survey although it is likely there will be a range of small invertebrates present normally associated with the habitat types identified.

Recordings of protected species are valid at the time of survey. There is the possibility that species not recorded in surveys may at sometime afterwards, occupy, utilise or colonise the site.

N.B. As per current best practice advice in the sharing of biological records, unless instructed otherwise Sheaf Ecology will pass on all findings of any protected species to the appropriate Local Biological Records Centre.

5.0 Evaluation of impacts and recommendations for mitigation

5.1 Ecological effects of the Development

5.1.1 For area A, the proposed development of the site will be sited predominantly on existing hard unvegetated surfaces which would have no ecological impact. The additional car parking would impact upon semi-mature trees which would have to be removed.

5.1.2 For areas B, C & D the additional car parking will be sited within areas that are presently amenity grassland, introduced shrub with occasional trees. Area E is exclusively amenity grassland with one tree to be lost.

5.2 Area A

5.2.1 **Habitats & flora**

A small grass verge and group of 4 trees would be lost to the siting of the proposed building but this would cause limited impact with the loss of fruit on Sorbus and cherry trees that could provide feeding for a range of birds. One of the larger plantation woodland blocks would have to be substantially removed through the provision of additional car parking spaces. This would amount to between 20-30% of semi-mature trees being removed along with some amenity grassland. To compensate for the loss of trees a range of purely native suitable species could be incorporated into a new landscape scheme. Loss of grassland will be compensated for by the use of a species rich 'wildflower lawn mix' again incorporated into a new landscape scheme. Loss of fruit baring shrub species with the loss of the introduced shrub will also be compensated for by the use of Sorbus and Prunus species in new tree planting. Therefore the proposed development in this area will have a negligible negative impact through the loss of semi-natural habitats.

5.3 Area B

5.3.1 There will be a small loss of wild bird food with the loss of the ornamental Sorbus which would produce winter berries. The loss of part of the shrub bed would remove a minor foraging area for small birds. Therefore the proposed development in this area will have a negligible negative impact through the loss of semi-natural habitats.

5.4 Area C

5.4.1 As above, the potential loss of a small number of native and non-native ornamental standard trees would have a minor impact on wildlife on the scale of the whole site which would still retain a large number of wildlife friendly trees and shrubs. Therefore the proposed development in this area will have a negligible negative impact through the loss of semi-natural habitats.

5.5 Area D

5.5.1 The loss of one semi mature tree associated shrub bed and amenity grassland would not constitute a significant loss in the context of the whole site where a large number of trees will be retained. Therefore the proposed development in this area will have a negligible negative impact through the loss of semi-natural habitats.

5.6 Area E

5.6.1 The loss of one small stunted silver birch and an area of close mown amenity grassland will not be a significant impact upon semi-natural habitat loss. Therefore the proposed development in this area will have a negligible negative impact through the loss of semi-natural habitats.

5.7 Fauna

5.7.1 Badger

There was no evidence of badgers using the site. It is predicted that the proposed development would have no impact upon this protected mammal.

5.7.2 Water Vole

The lack of any records, suitable habitats and absence of any field signs strongly suggest that there would be no impact from the development on this aquatic mammal.

5.7.3 Bats

The lack of any on-site records and suitable roosting habitats suggest that there would be no impact from the development on this mammal. Ivy on trees can provide short term roost sites but the ivy growing on the trees in areas A-E was not substantial enough to provide roosting potential. By providing roost sites within the proposed development there will be an increase in the potential for bats to use the site for roosting and perhaps breeding. Therefore with the provision of artificial roosts the impact upon bats is predicted to be moderately positive.

5.7.4 Reptiles and amphibians

There was no identified use of the site by either reptiles or amphibians. It is predicted that there will be no negative impact upon great crested newts or any other amphibian or reptile.

5.7.5 Invertebrates

Any loss of habitat would have an impact upon the invertebrates using the site but as the invertebrate fauna is only of local value the impact would be reduced. This can be compensated for by the use of species rich grassland which would provide greater habitat

opportunities for invertebrate species as part of a landscape scheme. It is therefore predicted that there would be a low impact upon invertebrates from the development.

5.8 Recommendations:

1) Any tree and scrub clearance work, should planning be approved, be carried out **outside the bird breeding season** (March-September) and that adequate replacement habitat is provided within the landscaping plans for the site

2) New landscaping works should include native tree and shrub plantings to compensate for the loss of tree habitat on-site. Such native species should be those found in local semi-natural habitats close to the site and a proportion of them should bear fruit for winter feeding of resident birds and winter migrant species. Use of native species of trees and shrubs will also provide enhanced habitat for invertebrates.

3) New landscaping works should include the sowing of species rich 'lawn grasses' that can be mown and continue to retain a species rich sward which would be good habitat for a range of invertebrates.

4) Additional breeding opportunities for birds such as house sparrows (*Passer domesticus*) should be included. Bat boxes should be placed in the remaining semi-mature trees to provide roost sites for bats especially pipistrelles. Small scale, invertebrate breeding and overwintering structures can be incorporated into the landscape to encourage a range of pollenating and beneficial insects to become established.

6.0 Conclusion

6.1 The site at Barnsley Business and Innovation Centre is one of very restricted semi-natural habitat value. The habitats identified are predominantly the result of a formal landscape scheme developed during the establishment of the whole site some 20-30 years ago. Over time the formality of these landscape elements have naturalised to some extent to make them more biodiverse and hence more valuable to local wildlife. However, the habits in total are still relatively poor in wildlife value and offer very few opportunities for protected or other species.

6.2 Although the impacts of the proposed development are predicted to be low, there are factors that should be considered in making provision for biodiversity. The new landscape scheme should use native species in the choice of trees and shrubs to replace those lost to the development. New areas of grassland should be created as species rich lawns that can be managed as amenity grassland but retain species richness and biodiversity value. Bat boxes, bird boxes and invertebrate habitat should be incorporated into the landscape.

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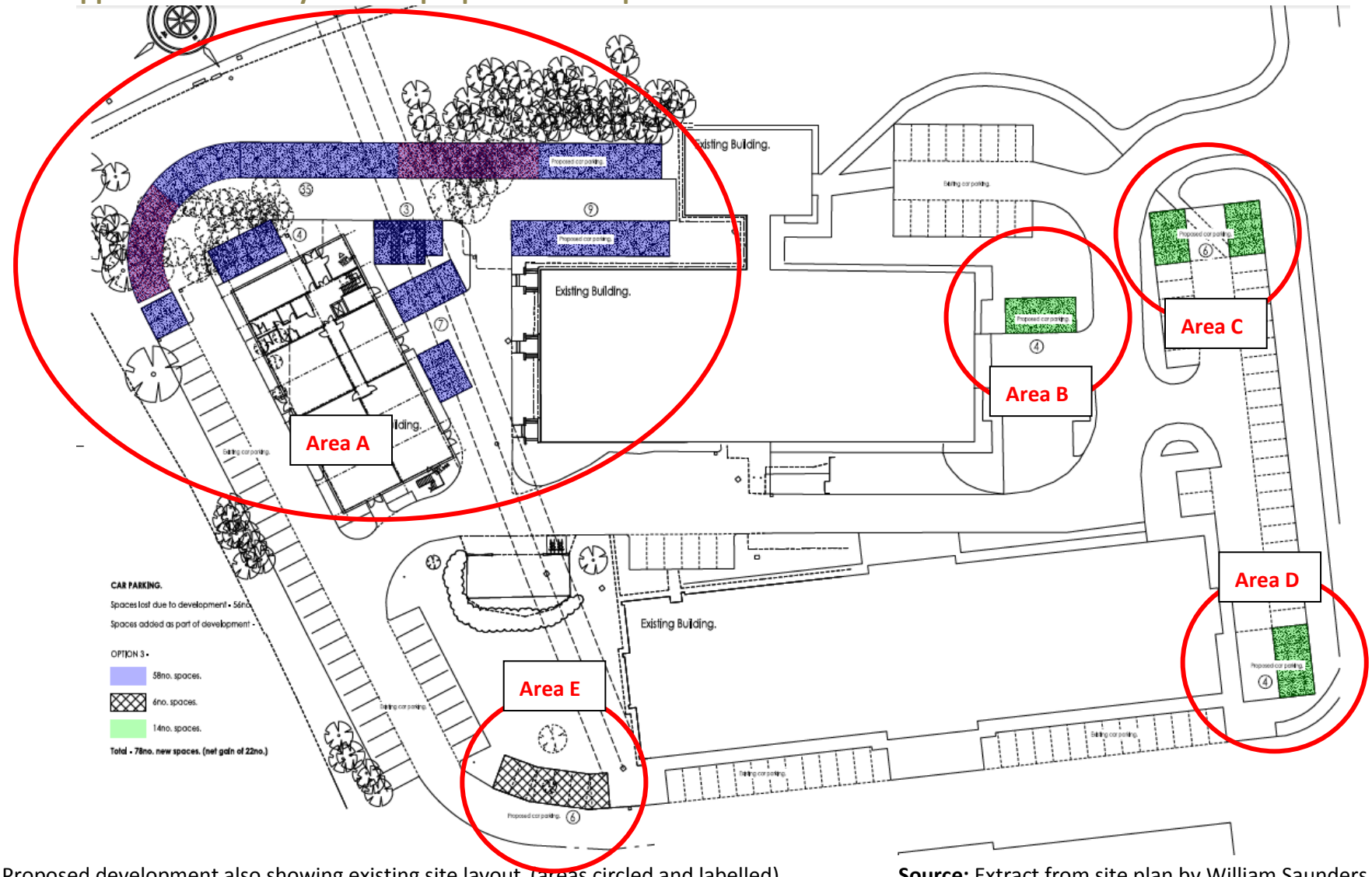
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Appendix A - Site layout with proposed development shown



Proposed development also showing existing site layout (areas circled and labelled)

Source: Extract from site plan by William Saunders

Appendix B - Photographs



Figure 1: Area A: Small group of trees on western boundary



Figure 2: Area A: Largest trees in the western plantation areas and some of the scattered trees



Figure 3: Area A: Showing large areas of hard surfaces which will form the main part of the footprint of the new building and small central verge with trees



Figure 4: Area A: Showing where tall ruderal appears on the edge of plantation areas (western edge)



Figure 5: Area A: Showing the 2nd plantation woodland area at the east



Figure 6: Area A: Introduced shrub bed



Figure 7: Area B: Facing north-west



Figure 8: Area C: Facing north on western side



Figure 9: Area C: Facing north on eastern side



Figure 10: Area D: Facing south-east

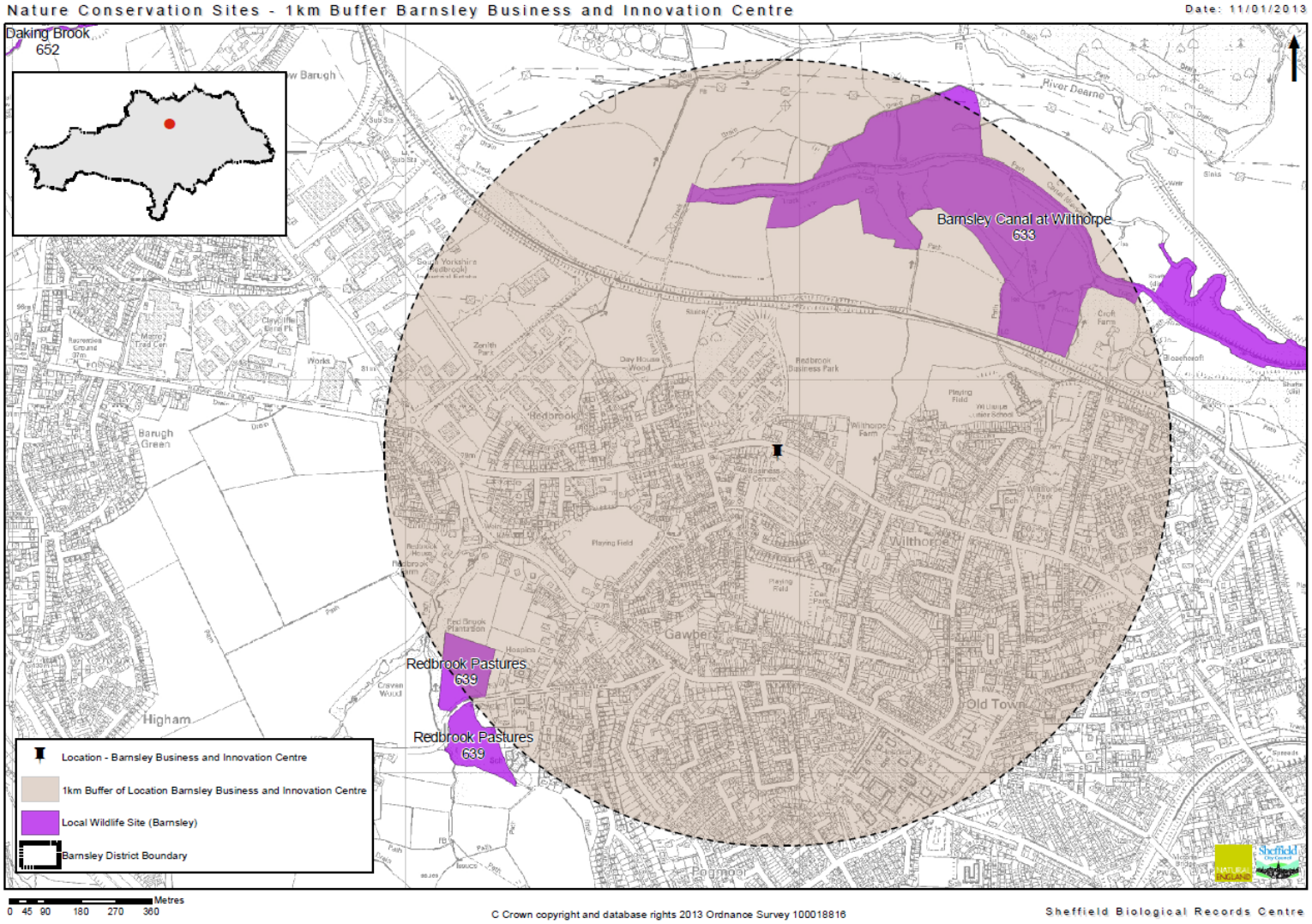


Figure 11: Area D: Facing south

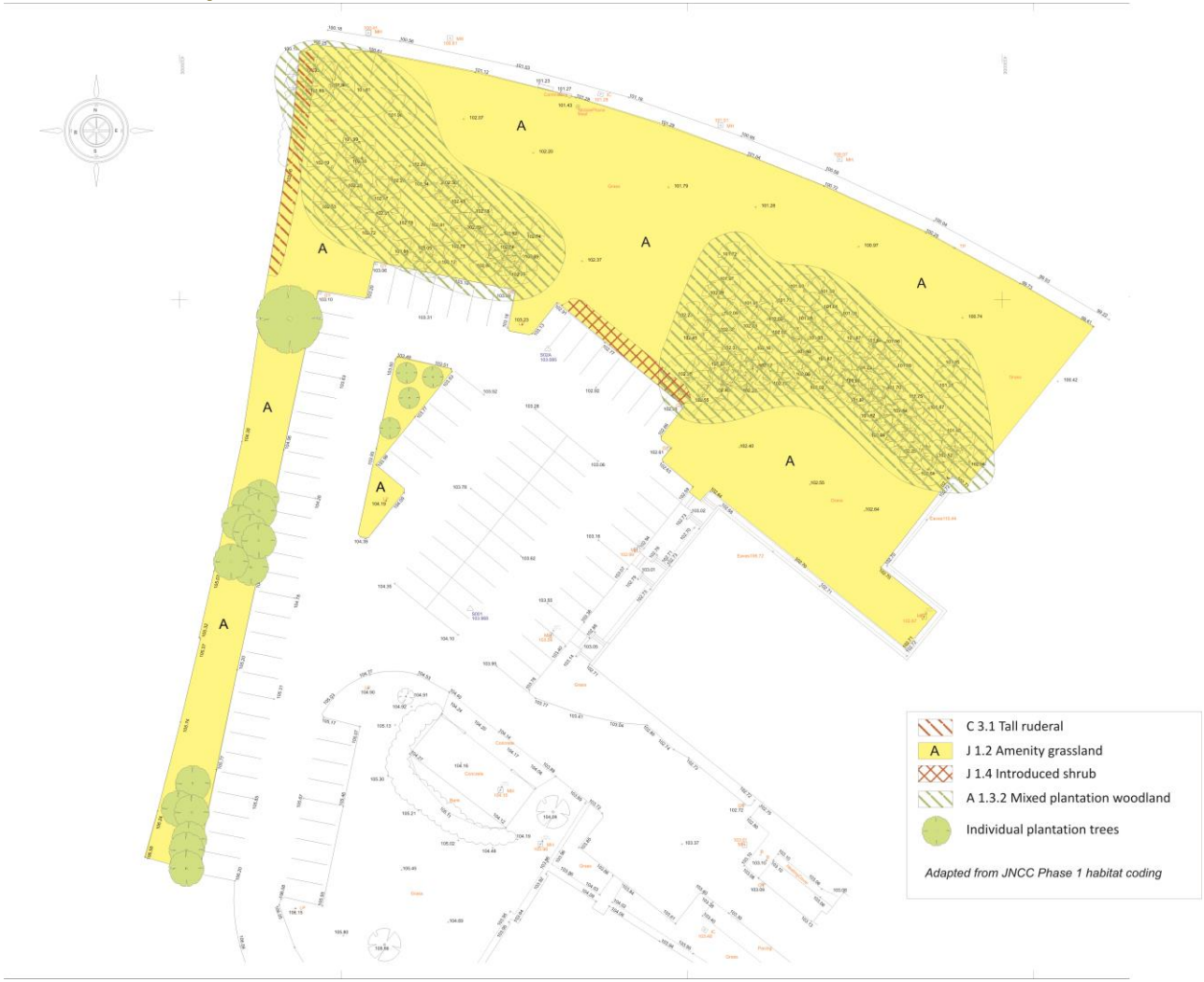


Figure 12: Area E: Facing west

Appendix C - Biological Records - Barnsley Biological Records Centre



Appendix D - Phase 1 habitat Map



Phase 1 Habitat Map for Area A **Source:** Adapted from plans by William Saunders

Appendix E - Species Lists

Amenity Grassland

Common Name	Scientific Name
Common bent	*Agrostis capillaris*
Daisy	*Bellis perennis*
Red fescue	*Festuca rubra*
Yorkshire fog	*Holcus lanatus*
Perennial rye grass	*Lolium perenne*
Ribwort plantain	*Plantago lanceolata*
Annual meadow grass	*Poa annua*
Creeping buttercup	*Ranunculus repens*
White clover	*Trifolium repens*

Plantation trees / scattered trees

Common Name	Scientific Name
Alder	*Alnus glutinosa*
Birch	*Betula pendula*
Hawthorn	*Crataegus monogyna*
Beech	*Fagus sylvatica*
Larch	*Larix decidua*
Black pine	*Pinus nigra*
London plane	*Plantanus acerifolia*
Cherry (ornamental)	*Prunus* var.
Sorbus (ornamental)	*Sorbus* var.

Tall ruderal

Common Name	Scientific Name
Cow parsley	*Anthriscus sylvatica*
Cocksfoot	*Dactylis glomerata*
Couch grass	*Elymus repens*
Cleavers	*Galium aparine*
Yorkshire fog	*Holcus lanatus*
Dock	*Rumex crispus*
Nettle	*Urtica dioica*

Appendix F - Assessing ecological impacts of a development

In assessing the ecological impact of a development it is essential to consider the types of ecological receptor that could be impacted upon:

- Designated sites and features
- Identifiable discrete units of important semi-natural habitats
- Definable populations, sub populations and meta populations
- Areas of habitat that form a continuum extending beyond the boundaries of the development site

These receptors that together and individually, form the intrinsic biodiversity interest of the site and must be valued to form the basis of an objective evaluation of the impacts of the proposed development upon the site. The relative values used are:

- International
- UK
- National (England, Scotland Wales and Northern Ireland)
- Regional
- County
- District (Unitary Authority)
- Local or parish
- Zone of influence (immediate area)

The impact of a development on receptors whether negative or positive can range across a number of factors, extent, magnitude, duration, reversibility and frequency all of which should be taken into account where relevant.

Appendix G - Legal status of species potentially present on-site

Nesting birds

Under the terms of the Wildlife and Countryside Act 1981 it is an offence to disturb nesting birds. The survey site is likely of significant local importance for nesting birds therefore any proposed operation considered to have the potential to disturb nesting birds should be carried out outside of the optimum period for bird nesting (**March to September inclusive**).

Priority habitats and species

Under the terms of the Natural Environment and Rural Communities Act 2006 all public bodies are required to have regard to the conservation of biodiversity when carrying out their activities. This means that efforts must be made to conserve, particularly, areas of priority habitat and populations of priority species. There would be a presumption in the land-use planning process against any development that would result in loss to an area of priority habitat.