

South Yorkshire Passenger Transport Executive (SYPTE)

Old Mill Lane, A61

Preliminary Ecological Appraisal

0-15-08

Issue | 16 April 2021

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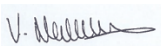
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Drawing 4.2: Phase 1 Habitat Plan

Drawing 4.2: Location of Waterbodies

Appendices

Appendix A

Desk Study Data

Executive Summary

Ove Arup and Partners Ltd. was commissioned by South Yorkshire Passenger Transport Executive to undertake an update Preliminary Ecological Appraisal at the Old Mill Lane site, Barnsley.

One statutory designated site was identified within 2km of the site. The Dearne Valley Park Local Nature Reserve is located approximately 200m east of the site. To ensure this designation is not adversely impacted by the proposed works, appropriate pollution prevention measures should be adopted during works and incorporated within a Construction Environment Management Plan.

Old Mill Lane Local Wildlife Site is located within the scheme redline boundary. This site is designated for a Daubenton's bat roost within a culvert to the east to Old Mill Lane. Bat emergence/re-entry surveys have been undertaken and recommendations in relation to mitigation and licencing requirements are provided in a standalone bat survey report.

It is recommended that scattered scrub, scattered broadleaved trees and broadleaved semi-natural woodland should be retained where possible. Where the loss of any tree is unavoidable, it is recommended that they are replaced on a 2:1 ratio, using species of local provenance.

The invasive plant species Himalayan balsam and giant hogweed were identified on site. It is recommended that an invasive species method statement is prepared for works and these species are eradicated from the site where possible.

No badger setts or signs of badger activity were identified within the site, however the woodland present provides suitable opportunities for sett construction and foraging. A pre-start survey is recommended prior to works commencing on site.

The River Dearne offers opportunities for otter foraging and resting. Otter surveys have been recommended to determine the presence or likely absence of the species in proximity to the site.

Any works which are likely to damage a breeding bird nest, for example vegetation clearance or building demolition, should be carried out outside of the bird nesting season (March – August inclusive). If this is not possible then the vegetation or building should be surveyed by a qualified ornithologist prior to works commencing.

1 Introduction

Ove Arup and Partners Ltd. (Arup) has been commissioned by South Yorkshire Passenger Transport Executive (SYLTE) to undertake an update Preliminary Ecological Appraisal (PEA) in relation to a proposed scheme to upgrade the A61 in Barnsley, South Yorkshire (Drawing 1.1). The PEA encompasses both a Phase 1 Habitat survey and protected species scoping study.¹ The PEA also conforms to the British Standard BS42020:2013 Biodiversity Code of Practice for Planning & Development.

1.1 Site and Scheme Description

The Old Mill Lane site is located north of Barnsley town centre (national grid reference SE3504307232) and encompasses a section of the A61 where it crosses the River Dearne. The proposed scheme involves widening of the A61 along the Old Mill Lane Bridge and the re-decking of the existing road. The site area is approximately 1.08ha.

1.2 Report Objectives

The purpose of this report is to identify the habitats within the site boundary; assess the potential for, or presence of, any protected or notable species; determine potential ecological impacts; and specify additional survey requirements, outline mitigation and enhancement options as appropriate.

Where accessible, habitats within 20m of the site boundary were also accessed and mapped (Drawing 4.2).

1.3 Report Structure

This report is structured as follows:

- Section 2: Legal and Policy Context.
- Section 3: Methodology.
- Section 4: Results.
- Section 5: Discussion.
- Section 6: Recommendations.

¹ CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

2 Legal and Policy Context

There is a comprehensive system of legislation, both domestic and international, which aims to protect biodiversity at the landscape, habitat and species level. Much of the legislation pertaining to biodiversity exists within, and also independently of, the planning process.

2.1 Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act (WCA) 1981 (as amended) is the primary legislation covering endangered species in England and sets out the framework for the designation of Sites of Special Scientific Interest (SSSIs). It confers differing levels of protection on species themselves, their habitats, or both, depending on their conservation status. Species offered protection by the Act are listed in a series of schedules. These Schedules are subject to a rolling review on a five-yearly basis. Protected species are listed under Section 1 (birds), Schedule 5 (animals other than birds and invertebrates) and Schedule 8 (plants).

2.2 Countryside and Rights of Way Act 2000

This Act affords a greater level of protection to SSSIs, provides enhanced management arrangements for Areas of Outstanding Natural Beauty (AONBs), and strengthens wildlife enforcement legislation. This Act has amended the WCA 1981 (as amended) by the addition of the term ‘recklessly’ to Section 1(5) and Section 9(4) which has resulted in additional obligations with respect to protected species. As such, it is now an offence to intentionally or recklessly disturb protected species listed on the relevant Schedules of the WCA 1981 (as amended).

2.3 Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities (NERC) Act 2006, is designed to help achieve a rich and diverse natural environment and thriving rural communities. Under Section 40 there is a Duty to conserve biodiversity; specifically Subsection (1) states “*Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.*”

Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40.

2.4 The Protection of Badgers Act 1992

This Act brings together all the legislation that is specific to badgers *Meles meles*, with the exception of their inclusion on Schedule 6 of the WCA 1981 (as

amended), which prohibits certain methods of taking or capture. The Act makes it an offence to intentionally kill or ill-treat a badger, and destroy, disturb or obstruct a sett. Specifically, it imposes restrictions on works carried out within certain distances of badger setts. Any works that will directly impact on an existing sett are only permitted subject to approval through the issue of a licence from Natural England.

2.5 Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019

The Habitats Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna provides legal protection for habitats and species of European importance. This Directive was transposed into UK law by the Conservation of Habitats and Species Regulations 2017.

The Regulations for the protection of European Protected Species (EPS) have been amended and consolidated with key changes including the removal of most of the defences from regulation 40 and regulation 43 including the removal of the ‘incidental result of an otherwise lawful operation’ defence, and the increase in the threshold for the offence of deliberately disturbing an EPS. Proposals that will affect EPS may require a licence from Natural England to allow an otherwise unlawful act. In 2009 a new offence of ‘breaching condition of an EPS licence’ was added to the regulations. The licensing process is separate from the planning process.

2.5.1 Brexit Implications

To ensure continued protection of these habitats and species, the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019 came into force on 1 January 2021. The EU Exit Regulations amend the 2017 Habitats Regulations, primarily to enable the transfer of functions from the European Commission to the appropriate authorities in England and Wales, and to ensure the 2017 Habitats Regulations continue to be operable. The Government’s Explanatory Memorandum to these regulations states:

“This instrument provides changes to those parts of the 2017 and 2001 Regulations which would no longer work when the UK leaves the EU... The intention is to ensure habitats and species protection and standards as set out under the Nature Directives are implemented in the same way or an equivalent way when the UK exits the EU. There is no change to policy.”²

The EU Exit Regulations therefore ensure that habitat and species protections and standards as derived from EU law will continue to apply now that the UK has left the EU. As a result, the obligations of a competent authority in relation to the protection of European sites or species have not changed. Within this report,

² Explanatory Memorandum to The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 No. 579. Available at: https://www.legislation.gov.uk/uksi/2019/579/pdfs/uksem_20190579_en.pdf. Accessed March 2021.

reference to the ‘Habitats Regulations’ should be taken to mean the 2017 Habitats Regulations as amended by the EU Exit Regulations.

2.6 Birds Directive (2009/147/EC)

The EU meets its obligations for bird species under the Bern Convention and Bonn Convention and more generally by means of Directive 2009/147/EC (Birds Directive) on the conservation of wild birds. In the UK, the provisions of the Birds Directive are implemented through the WCA 1981 (as amended) and the Habitats Regulations, as well as other legislation related to land and sea.

The main provisions of the Directive include: the maintenance of populations of all wild bird species across their natural range; the establishment of a general scheme of protection for all wild birds; requirements to ensure that introduction of non-native birds do not threaten other biodiversity; and the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance (Article 4). Together with Special Areas of Conservation (SACs) designated under the Habitats Directive, SPAs form a network (formerly Natura 2000 sites) under the Habitats and Species Amendment (EU Exit) Regulations 2019.

2.7 National Planning Policy Framework

The revised National Planning Policy Framework (NPPF) was published in February 2019 and is a material consideration in all planning decisions. NPPF refers to the responsibilities of the local authorities to conserve the natural environment with respect to the use of the ‘*Circular 6/2005: Biodiversity and Geological Conservation – Statutory Obligation and their Impact within the Planning System*’ as guidance in this process. All public bodies including local planning authorities are to consider habitats and species of Principal Importance listed in S41 of the NERC Act and Priority Species/Habitats within Biodiversity Action Plans when considering a planning application.

2.8 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

The Water Framework Directive (WFD) introduced a comprehensive river basin management planning system to help protect and improve the ecological health of our rivers, lakes, estuaries and coastal and groundwaters. This is underpinned by the use of environmental standards to help assess risks to the ecological quality of the water environment and to identify the scale of improvements that would be needed to bring waters under pressure back into a good condition. WFD requires that for any activity which may negatively affect the water environment, there is a low risk that the activity will cause deterioration in status/potential or prevent good status/potential being achieved.

2.9 Non-Statutory Local Sites

Non-statutory local sites are referred to as Local Wildlife Sites (LWS) within the region. These sites are of county importance for their wildlife value. They have no statutory protection but are recognised by Local Authorities and statutory agencies and their presence is fully considered when determining planning applications.

3 Methodology

3.1 Desk Study

Protected species records and non-statutory designated site information within a 2km buffer surrounding the site were requested from the Barnsley Biological Records Centre, which is run by Sheffield Biological Records Centre (SBRC).

The Multi-Agency Geographic Information for the Countryside (MAGIC) website³ was consulted for:

- statutory designated site information within 2km of the site;
- previously granted EPS licences within 2km of the site;
- S41 Habitats of Principal Importance (NERC Act 2006) within the site; and
- SSSI Impact Risk Zones which extend onto the site. The Risk Zones have been developed to guide planners on whether a development would impact upon a SSSI/ SAC/ SPA/Ramsar site.

Ordnance Survey maps were examined for the presence of mapped waterbodies within a 250m radius of the site.

3.2 Field Survey

3.2.1 Phase 1 Habitat Survey

A field survey of the site was carried out in August 2020. Habitats were identified using the standard Phase 1 Habitat survey methodology (JNCC, 2010).⁴ As part of the field survey, the potential for the site to support any legally protected or notable faunal species was also assessed. Unless otherwise specified, detailed faunal surveys were not undertaken at this stage; rather the potential for the site to support each species or species group was assessed based on the known range of each species or species group, and the suitability of the habitats within the site. Field signs or sightings of such species were recorded as observed.

Invasive Species

The list of invasive plant species included on Schedule 9 of the WCA 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The survey checked, in particular, for the presence of Japanese knotweed *Reynoutria japonica*, giant knotweed *R. sachalinensis*, *R. japonica* x *R. sachalinensis* (a hybrid knotweed) giant hogweed *Heracleum mantegazzianum*, and Himalayan balsam *Impatiens glandulifera*.

³ <https://magic.defra.gov.uk/MagicMap.aspx>. Accessed 20/10/20.

⁴ Joint Nature Conservation Committee (JNCC) (2010) *Handbook for Phase 1 Habitat Survey: A technique for environmental audit*. Revised re-print. JNCC: Peterborough.

3.2.2 Bat Roost Suitability Assessment

An external bat roost suitability assessment of trees and buildings within the site boundary (Drawing 1.1) was undertaken in August 2020 to determine their suitability to support roosting bats. The survey was conducted externally from the ground using binoculars. The survey followed standard methodology detailed within the Bat Conservation Trust Good Practice Guidelines (Collins, 2016)⁵. Each tree and building on site was inspected for signs of bat presence including:

- bat droppings;
- scratch and grease marks;
- live or dead bats; and
- noises of bats calling from within the roost.

In addition, features searched for on buildings included:

- cracked, missing or lifted roof tiles;
- missing mortar in walls;
- gaps in soffits, fascia or barge boards;
- presence of a cavity wall, and
- any cracks or gaps at least 10mm in size.

Features searched for on trees included:

- cavities or splits in trunks/branches;
- woodpecker holes;
- loose bark; and
- dense ivy covering (may be covering up potential roosting opportunities).

Each tree or building was then awarded a level of suitability to support roosting bats at different times of the year. The assessment categories used are explained in Table 3.1.

Table 3.1: Bat roost suitability categories.

Habitat value (adapted from Collins, (2016) ⁵ Table 4.1 classification)	Roosting habitats	Commuting and foraging habitats
High suitability	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions (temp, humidity, height	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used

⁵ Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). London: The Bat Conservation Trust.

Habitat value (adapted from Collins, (2016) ⁵ Table 4.1 classification)	Roosting habitats	Commuting and foraging habitats
	above ground level, light levels or levels of disturbance) and surrounding habitat.	regularly by foraging bats such as broadleaved woodland, tree lined watercourses and grazed parkland. Site is close to and connected to known roosts.
Moderate suitability	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low suitability	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (<i>i.e.</i> unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting suitability.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, <i>i.e.</i> not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Negligible suitability	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.

3.2.3 Habitat Suitability Index (HSI)

Suitable waterbodies within a 250m radius of the site were assessed as to their potential to support a breeding population of great crested newt *Triturus cristatus*. This assessment was undertaken using the Habitat Suitability Index (HSI) developed by Oldham *et al.* (2000) which considers several habitat/ecological parameters.⁶ Habitat variables measured include location, desiccation, water quality, macrophyte cover, terrestrial habitat quality, etc. A value is recorded for each parameter and combined to determine an index of breeding suitability for great crested newts. The HSI is represented by a value from 0 to 1, the higher the value the more likely it is that the waterbody may support breeding great crested newt.

⁶ Oldham, R.S., Keeble, J., Swan, M.J., and Jeffcote, M., (2000) *Evaluating the suitability of habitats for great crested newt (Triturus cristatus)*. Herpetological Journal 10: 143-15.

3.2.4 Survey Limitations

Ecological surveys are limited by factors that affect the presence of plants and animals, such as the time of year, migration patterns and behaviour. Therefore, 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. However, professional judgement allows for the likely presence of these species to be predicted with sufficient certainty to not significantly limit the validity of these findings.

Any grid references provided within this report are approximate (obtained through handheld GPS devices) and are to be used as a guide only.

4 Results

4.1 Desk Study

The full results of the data search provided by SBRC are provided in Appendix A.

4.1.1 Statutory Designations

One statutory designated site was recorded within 2km of the site; Dearne Valley Park Local Nature Reserve (LNR). Details of the site designation are provided in Table 4.1.

Table 4.1: Statutory designations within 2km of the site.

Designation	Reason for designation	Location
Dearne Valley Park LNR	The 49.34ha site consists of acidic oak woodland and a mosaic of wetland and grassland habitats.	0.2km east of the site

The site is not located within a SSSI Impact Risk Zone.

4.1.2 Non-Statutory Designations

Details of non-statutory designated sites within a 2km search radius are summarised in Table 4.2. The full details are provided in Appendix A.

Table 4.2: Non-statutory sites within 2km of the site.

LWS	Description	Location
Old Mill Lane Culvert Bat Roost LWS	The site is located on the River Dearne where it flows in a south-eastern direction just to the north-east of Barnsley Town Centre. The site covers an area of 10.27ha. Since 1990, the culvert under the A61 bridge has been known to support an important maternity roost for Daubenton's bat <i>Myotis Daubentonii</i> . The River Dearne is tree-lined, both upstream and downstream of the A61 bridge and is used by foraging bats. Upstream of the A61, the landscape of the floodplain opens into recreation grounds and bodies of standing water.	Within site boundary.
Cliff Wood LWS	Cliff wood is located within the Dearne Valley Park. It lies to the north of the River Dearne between Old Mill lane in the west and Cundy Cross to the east. The site contains broadleaved woodland which is dominated by oak and birch with smaller amounts of other native species such as ash <i>Fraxinus excelsior</i> , hawthorn <i>Crataegus monagyna</i> , holly <i>Ilex aquifolium</i> , hazel <i>Corylus avellana</i> , and field maple <i>Acer campestre</i> . Many of the species are stunted and multi-stemmed.	Approximately 0.7km south east.
Barnsley Canal at Wilthorpe LWS	The Barnsley Canal at Wilthorpe LWS site includes a stretch of the disused Barnsley Canal and adjacent pastoral farmland. The River Dearne is to the north of the site and an active railway line lies to the south, with a mix of arable and pasture farmland comprising the majority of the wider area. The majority of the disused canal is now swamp with reed sweet-grass <i>Glyceria maxima</i> , dominant.	Approximately 0.8km north west.

MAGIC identified the following S41 Habitats of Principal Importance (HoPI) within the site boundary:

- broadleaved deciduous woodland.

4.1.3 Species Records

Records of protected/notable or invasive species provided by SBRC within a 2km search radius surrounding the site are summarised in Table 4.3. Any records over 25 years old have been omitted from Table 4.3 as these are not considered to reflect the current species assemblage. In addition, records with less than a six-figure National Grid Reference have been omitted as an accurate location relative to the site could not be determined.

Full desk study data is contained in Appendix A.

Table 4.3: Summary of protected/notable species records within 2km.

Taxonomic group	Common name	Approximate distance and direction of closest record	Number of records within 2km
Terrestrial mammals	Otter <i>Lutra lutra</i>	Within site boundary	4
	Badger <i>Meles meles</i>	0.3km east	5
	Hedgehog <i>Erinaceus europaeus</i>	0.5km south	9
	Water vole <i>Arvicola amphibius</i>	0.9km south-east	3
Bats	Common pipistrelle <i>Pipistrellus pipistrellus</i>	Within site boundary	16
	Daubenton's bat <i>Myotis daubentonii</i>	Within site boundary	144
	Pipistrelle species <i>Pipistrellus</i> sp.	0.1km east	65
	Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	0.2km north west	6
	Noctule <i>Nyctalus noctula</i>	0.2km north west	22
	Leisler's bat <i>Nyctalus leisleri</i>	1.0km west	5
Birds	Blackbird <i>Turdus merula</i>	Within site boundary	227
	Black-headed gull <i>Larus ridibundus</i>	0.3km west	19
	Black-tailed godwit <i>Limosa limosa</i>	1.9km north west	2
	Bullfinch <i>Pyrrhula pyrrhula</i>	0.2km north west	50
	Common gull <i>Larus canus</i>	1.7km north west	1
	Cormorant <i>Phalacrocorax carbo</i>	1.6km north west	7
	Cuckoo <i>Cuculus canorus</i>	0.9km north west	11
	Dunnock <i>Prunella modularis</i>	0.3km south	103
	Fieldfare <i>Turdus pilaris</i>	1.3km south east	6

	Gadwall <i>Anas strepera</i>	1.5km north west	16
	Goldcrest <i>Regulus regulus</i>	0.4km north east	15
	Goldeneye <i>Bucephala clangula</i>	1.0km south east	1
	Grasshopper warbler <i>Locustella naevia</i>	1.9km north west	12
	Green sandpiper <i>Tringa ochropus</i>	1.9km north west	10
	Green woodpecker <i>Picus viridis</i>	0.8km south east	20
	Grey partridge <i>Perdix perdix</i>	1.9km south east	9
	Grey wagtail <i>Motacilla flava</i>	1.2km east	6
	Herring gull <i>Larus argentatus</i>	0.6km north west	1
	Hobby <i>Falco subbuteo</i>	1.9km north west	1
	House martin <i>Delichon urbica</i>	1.6km west	10
	Jack snipe <i>Lymnocyrtus minimus</i>	1.9km north west	9
	Kestrel <i>Falco tinnuculus</i>	0.5km north west	17
	Kingfisher <i>Alcedo atthis</i>	0.2km north west	27
	Lapwing <i>Vanellus vanellus</i>	1.4km north west	16
	Lesser redpoll <i>Acanthis cabaret</i>	1.8km north east	6
	Linnet <i>Carduelis cannabina</i>	0.9km north west	15
	Little ringed plover <i>Charadrius dubius</i>	0.9km north west	6
	Meadow pipit <i>Anthus pratensis</i>	1km north east	8
	Mistle thrush <i>Turdus viscivorus</i>	0.9km north west	29
	Mute swan <i>Cygnus olor</i>	0.9km north west	9
	Oystercatcher <i>Haematopus ostralegus</i>	0.9km north west	6
	Peregrine <i>Falco peregrinus</i>	0.5km north west	13
	Pink-footed goose <i>Anser brachyrhynchus</i>	1.2km south	8
	Redshank <i>Tringa totanus</i>	1.9km north west	3
	Redwing <i>Turdus iliacus</i>	0.6km north west	10
	Reed bunting <i>Emberiza schoeniclus</i>	1.0km north west	16
	Sand martin <i>Riparia riparia</i>	1.9km north west	2
	Shoveler <i>Anas clypeata</i>	1.0km south east	3
	Snipe <i>Gallinago gallinago</i>	1.6km north west	19

	Song thrush <i>Turdus philomelos</i>	0.3km north east	51
	Starling <i>Sturnus vulgaris</i>	0.2km south west	120
	Swallow <i>Hirundo rustica</i>	1.4km north west	11
	Teal <i>Anas crecca</i>	1.4km north west	18
	Tree sparrow <i>Passer montanus</i>	1.2km west	2
	Water rail <i>Rallus aquaticus</i>	0.2km north west	30
	Willow warbler <i>Phylloscopus trochilus</i>	1.8km north west	42
	Yellow hammer <i>Emberiza citrinella</i>	1.0km north east	10
Amphibians	Common frog <i>Rana temporaria</i>	0.4km south east	7
	Common toad <i>Bufo bufo</i>	0.6km east	10
	Great crested newt <i>Triturus cristatus</i>	0.9km south east	12
	Smooth newt <i>Triturus vulgaris</i>	1.0km north west	16
Invertebrates	Small square-spot <i>Diarsia rubi</i>	1.0km north	1
	Small heath <i>Coenonympha pamphilus</i>	1.0km north west	17
	Dingy skipper <i>Erynnis tages</i>	1.6km south east	14
	Cinnabar <i>Tyria jacobaeae</i>	1.6km south east	16
Bony fish	Brown / sea trout <i>Salmo trutta</i>	0.1km east	1
Flowering plants	Cornflower <i>Centaurea cyanus</i>	1.3km south east	2

There was one previously granted EPS application within 2km of the site identified on MAGIC.³

- EPSM2013-6477: common pipistrelle, licence start date 18/10/2013 – licence end date 30/09/2014 for the destruction of a resting place. Located approximately 650m west of the site.

4.2 Field Survey

The results of the field survey undertaken at the site are described below.

4.2.1 Habitats

The Phase 1 Habitat map is presented in Drawing 4.2. This graphically represents the habitats recorded within the site and denotes the location of Target Notes (TN).

The following habitat types were identified within the site boundary and 20m survey buffer (where accessible):

- Broadleaved semi-natural woodland.
- Dense scrub.
- Scattered broadleaved trees and scrub.
- Amenity grassland.
- Introduced shrub.
- Tall ruderal vegetation.
- Running water.
- Hardstanding and buildings.

Broadleaved semi-natural woodland

Broadleaved semi-natural woodland is located to the west of Old Mill Lane (Drawing 4.2). To the north of the River Dearne, the woodland supports a range of age classes including mature trees and juvenile trees/samplings. Species recorded within the woodland canopy and understorey include sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior*, beech *Fagus sylvatica*, silver birch *Betula pendula*, crack willow *Salix fragilis*, elder *Sambucus nigra*, hawthorn *Crataegus monogyna*, holly *Ilex aquifolium*, field maple *Acer campestre*, and cherry *Prunus* sp. The ground flora contained cow parsley *Anthriscus sylvestris*, bramble *Rubus fruticosus* agg., bracken *Pteridium aquilinum*, garlic mustard *Alliaria petiolate*, wood avens *Geum urbanum*, nettle *Urtica dioica*, teasel *Dipsacus fullonum*, and ramsons *Allium ursinum*. The invasive species giant hogweed and Himalayan balsam were also recorded within the woodland (TN1: Drawing 4.2).

The woodland to the south of the river comprises young, narrow-stemmed hawthorn and dogwood *Cornus sanguinea*, with occasional field maple, holly and rowan *Sorbus aucuparia*.

Dense scrub

An area of dense scrub comprising buddleia *Buddleja davidii*, Chinese barberry *Berberis julianae*, rose *Rosa* sp., and non-invasive cotoneaster species *Cotoneaster* sp. is present at the bottom of high retaining wall along the eastern side of Old Mill Lane.

Scattered broadleaved trees and scrub

Scattered broadleaved trees and scrub are present throughout the site. Young to semi-mature trees and scrub are planted within road verges, particularly in the south section of the site. Species recorded include silver birch, oak *Quercus* sp., ash, sycamore, cherry, white poplar *Populus alba*, sea buckthorn *Hippophae rhamnoides*, elder, rowan and common dogwood.

Amenity grassland

Amenity grassland is present within road verges throughout the site (Drawing 4.2). Species recorded include annual meadow grass *Poa annua*, perennial rye-

grass *Lolium perenne*, creeping buttercup *Ranunculus repens*, daisy *Bellis perennis*, cocksfoot *Dactylis glomerata*, ribwort plantain *Plantago lanceolata*, white clover *Trifolium repens*, yarrow *Achillea millefolium*, dandelion *Taraxacum officinale* agg., sow thistle *Sonchus* sp., germander speedwell *Veronica chamaedrys*, and common mouse-ear *Cerastium fontanum*.

Introduced shrub

Introduced shrubs and ornamental species are present in the south and west of the site (Drawing 4.2). Species recorded include, but are not limited to, laurel *Laurus* sp., buddleia, non-invasive cotoneaster, Chinese barberry, Rose of Sharon *Hypericum calycinum*, and rose species *Rosa* sp. Some of these species are also present within patches of dense or scattered native scrub.

Running water

The River Dearne flows in a south-east direction through the centre of the site. A weir is present to the west of Old Mill Lane, resulting in fast flowing water within the site. Water was between 0.5 to 1m deep within the site boundary at the time of survey.

Small islands of silt and gravel in the river support stands of vegetation including Himalayan balsam and great willowherb *Epilobium hirsutum* (TN2; Drawing 4.2).

The banks of the river either side of Old Mill Lane bridge comprise vertical stone retaining walls. Mature trees and woodland are present on top or behind these retaining walls. On the western side of the bridge, a gated entrance to a culvert is present which is known to support a Daubenton's bat *Myotis daubentonii*, roost (TN3; Drawing 4.2).

To the west of the site boundary above the weir, the riverbanks are more naturalised comprising earth banks with woodland and scrub habitat.

Hardstanding and buildings

The site is dominated by hardstanding comprising Old Mill Lane (A61), car parks and side roads.

One small substation building is present within the site boundary (TN4; Drawing 4.2). A second small substation is located just outside the site boundary, to the west of Old Mill Lane (TN5; Drawing 4.2). These buildings were assessed for their potential to support roosting bats (Section 4.2.2).

Invasive Species

The invasive species Himalayan balsam and giant hogweed (TN1 and TN2; Drawing 4.2) were recorded within the site boundary.

4.2.2 Fauna

During the field survey, signs of protected/notable fauna were recorded if observed. In addition, the habitats were assessed as to their potential to support protected species. The protected species groups sought/assessed included:

- Mammals.
- Birds.
- Herpetofauna (amphibians and reptiles).
- Invertebrates.

Bats

The trees and buildings within or immediately adjacent to the site boundary were assessed as to their suitability to support roosting bats.

TN4 (Drawing 4.2) is a red brick building approximately 2.5m high located at the edge of a car park. This building has a flat roof with a wooden fascia; the top of the fascia is open so does not provide an enclosed space. The roof sits flush against the supporting walls, with no cracks or crevices visible.

TN5 (Drawing 4.2) is a small brick building approximately 1.8m high with a flat roof. The fascia sits flush against the building and no cracks, voids or other potential roost features present. Both substations were therefore assessed to have negligible suitability for roosting bats.

The Old Mill Lane bridge (TN6; Drawing 4.2) comprises a concrete deck on brick abutments. The brickwork and mortar is in good condition with no visible cracks or voids that would provide potential roost features for bats. The structure is therefore considered to provide negligible bat roost suitability.

A culvert located within the site boundary (TN3; Drawing 4.2) adjacent to the Old Mill Lane bridge is known to support a maternity roost of Daubenton's bats. Bat emergence/re-entry surveys were undertaken in 2020 and confirmed the presence of this roost. Full details of the survey and recommendations in relation to bats are provided in a standalone bat survey report.⁷

Scattered broadleaved trees within the site boundary were predominantly too immature to provide potential bat roost features associated with larger and over-mature trees, e.g. rot holes or cavities. Where more mature trees were present within the areas of broadleaved woodland in the site boundary, these were largely noted to be in good condition and lacking potential bat roost features. A single sycamore tree with a large wound on the eastern side of the stem was noted within the woodland, however on inspection with binoculars and a high-powered torch, the feature was noted to be too shallow and exposed to provide potential roosting opportunity.

The broadleaved woodland in the north of the site provides opportunities for foraging and commuting bats. In addition, the River Dearne is also likely to support bat foraging and commuting. In accordance with current guidelines (Table 3.1), the site was assessed to provide high suitability for commuting and foraging bats.

⁷ Arup (2021) Old Mill Lane A61 Bat Survey Report.

Badger

No signs of badger (e.g. setts, latrines, snuffle holes, paths, footprints and/or hairs) were identified on site. However, the broadleaved woodland adjacent to the River Dearne provide suitable foraging resource. The topography within the woodlands includes steep embankments and may provide opportunities for sett construction.

Water vole

There were no wet ditches within or adjacent to the site. The section of the River Dearne which flows through the site comprises vertical retaining walls and limited vegetation is present within the channel. A weir is present to the west of Old Mill Lane which results in fast flowing water through the site boundary.

The site was therefore not considered suitable for water vole *Arvicola amphibius*. Consequently, water vole are not considered further within this assessment.

Otter

The data search identified four records of otter within 2km of the site, the closest of which was located within the site boundary. The section of river within the site boundary is heavily engineered and comprises vertical retaining walls and a weir. It is subject to high levels of disturbance from the nearby road, limiting opportunities for holts or couches. However, in such circumstances, otters have been known to use outfall pipes or artificial shelves as holts and couches.

It is likely that otter utilise this section of the river as a corridor to commute between more suitable areas of habitat within the wider catchment. It is also possible that the habitat located up and down-stream of the site offers suitable opportunities for otter holts and resting places.

Birds

Suitable habitat for breeding birds such as chiffchaff *Phyllscopus collybita*, great tit *Parus major*, and great spotted woodpecker *Dendrocopos major*, are provided within the broadleaved woodland on site. The scattered trees, scrub and introduced shrub may also provide nesting habitat for common species such as wren *Troglodytes troglodytes*, and robin *Erithacus rubecula*.

Amphibians

Two waterbodies were identified within 250m of the site boundary (Drawing 4.2). The waterbodies were assessed using the HSI assessment method. A summary of the assessment is provided in Table 4.4.

Table 4.4: HSI Results.

Waterbody	Grid Reference	HSI score (suitability for great crested newt)
WB1	SE3492007364	0.29 (poor)
WB2	SE3490307597	0.58 (below average)

WB1 is a small waterbody heavily shaded by surrounding woodland and was noted to contain abundant leaf litter. WB2 comprises a large lake (approximately 4.3ha) which is an established coarse fishery.

The nearest records of great crested newt are 0.9km south east of the site boundary. Major barriers to amphibian movement including roads, buildings and expansive made ground are present between these records and the site. Due to the absence of suitable connecting habitat and the sub-optimal nature of waterbodies located within 250m of the site, great crested newt are considered likely absent from the site.

Consequently, great crested newt are not considered further within this assessment.

Reptiles

The site largely comprises made ground and urban development making it sub-optimal for reptile species. Furthermore, there are no records of reptiles within 2km of the site.

Consequently, reptiles are not considered further within this assessment.

5 Discussion

5.1 Statutory Designations

Dearne Valley Park LNR is located approximately 0.2km east of the site. This 49.34ha site consists of acidic oak woodland and a mosaic of wetland habitats. The LNR is hydrologically linked to the site via the River Dearne and is situated downstream of the proposed works.

To prevent adverse impacts on the Dearne Valley LNR, it is recommended that appropriate pollution prevention measures are adopted during works and incorporated within a Construction Environmental Management Plan (CEMP). Measures to prevent impacts on habitats contiguous with the LNR, or protected species associated with those habitats, are detailed below (Sections 5.3 and 5.5).

No other statutory designated sites are located within 2km of the site.

5.2 Non-statutory Designations

There are three non-statutory designated sites located within 2km of the site.

Old Mill Lane LWS is located within the site boundary and is primarily designated for the presence of a Daubenton's bat maternity roost. The roost is located within a culvert approximately 2m wide by 1.5m high, running parallel to Old Mill Lane. The LWS covers an area of 10.27ha and encompasses suitable bat foraging habitat surrounding the culvert including the river, woodland and waterbodies located at The Fleets. An area of woodland within the LWS comprises S41 priority habitat deciduous woodland.

Recommendations in relation to the bat roost are detailed in Section 5.5.1.

Where practicable, the loss of any trees within the Old Mill Lane LWS and the S41 deciduous woodland habitat should be avoided. Where this is not possible, trees should be replaced on a 2:1 ratio using native species appropriate to the site. Any areas of habitat temporarily impacted during works should be reinstated following construction.

Cliff Wood LWS is located approximately 0.7km south east of the Old Mill Lane site. The LWS is hydrologically connected to the site via the River Dearne. Appropriate pollution prevention measures must be adopted during works and incorporated within a CEMP to ensure the LWS is not impacted as a result of pollution pathways.

The Barnsley Canal at Wilthorpe LWS is located 0.8km north west of the site. There are no pollution pathways between the site and this LWS. Consequently, it is not anticipated the LWS will be adversely impacted by the proposed works.

5.3 Habitats

The habitats on site consist of hardstanding and buildings, amenity grassland, broadleaved woodland, scattered broadleaved trees and scrub, introduced shrub and running water.

The areas of broadleaved woodland, trees and scrub should be retained where possible. Where the loss of any trees is unavoidable, it is recommended that these are replaced on a 2:1 ratio using species of local provenance in-keeping with the local habitat. Tree species should include oak, willow, hawthorn, blackthorn, poplar *Populus* sp., hazel *Corylus avellana* and silver birch.

5.4 Invasive Species

A number of invasive species were recorded during the field survey (Section 4.2.1). It is recommended that an invasive species method statement is prepared to ensure these species are managed appropriately and that there is no spread off site.

5.5 Fauna

5.5.1 Bats

A known Daubenton's bat roost is present within the site boundary and is a key feature of the Old Mill Lane LWS designation.

British bat species are fully protected through their inclusion in Schedule 5 of the WCA 1981 (as amended) and in Schedule 2 of The Conservation of Habitats and Species Regulations 2010 (as amended). Under the legislation, it is an offence to intentionally kill, injure or take a bat as well as intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat or disturb an animal while it is occupying a structure or place which it uses for that purpose.

Update bat emergence/re-entry surveys have been undertaken on the Old Mill Lane culvert in 2020 which confirmed the presence of a Daubenton's bat roost.⁷ It was not possible to access the culvert during winter in order to complete hibernation surveys, therefore it is currently assumed that the culvert also supports hibernating bats.

Due to proposed piling works taking place in proximity to the roost and road re-surfacing works occurring above the culvert, a licence for disturbance will be required from Natural England. In order to obtain a bat licence, the development will require planning consent, up to date bat survey data (from the most recent survey season), and a robust mitigation strategy. The licence application will require a method statement detailing measures to minimise adverse impacts on the roost. Consultation with the county ecologist and Natural England is recommended to inform the proposed mitigation within the licence. Natural England take a minimum of 30 working days to process a licence application and provide a response.

In accordance with current guidelines, bat survey data to support the licence should comprise three dusk emergence/dawn re-entry surveys of the roost.⁵ Surveys must be undertaken during the active bat period between May-September.

Dusk emergence surveys commence 15 minutes before sunset and continue for 1.5 to 2 hours after sunset or until it is considered that all bats will have emerged. Dawn re-entry surveys commence 1.5 to 2 hours before sunrise and continue until 15 minutes after sunrise or until it is considered that all bats have entered their roosts.

Internal inspection of the culvert is recommended, if accessible, in order to determine the location of roosting bats. This information will help inform the licence application and proposed mitigation.

Lighting for the scheme should be designed with consideration of the bat roost and should not increase the existing lighting levels on Old Mill Lane, notably on the bridge adjacent to the culvert. Lighting should be limited where possible and be directed downwards, avoiding light spill onto surrounding vegetation.

5.5.2 Badger

No badger setts or signs of badger activity were identified within the site. However, the woodland on site provides suitable habitat for sett construction and foraging, and records of badger within 300m of the site were provided in the desk study.

Badger are protected under the Protection of Badgers Act 1992 and it is an offence to intentionally kill or ill-treat a badger, and destroy, disturb or obstruct a sett. Restrictions are imposed on works carried out within close proximity to badger setts. Any works that will directly impact on an existing sett can only be permitted through the application of a licence from Natural England.

Badger are highly mobile and as there is suitable habitat for sett construction and foraging on site, it is possible that they may excavate a sett prior to works commencing. It is recommended that a pre-start survey for badgers is undertaken within all areas of suitable habitat prior to works commencing. Badger surveys can be undertaken at any time of year.

5.5.3 Otter

Recent records indicate otter are using the River Dearne and include sightings of the species within the site boundary.

Otter are subject to European protection under the Conservation of Habitats and Species Regulations 2010, which is transposed through the provisions of the WCA 1981 (as amended). This legislation means that it is an offence to deliberately capture, injure or kill an otter; to deliberately disturb an otter in such a way as to significantly affect its ability to breed and rear young or its local distribution; or to damage or destroy a breeding or resting place used by otters.

In urban areas with heavily engineered watercourses, otter have been known to use outfall pipes and shelves as couch or holt sites in the absence of natural riverbank features. Consequently, an otter survey has been undertaken on the River Dearne to search for potential holts and couches within 250m of the proposed works. The findings are reported in a standalone survey report.⁸

5.5.4 Birds

The areas of broadleaved woodland, introduced shrub, scattered scrub and broadleaved trees offer suitable habitat for common nesting bird species.

Wild birds are protected under Part 1 Section 1 of the WCA 1981 (as amended); they are protected from being killed, injured or captured, while their nests and eggs are protected from being damaged, destroyed or taken.

Where possible, vegetation clearance and demolition activities should be completed outside of the bird nesting season (March – August). If works during the bird nesting season are unavoidable then areas of suitable habitat must be surveyed by a qualified ornithologist immediately prior to the clearance taking place. If the survey confirms the absence of nesting birds in the working area then works can proceed, providing it is done within three days of the survey.

⁸ Arup (2021) Old Mill Lane A61 Otter Survey Report.

6 Recommendations

Based on the current plans for the proposed scheme, the key recommendations are as follows:

- Statutory designated sites: Adopt appropriate pollution prevention measures during works and ensure these are incorporated within a CEMP.
- Non-statutory designated sites: the loss of any trees and scrub within the Old Mill Lane LWS (and throughout the wider site) should be avoided. Where this is not possible, trees should be replaced on a 2:1 ratio using native species appropriate to the site. Any areas of habitat temporarily impacted during works should be reinstated following construction.
- Invasive species: Himalayan balsam and giant hogweed were identified on site. It is recommended that an invasive species method statement is prepared to ensure all works on-site are legally compliant in relation to invasive plant species.
- Bats: Three bat surveys are required on the known Daubenton's bat roost in the culvert. Surveys must be undertaken between May to September and should include at least one dusk emergence and one dawn re-entry survey (the third survey can comprise either dusk or dawn survey). The findings of the survey should be used to inform a Natural England licence for disturbance. It is recommended that consultation is undertaken with the county ecologist and Natural England to inform the mitigation for the licence.
- Badger: A pre-start survey is recommended prior to works commencing on site.
- Otter: Survey has been undertaken on the River Dearne to search for potential otter holt and couch sites within 250m of the site. Recommendations relating to otter are contained in a standalone survey report.⁸
- Birds: Any works which are likely to damage a breeding bird nest, for example vegetation clearance or building demolition, should be completed outside of the nesting season (March to August). If this is not possible then vegetation or buildings should be surveyed by a qualified ornithologist prior to works commencing.

This report is the result of survey work undertaken in August 2020. This report refers, within the limitations stated, to the condition or proposed development of the site at the time of the inspections. Changes in legislation, guidance, best practice, etc. may necessitate a re-assessment/survey. It is also advised that if there is a delay of over two years in undertaking the works, a re-survey may be required. No warranty is given as to the possibility of future changes in the condition of the site.

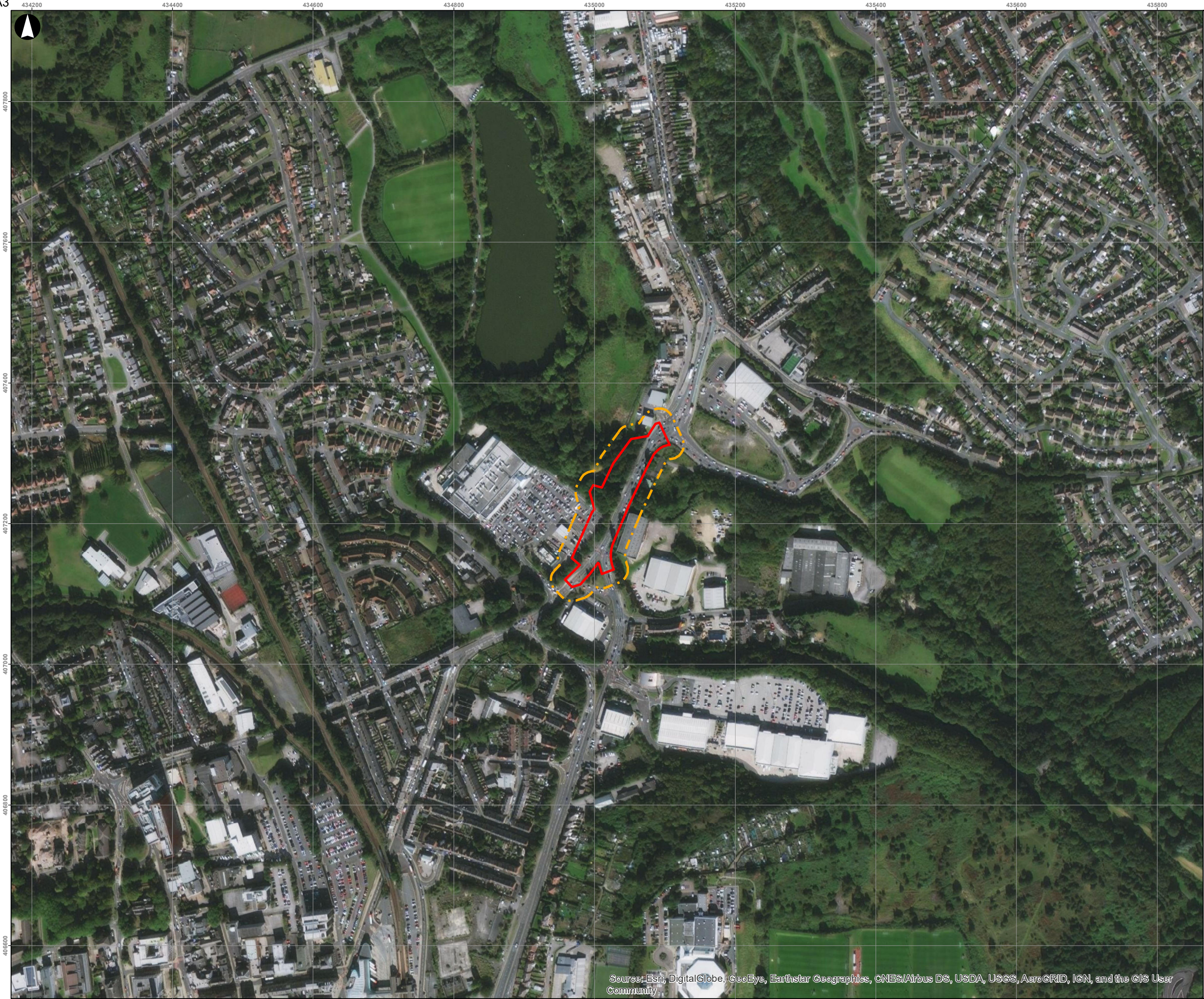
This report is produced solely for the benefit of SYPTE and no liability is accepted for any reliance placed on it by any other party. This report is prepared for the proposed uses stated in the report and should not be used in a different context.

Drawings

Drawing 1.1: Site Location

Drawing 4.2: Phase 1 Habitat Plan

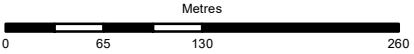
Drawing 4.2: Location of Waterbodies



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Key

- Site Boundary
- 20m Survey Buffer



A	19/03/21	VN	AM	RC
Rev	Date	By	Chkd	Appd

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Client
**South Yorkshire Passenger
Transport Executive (SYLTE)**

Project Title
A61 Old Mill Lane

Drawing Title
Site Location

Scale at A3
1:5,000

Role
Ecology

Suitability
Issue

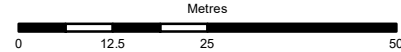
Arup Job No 253511-00	Rev A
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Name
Drawing 1.1



Key

- Site Boundary
- 20m Survey Buffer
- Phase 1 Habitat**
 - A1.1.1 Semi-natural broadleaved woodland
 - A2.1 Dense scrub
 - G2 Running water
 - J1.2 Amenity grassland
 - J1.4 Introduced shrub
 - J3.6 Buildings
 - Hardstanding
 - J2.5 Wall
 - A2.2 Scattered scrub
 - A3.1 Scattered broadleaved trees
 - Target Note



A	30/10/20	VN	AM	RC
Rev	Date	By	Chkd	Appd

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Project Title
A61 Old Mill Lane

Drawing Title
Phase 1 Habitat Plan

Scale at A3
1:1,000

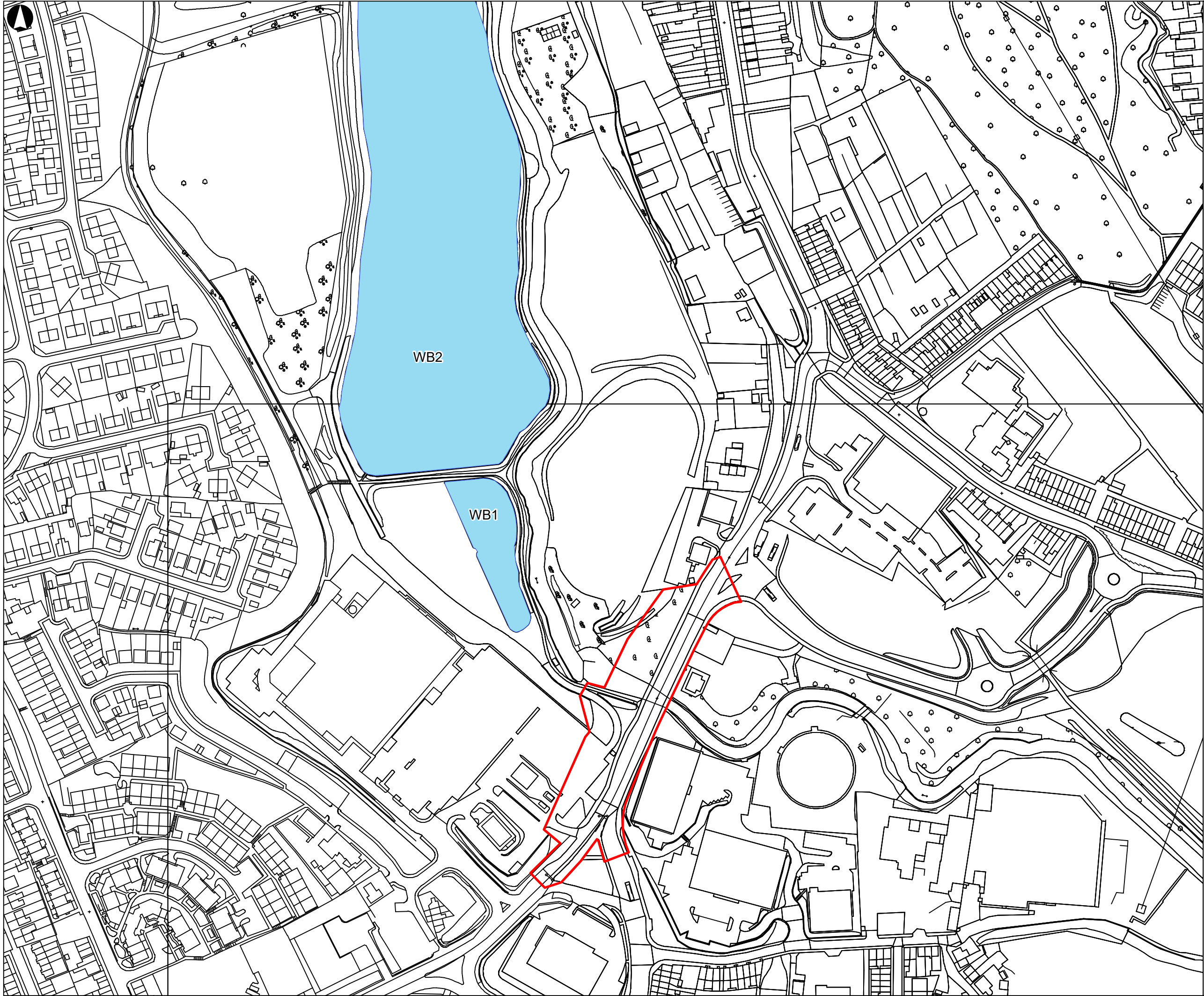
Role
Ecology

Suitability
Issue

Arup Job No
253511-00

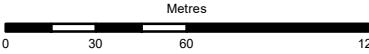
Rev
A

Name
Drawing 4.1



Key

- Site Boundary
- Waterbodies



A	01/04/21	VN	AM	RC
Rev	Date	By	Chkd	Appd

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Project Title
A61 Old Mill Bridge

Drawing Title
Location of Waterbodies

Scale at A3
1:2,500

Role
Ecology

Suitability
Issue

Arup Job No 253511-00	Rev A
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Name
Drawing 4.2

Appendix A

Desk Study Data

A1



25. Barnsley Canal at Wilthorpe

LWS Assessment and Phase 1 Survey

Prepared by
TEP

for

Barnsley Metropolitan Borough Council

January 2011
(Edited December 2011)

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Site Name:	Barnsley Canal at Wilthorpe
Site Area:	33.36ha
Survey Date:	September 2010
Nearest Settlement:	Wilthorpe
Grid Reference at Centre:	SE33651, 08340
Surveyor(s)	VG, LAC, PG

Site Description:

The Barnsley Canal at Wilthorpe LWS Site includes a stretch of the disused Barnsley Canal and adjacent pastoral farmland. The River Dearne is to the north of the site and an active railway line lies to the south, with a mix of arable and pastoral farmland comprising the majority of the wider area. An old section of the river, which was cut off following channel straightening upstream, forms part of the northern site boundary.

The majority of the disused canal is now swamp with reed sweet-grass (*Glyceria maxima*) dominant. At the eastern end of the canal, Himalayan balsam (*Impatiens glandulifera*) and greater reedmace (*Typha latifolia*) are abundant. Greater reedmace and reed sweet-grass are abundant throughout the site in areas of standing water and swamp. Three areas of standing water remain in the section of the canal. An area of standing water at the eastern end of the canal section is dominated by least duckweed (*Lemna minuta*). Rigid hornwort (*Ceratophyllum demersum*) is abundant and Himalayan balsam (*Impatiens glandulifera*) is rare. In an area of standing water in the centre, there is a patch of floating pennywort (*Hydrocotyle ranunculoides*). Great willowherb (*Epilobium hirsutum*) is abundant in the most westerly area of standing water.

The majority of the land surrounding the canal consists of semi-improved neutral grassland, with a variety of habitats found within the grassland. The largest parcel of land is in the west of the site, south of the canal. At the western end of this area lies unimproved neutral grassland, where red fescue (*Festuca rubra*) is abundant. To the east of this a willow carr dominated by grey willow (*Salix cinerea*) and a pond. Branched burr-reed (*Sparganium erectum*) and a pond weed species (*Potamogeton* sp.) are frequent within the pond. An area of swamp surrounded by semi-natural broadleaved woodland lies in the centre of the parcel of land, where sessile oak (*Quercus petraea*) and silver birch (*Betula pendula*) are dominant. To the west of the woodland lies an area of semi-improved acid grassland dominated by mat-grass (*Nardus stricta*). Within the parcel of land there are areas of dense scrub where hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and goat willow (*Salix caprea*) are dominant. There are also areas of tall ruderal that are dominated by creeping thistle (*Cirsium arvense*). A species-poor defunct hedge is present in the south east of the area. The hedge contains English (*Quercus robur*) and sessile oaks, field maple (*Acer campestre*), European ash (*Fraxinus excelsior*) and European beech (*Fagus sylvatica*). South of the hedge lies an area of marshy grassland.

To the north of the canal lies a second parcel of land where there are two areas of swamp with some standing water. Reed sweet-grass and greater reedmace are dominant. There is also marshy grassland present within this parcel of land, where hard rush (*Juncus inflexus*) is abundant.

Along the eastern section of the canal runs a species-poor intact hedge along the northern bank, where there are occasional crab apple (*Malus sylvestris*). Adjacent to the canal and the former towpath there is a strip of modified neutral grassland dominated by false-oat grass (*Arrhenatherum elatius*).

To the north of the hedge lies a third parcel of land where there are areas of dense scrub. Within the scrub there is a scattering of broadleaved trees which include wych elm (*Ulmus glabra*), crack willow (*Salix fragilis*) and white willow (*Salix alba*). Bluebell (*Hyacinthoides non-scripta*) and Japanese knotweed are occasional in this area, and Himalayan balsam is frequent. To the west of the dense scrub lies a small area of unimproved acid grassland and marshy grassland, dominated by tufted hair-grass (*Deschampsia cespitosa*). To the north lies the old course of the River Dearne, which consists of standing water and swamp. In the standing water Nuttall's pondweed (*Elodea nuttallii*) is frequent and water starwort species (*Callitriche* sp.) occurs occasionally. Buttonweed (*Cotula coronopifolia*) is abundant on the banks. Greater reed-mace is the dominant species in the swamp areas and lesser water-parsnip (*Berula erecta*) occurs occasionally.

In the southeast corner of the site there is an area of tall ruderal, where Himalayan balsam is present along the river channel. At Smithy's Bridge there is a species-poor hedge and trees, which contains Japanese knotweed (*Fallopia japonica*). The hedge connects the river corridor to a large area of swamp to the north.

Important Species:

Ancient woodland indicator species remote sedge (*Carex remota*) (TN 11), bluebell (*Hyacinthoides non-scripta*), wood speedwell (*Veronica montana*) (TN 3) and sessile oak (*Quercus petraea*) (TN 11) were found on site.

UKBAP species: reed bunting (*Emberiza schoeniclus*), grasshopper warbler (*Locustella naevia*), willow tit (*Poecile montanus*), dunnoek (*Prunella modularis*), bullfinch (*Pyrrhula pyrrhula*) and song thrush (*Turdus philomelos*) all breed on the site and water rail (*Rallus aquaticus*), a Bird of Conservation Concern (Amber List species) also breeds and winters on site.

The section of canal with standing water and the cut off section of the River Dearne offer potential habitat for great crested newts (*Triturus cristatus*) and water vole (*Arvicola aquaticus*). It is likely that UKBAP priority species common toad (*Bufo bufo*) is present in these areas.

Target Note:	TN 1	
Habitat:	Species-poor hedge	
Species List:		
Scientific Name	Common Name	Frequency
<i>Crataegus monogyna</i>	Hawthorn	D
<i>Rubus fruticosus</i> agg.	Bramble	A
<i>Hedera helix</i>	Ivy	O
<i>Lonicera periclymenum</i>	Honeysuckle	O
<i>Malus sylvestris</i>	Crab-apple	O
<i>Rosa canina</i> agg.	Dog Rose	O
<i>Sambucus nigra</i>	Elder	O
<i>Silene vulgaris</i>	Bladder Campion	O
<i>Torilis japonica</i>	Upright Hedge-parsley	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 2	
Habitat:	Swamp	
Species List:		
Scientific Name	Common Name	Frequency
<i>Glyceria maxima</i>	Reed Sweet-grass	D
<i>Impatiens glandulifera</i>	Himalayan Balsam	A
<i>Typha latifolia</i>	Greater Reedmace	A
<i>Epilobium hirsutum</i>	Great Willowherb	F
<i>Juncus effusus</i>	Soft Rush	F
<i>Lycopus europaeus</i>	Gypsywort	F
<i>Mentha aquatica</i>	Water Mint	F
<i>Berula erecta</i>	Lesser Water-parsnip	O
<i>Crataegus monogyna</i>	Hawthorn	O
<i>Equisetum arvense</i>	Field Horsetail	O
<i>Juncus inflexus</i>	Hard Rush	O
<i>Persicaria amphibia</i>	Amphibious Bistort	O
<i>Phalaris arundinacea</i>	Reed Canary-grass	O
<i>Ranunculus acris</i>	Meadow Buttercup	O
<i>Rubus fruticosus</i> agg.	Bramble	O
<i>Salix caprea</i>	Goat Willow	O
<i>Salix cinerea</i>	Grey Willow	O
<i>Salix fragilis</i>	Crack Willow	O
<i>Solanum dulcamara</i>	Bittersweet	O
<i>Stachys palustris</i>	Marsh Woundwort	O
<i>Caltha palustris</i>	Marsh-marigold	R
<i>Cardamine flexuosa</i>	Wavy Bitter-cress	R
<i>Equisetum sylvaticum</i>	Wood Horsetail	R
<i>Filipendula ulmaria</i>	Meadowsweet	R
<i>Rumex sanguineus</i>	Wood Dock	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 3	
Habitat:	Dense scrub and scattered broadleaved trees	
Species List:		
Scientific Name	Common Name	Frequency
<i>Crataegus monogyna</i>	Hawthorn	D
<i>Betula pendula</i>	Silver Birch	A
<i>Rubus fruticosus</i> agg.	Bramble	A
<i>Impatiens glandulifera</i>	Himalayan Balsam	F
<i>Salix fragilis</i>	Crack Willow	F
<i>Sambucus nigra</i>	Elder	F
<i>Crepis capillaris</i>	Smooth Hawk's-beard	R
<i>Dryopteris dilatata</i>	Broad Buckler-fern	R
<i>Fallopia japonica</i>	Japanese Knotweed	O
<i>Fraxinus excelsior</i>	Ash	O
<i>Hedera helix</i>	Ivy	O
<i>Hyacinthoides non-scripta</i>	Bluebell	O
<i>Quercus robur</i>	English Oak	O
<i>Salix alba</i>	White Willow	O
<i>Salix cinerea</i>	Grey Willow	O
<i>Ulmus glabra</i>	Wych Elm	O
<i>Veronica montana</i>	Wood Speedwell	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 4	
Habitat:	Unimproved acid grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Festuca rubra</i>	Red Fescue	D
<i>Agrostis capillaris</i>	Common Bent	F
<i>Galium saxatile</i>	Heath Bedstraw	F
<i>Juncus effusus</i>	Soft Rush	O
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Potentilla erecta</i>	Tormentil	O
<i>Rumex acetosa</i>	Common Sorrel	O
<i>Succisa pratensis</i>	Devil's-bit Scabious	O
<i>Luzula multiflora</i>	Heath Woodrush	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 5	
Habitat:	Unimproved neutral grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Holcus lanatus</i>	Yorkshire-fog	D
<i>Arrhenatherum elatius</i>	False Oat-grass	F
<i>Centaurea nigra</i>	Knapweed	O
<i>Cirsium arvense</i>	Creeping Thistle	O
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O
<i>Chamerion angustifolium</i>	Rosebay Willowherb	O
<i>Juncus conglomeratus</i>	Compact Rush	O
<i>Poa pratensis</i>	Smooth Meadow-grass	O
<i>Stellaria graminea</i>	Lesser Stitchwort	O
<i>Dactylis glomerata</i>	Cock's-foot	O
<i>Hypochaeris radicata</i>	Common Cat's-ear	O
<i>Rumex acetosa</i>	Common Sorrel	O
<i>Senecio jacobaea</i>	Ragwort	O
<i>Ranunculus acris</i>	Meadow Buttercup	O
<i>Plantago major</i>	Greater Plantain	O
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Cerastium fontanum</i>	Common Mouse-ear	O
<i>Ranunculus repens</i>	Creeping Buttercup	O
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	O
<i>Odontites verna</i>	Red Bartsia	R
<i>Tanacetum vulgare</i>	Tansy	R
<i>Cirsium palustre</i>	Marsh Thistle	R
<i>Crepis capillaris</i>	Smooth Hawk's-beard	R
<i>Veronica chamaedrys</i>	Germander Speedwell	R
<i>Carex ovalis</i>	Oval Sedge	R
<i>Cruciata laevipes</i>	Crosswort	R
<i>Pimpinella major</i>	Greater Burnet-saxifrage	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 6	
Habitat:	Unimproved acid grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Nardus stricta</i>	Mat-grass	D
<i>Agrostis capillaris</i>	Common Bent	A
<i>Festuca ovina</i>	Sheep's Fescue	F
<i>Calluna vulgaris</i>	Heather	O
<i>Rumex acetosella</i>	Sheep's Sorrel	O
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN7	
Habitat:	Modified neutral grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Arrhenatherum elatius</i>	False Oat-grass	D
<i>Agrostis stolonifera</i>	Creeping Bent	F
<i>Cirsium arvense</i>	Creeping Thistle	F
<i>Lolium perenne</i>	Ryegrass	F
<i>Plantago lanceolata</i>	Ribwort Plantain	F
<i>Poa annua</i>	Annual Meadow-grass	F
<i>Ranunculus repens</i>	Creeping Buttercup	F
<i>Trifolium pratense</i>	Red Clover	F
<i>Urtica dioica</i>	Nettle	F
<i>Achillea millefolium</i>	Yarrow	O
<i>Anthriscus sylvestris</i>	Cow Parsley	O
<i>Arctium minus</i>	Lesser Burdock	O
<i>Aster sp.</i>	Michaelmas-daisy species	O
<i>Cerastium fontanum</i>	Common Mouse-ear	O
<i>Dactylis glomerata</i>	Cock's-foot	O
<i>Equisetum arvense</i>	Field Horsetail	O
<i>Festuca rubra</i>	Red Fescue	O
<i>Heracleum sphondylium</i>	Hogweed	O
<i>Hieracium sp.</i>	Hawkweed species	O
<i>Hypochaeris radicata</i>	Common Cat's-ear	O
<i>Lathyrus pratensis</i>	Meadow Vetchling	O
<i>Linaria vulgaris</i>	Common Toadflax	O
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	O
<i>Odontites verna</i>	Red Bartsia	O
<i>Plantago major</i>	Greater Plantain	O
<i>Pteridium aquilinum</i>	Bracken	O
<i>Ranunculus acris</i>	Meadow Buttercup	O
<i>Rosa canina agg.</i>	Dog Rose	O
<i>Rubus fruticosus agg.</i>	Bramble	O
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O
<i>Tanacetum vulgare</i>	Tansy	O
<i>Taraxacum sp.</i>	Dandelion species	O
<i>Trifolium repens</i>	White Clover	O
<i>Berberis sp.</i>	Garden Berberis	R
<i>Lupinus x regalis</i>	Lupin	R
<i>Polygonum aviculare</i>	Knotgrass	R
<i>Rumex acetosella</i>	Sheep's Sorrel	R
<i>Rumex sanguineus</i>	Wood Dock	R
<i>Stellaria graminea</i>	Lesser Stitchwort	R
<i>Torilis japonica</i>	Upright Hedge-parsley	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 8		
Habitat:	Marshy grassland		
Species List:			
Scientific Name	Common Name	Frequency	
<i>Alisma plantago-aquaticis</i>	Water-plantain	F	
<i>Ranunculus repens</i>	Creeping Buttercup	F	
<i>Veronica beccabunga</i>	Brooklime	O	
<i>Iris pseudacorus</i>	Yellow Flag Iris	O	
<i>Lycopus europaeus</i>	Gypsywort	O	
<i>Ranunculus sp.</i>	Water-crowfoot species	O	
<i>Juncus articulatus</i>	Jointed Rush	R	
<i>Pulicaria dysenterica</i>	Fleabane	R	
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare			

Target Note:	TN 9	
Habitat:	Standing water	
Species List:		
Scientific Name	Common Name	Frequency
<i>Epilobium hirsutum</i>	Great Willowherb	A
<i>Glyceria maxima</i>	Reed Sweet-grass	A
<i>Alisma plantago-aquaticis</i>	Water-plantain	F
<i>Apium nodiflorum</i>	Fool's Watercress	F
<i>Lycopus europaeus</i>	Gypsywort	F
<i>Callitriche sp.</i>	Water Starwort species	O
<i>Juncus articulatus</i>	Jointed Rush	O
<i>Juncus effusus</i>	Soft Rush	O
<i>Lemna trisulca</i>	Ivy-leaved Duckweed	O
<i>Potamogeton sp.</i>	Pondweed species	O
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup	O
<i>Typha latifolia</i>	Greater Reedmace	O
<i>Bidens tripartita</i>	Trifid Bur-marigold	R
<i>Ranunculus sp.</i>	Water-crowfoot species	R
<i>Scutellaria galericulata</i>	Skullcap	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 10	
Habitat:	Semi-improved neutral grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Agrostis capillaris</i>	Common Bent	F
<i>Arrhenatherum elatius</i>	False Oat-grass	F
<i>Crataegus monogyna</i>	Hawthorn	F
<i>Trifolium repens</i>	White Clover	F
<i>Achillea millefolium</i>	Yarrow	O
<i>Centaurea nigra</i>	Knapweed	O
<i>Cynosurus cristatus</i>	Crested Dog's-tail	O
<i>Festuca rubra</i>	Red Fescue	O
<i>Hypochaeris radicata</i>	Common Cat's-ear	O
<i>Lolium perenne</i>	Ryegrass	O
<i>Plantago major</i>	Greater Plantain	O
<i>Poa annua</i>	Annual Meadow-grass	O
<i>Poa pratensis</i>	Smooth Meadow-grass	O
<i>Ranunculus acris</i>	Meadow Buttercup	O
<i>Ranunculus repens</i>	Creeping Buttercup	O
<i>Rumex acetosa</i>	Common Sorrel	O
<i>Senecio jacobaea</i>	Ragwort	O
<i>Silene vulgaris</i>	Bladder Campion	O

<i>Succisa pratensis</i>	Devil's-bit Scabious	O
<i>Tanacetum vulgare</i>	Tansy	O
<i>Taraxacum</i> sp.	Dandelion species	O
<i>Trifolium pratense</i>	Red Clover	O
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	R
<i>Bromus hordeaceus</i>	Soft Brome	R
<i>Campanula rotundifolia</i>	Harebell	R
<i>Centranthus ruber</i>	Red Valerian	R
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	R
<i>Festuca ovina</i>	Sheep's Fescue	R
<i>Holcus lanatus</i>	Yorkshire-fog	R
<i>Holcus mollis</i>	Creeping Soft-grass	R
<i>Knautia arvensis</i>	Field Scabious	R
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	R
<i>Nardus stricta</i>	Mat-grass	R
<i>Odontites verna</i>	Red Bartsia	R
<i>Phleum pratense</i>	Timothy	R
<i>Potentilla reptans</i>	Creeping Cinquefoil	R
<i>Rumex acetosella</i>	Sheep's Sorrel	R
<i>Sambucus nigra</i>	Elder	R
<i>Stellaria graminea</i>	Lesser Stitchwort	R
<i>Veronica chamaedrys</i>	Germander Speedwell	R
<i>Vicia cracca</i>	Tufted Vetch	R

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

Target Note:	TN 11	
Habitat:	Semi-natural broad-leaved woodland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Betula pendula</i>	Silver Birch	D
<i>Quercus petraea</i>	Sessile Oak	D
<i>Crataegus monogyna</i>	Hawthorn	A
<i>Holcus mollis</i>	Creeping Soft-grass	A
<i>Agrostis capillaris</i>	Common Bent	F
<i>Corylus avellana</i>	Hazel	F
<i>Rosa canina</i> agg.	Dog Rose	F
<i>Rubus fruticosus</i> agg.	Bramble	F
<i>Carex remota</i>	Remote Sedge	O
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	O
<i>Deschampsia flexuosa</i>	Wavy Hair-grass	O
<i>Geum urbanum</i>	Wood Avens	O
<i>Hedera helix</i>	Ivy	O
<i>Urtica dioica</i>	Nettle	O
<i>Acer campestre</i>	Field Maple	R
<i>Stachys sylvatica</i>	Hedge Woundwort	R
<i>Torilis japonica</i>	Upright Hedge-parsley	R

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

Target Note:	TN 12	
Habitat:	Species-poor hedge and trees	
Species List:		
Scientific Name	Common Name	Frequency
<i>Typha latifolia</i>	Greater Reedmace	D
<i>Crataegus monogyna</i>	Hawthorn	A
<i>Rubus fruticosus</i> agg.	Bramble	F
<i>Sambucus nigra</i>	Elder	F
<i>Ulmus glabra</i>	Wych Elm	F
<i>Urtica dioica</i>	Nettle	F
<i>Acer pseudoplatanus</i>	Sycamore	O
<i>Calystegia silvatica</i>	Large Bindweed	O
<i>Hedera helix</i>	Ivy	O
<i>Phalaris arundinacea</i>	Reed Canary-grass	O
<i>Prunus spinosa</i>	Blackthorn	O
<i>Pteridium aquilinum</i>	Bracken	O
<i>Rosa canina</i> agg.	Dog Rose	O
<i>Salix fragilis</i>	Crack Willow	O
<i>Alnus glutinosa</i>	Alder	R
<i>Fallopia japonica</i>	Japanese Knotweed	R
<i>Fraxinus excelsior</i>	Ash	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 13		
Habitat:	Swamp		
Species List:			
Scientific Name	Common Name	Frequency	
<i>Typha latifolia</i>	Greater Reedmace	D	
<i>Angelica sylvestris</i>	Wild Angelica	O	
<i>Berula erecta</i>	Lesser Water-parsnip	O	
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	O	
<i>Epilobium hirsutum</i>	Great Willowherb	O	
<i>Filipendula ulmaria</i>	Meadowsweet	O	
<i>Juncus articulatus</i>	Jointed Rush	O	
<i>Lotus pedunculatus</i>	Marsh Bird's-foot Trefoil	O	
<i>Lycopus europaeus</i>	Gypsywort	O	
<i>Phalaris arundinacea</i>	Reed Canary-grass	O	
<i>Ranunculus repens</i>	Creeping Buttercup	O	
<i>Scrophularia auriculata</i>	Water Betony	O	
<i>Sparganium erectum</i>	Branched Bur-reed	O	
<i>Alisma plantago-aquaticum</i>	Water-plantain	R	
<i>Epilobium montanum</i>	Broad-leaved Willowherb	R	
<i>Epilobium palustre</i>	Marsh Willowherb	R	
<i>Galium palustre</i>	Marsh Bedstraw	R	
<i>Juncus bufonius</i>	Toad Rush	R	
<i>Rumex hydopathalum</i>	Water Dock	R	
<i>Salix cinerea</i> ssp. <i>cinerea</i>	Grey Willow	R	
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare			

Target Note:	TN 14	
Habitat:	Species-rich modified neutral grassland with some acidic areas	
Species List:		
Scientific Name	Common Name	Frequency
<i>Agrostis stolonifera</i>	Creeping Bent	F
<i>Festuca rubra</i>	Red Fescue	F
<i>Holcus lanatus</i>	Yorkshire-fog	F
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	F
<i>Trifolium pratense</i>	Red Clover	F
<i>Trifolium repens</i>	White Clover	F
<i>Achillea millefolium</i>	Yarrow	O
<i>Agrostis capillaris</i>	Common Bent	O
<i>Arrhenatherum elatius</i>	False Oat-grass	O
<i>Centaureum erythraea</i>	Common Centaury	O
<i>Dactylis glomerata</i>	Cock's-foot	O
<i>Hypochaeris radicata</i>	Common Cat's-ear	O
<i>Knautia arvensis</i>	Field Scabious	O
<i>Lathyrus pratensis</i>	Meadow Vetchling	O
<i>Odontites verna</i>	Red Bartsia	O
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Plantago major</i>	Greater Plantain	O
<i>Ranunculus repens</i>	Creeping Buttercup	O
<i>Anthriscus sylvestris</i>	Cow Parsley	R
<i>Carex otrubae</i>	False Fox-sedge	R
<i>Carex ovalis</i>	Oval Sedge	R
<i>Cerastium fontanum</i>	Common Mouse-ear	R
<i>Cirsium arvense</i>	Creeping Thistle	R
<i>Crataegus monogyna</i>	Hawthorn	R
<i>Cytisus scoparius</i>	Broom	R
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	R
<i>Festuca ovina</i>	Sheep's Fescue	R
<i>Hieracium sp.</i>	Hawkweed species	R
<i>Juncus conglomeratus</i>	Compact Rush	R
<i>Juncus effusus</i>	Soft Rush	R
<i>Juncus inflexus</i>	Hard Rush	R
<i>Linaria vulgaris</i>	Common Toadflax	R
<i>Potentilla anserina</i>	Silverweed	R
<i>Potentilla erecta</i>	Tormentil	R
<i>Ranunculus acris</i>	Meadow Buttercup	R
<i>Rosa canina agg.</i>	Dog Rose	R
<i>Rumex acetosa</i>	Common Sorrel	R
<i>Stellaria graminea</i>	Lesser Stitchwort	R
<i>Trifolium dubium</i>	Lesser Trefoil	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 15	
Habitat:	Swamp/standing water	
Species List:		
Scientific Name	Common Name	Frequency
<i>Typha latifolia</i>	Greater Reedmace	D
<i>Bidens tripartita</i>	Trifid Bur-marigold	F
<i>Callitriche</i> sp.	Water Starwort species	F
<i>Elodea nutallii</i>	Nuttall's Pondweed	F
<i>Glyceria maxima</i>	Reed Sweet-grass	F
<i>Agrostis stolonifera</i>	Creeping Bent	O
<i>Angelica sylvestris</i>	Wild Angelica	O
<i>Berula erecta</i>	Lesser Water-parsnip	O
<i>Calystegia</i> sp.	Bindweed species	O
<i>Chenopodium rubrum</i>	Red Goosefoot	O
<i>Impatiens glandulifera</i>	Himalayan Balsam	O
<i>Mentha aquatica</i>	Water Mint	O
<i>Persicaria amphibia</i>	Amphibious Bistort	O
<i>Ranunculus repens</i>	Creeping Buttercup	O
<i>Alisma plantago-aquaticum</i>	Water-plantain	R
<i>Artemisia vulgaris</i>	Mugwort	R
<i>Epilobium hirsutum</i>	Great Willowherb	R
<i>Juncus bufonius</i>	Toad Rush	R
<i>Lycopus europaeus</i>	Gypsywort	R
<i>Myosotis scorpioides</i>	Water Forget-me-not	R
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup	R
<i>Scrophularia auriculata</i>	Water Betony	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 16	
Habitat:	Marshy grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	D
<i>Holcus lanatus</i>	Yorkshire-fog	F
<i>Typha latifolia</i>	Greater Reedmace	F
<i>Juncus effusus</i>	Soft Rush	O
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Ranunculus repens</i>	Creeping Buttercup	O
<i>Salix caprea</i>	Goat Willow	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 17	
Habitat:	Unimproved neutral grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Festuca rubra</i>	Red Fescue	A
<i>Achillea millefolium</i>	Yarrow	F
<i>Agrostis stolonifera</i>	Creeping Bent	F
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	F
<i>Centaurea nigra</i>	Knapweed	F
<i>Holcus lanatus</i>	Yorkshire-fog	F
<i>Hypochaeris radicata</i>	Common Cat's-ear	F
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	F
<i>Pulicaria dysenterica</i>	Fleabane	F
<i>Vicia cracca</i>	Tufted Vetch	F
<i>Achillea ptarmica</i>	Sneezewort	O
<i>Carex hirta</i>	Hairy Sedge	O
<i>Carex nigra</i>	Common Sedge	O
<i>Carex otrubae</i>	False Fox-sedge	O
<i>Cirsium arvense</i>	Creeping Thistle	O
<i>Cynosurus cristatus</i>	Crested Dog's-tail	O
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	O
<i>Equisetum arvense</i>	Field Horsetail	O
<i>Juncus inflexus</i>	Hard Rush	O
<i>Knautia arvensis</i>	Field Scabious	O
<i>Lathyrus pratensis</i>	Meadow Vetchling	O
<i>Lolium perenne</i>	Ryegrass	O
<i>Lycopus europaeus</i>	Gypsywort	O
<i>Salix caprea</i>	Goat Willow	O
<i>Trifolium pratense</i>	Red Clover	O
<i>Trifolium repens</i>	White Clover	O
<i>Agrostis capillaris</i>	Common Bent	R
<i>Carex panicea</i>	Carnation Sedge	R
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	R
<i>Juncus conglomeratus</i>	Compact Rush	R
<i>Plantago major</i>	Greater Plantain	R
<i>Potentilla erecta</i>	Tormentil	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 18	
Habitat:	Standing water	
Species List:		
Scientific Name	Common Name	Frequency
<i>Potamogeton sp.</i>	Pondweed species	F
<i>Sparganium erectum</i>	Branched Bur-reed	F
<i>Typha latifolia</i>	Greater Reedmace	F
<i>Berula erecta</i>	Lesser Water-parsnip	O
<i>Glyceria maxima</i>	Reed Sweet-grass	O
<i>Juncus effusus</i>	Soft Rush	O
<i>Juncus inflexus</i>	Hard Rush	O
<i>Salix cinerea ssp. cinerea</i>	Grey Willow	O
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 19	
Habitat:	Semi-improved neutral grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Agrostis stolonifera</i>	Creeping Bent	A
<i>Plantago major</i>	Greater Plantain	A
<i>Poa annua</i>	Annual Meadow-grass	A
<i>Trifolium repens</i>	White Clover	A
<i>Cirsium arvense</i>	Creeping Thistle	F
<i>Polygonum aviculare</i>	Knotgrass	F
<i>Ranunculus repens</i>	Creeping Buttercup	F
<i>Achillea millefolium</i>	Yarrow	O
<i>Festuca rubra</i>	Red Fescue	O
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	O
<i>Hypochaeris radicata</i>	Common Cat's-ear	O
<i>Impatiens glandulifera</i>	Himalayan Balsam	O
<i>Lolium perenne</i>	Ryegrass	O
<i>Matricaria discoidea</i>	Pineapple-weed	O
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Potentilla anserina</i>	Silverweed	O
<i>Ranunculus acris</i>	Meadow Buttercup	O
<i>Rumex crispus</i>	Curled Dock	O
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O
<i>Trifolium pratense</i>	Red Clover	O
<i>Arctium minus</i>	Lesser Burdock	R
<i>Artemisia vulgaris</i>	Mugwort	R
<i>Centaurea nigra</i>	Knapweed	R
<i>Chenopodium rubrum</i>	Red Goosefoot	R
<i>Cirsium palustre</i>	Marsh Thistle	R
<i>Sonchus asper</i>	Prickly Sow-thistle	R
<i>Trifolium medium</i>	Zigzag Clover	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 20	
Habitat:	Swamp	
Species List:		
Scientific Name	Common Name	Frequency
<i>Glyceria maxima</i>	Reed Sweet-grass	D
<i>Berula erecta</i>	Lesser Water-parsnip	O
<i>Juncus effusus</i>	Soft Rush	O
<i>Lycopus europaeus</i>	Gypsywort	O
<i>Mentha aquatica</i>	Water Mint	O
<i>Typha latifolia</i>	Greater Reedmace	O
<i>Epilobium palustre</i>	Marsh Willowherb	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 21	
Habitat:	Semi-improved grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Festuca rubra</i>	Red Fescue	A
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	F
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	F
<i>Holcus lanatus</i>	Yorkshire-fog	F
<i>Plantago lanceolata</i>	Ribwort Plantain	F
<i>Ranunculus repens</i>	Creeping Buttercup	F
<i>Trifolium repens</i>	White Clover	F
<i>Achillea ptarmica</i>	Sneezewort	O
<i>Agrostis capillaris</i>	Common Bent	O
<i>Centaurea nigra</i>	Knapweed	O
<i>Cerastium fontanum</i>	Common Mouse-ear	O
<i>Cirsium arvense</i>	Creeping Thistle	O
<i>Cirsium palustre</i>	Marsh Thistle	O
<i>Equisetum arvense</i>	Field Horsetail	O
<i>Hypochaeris radicata</i>	Common Cat's-ear	O
<i>Lathyrus pratensis</i>	Meadow Vetchling	O
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	O
<i>Potentilla reptans</i>	Creeping Cinquefoil	O
<i>Pulicaria dysenterica</i>	Fleabane	O
<i>Ranunculus acris</i>	Meadow Buttercup	O
<i>Rumex acetosa</i>	Common Sorrel	O
<i>Torilis japonica</i>	Upright Hedge-parsley	O
<i>Trifolium pratense</i>	Red Clover	O
<i>Vicia cracca</i>	Tufted Vetch	O
<i>Angelica sylvestris</i>	Wild Angelica	R
<i>Potentilla anserina</i>	Silverweed	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 22	
Habitat:	Marshy grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Epilobium hirsutum</i>	Great Willowherb	A
<i>Juncus inflexus</i>	Hard Rush	A
<i>Agrostis stolonifera</i>	Creeping Bent	F
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	F
<i>Lycopus europaeus</i>	Gypsywort	F
<i>Achillea ptarmica</i>	Sneezewort	O
<i>Alisma plantago-aquaticum</i>	Water-plantain	O
<i>Berula erecta</i>	Lesser Water-parsnip	O
<i>Cirsium palustre</i>	Marsh Thistle	O
<i>Filipendula ulmaria</i>	Meadowsweet	O
<i>Juncus conglomeratus</i>	Compact Rush	O
<i>Lotus pedunculatus</i>	Marsh Bird's-foot Trefoil	O
<i>Senecio erucifolius</i>	Hoary Ragwort	O
<i>Hypericum tetrapterum</i>	Square-stalked St John's-wort	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 23	
Habitat:	Standing water	
Species List:		
Scientific Name	Common Name	Frequency
<i>ratophyllum demersum</i>	Rigid Hornwort	A
<i>Crataegus monogyna</i>	Hawthorn	F
<i>Lemna minuta</i>	Least Duckweed	F
<i>Typha latifolia</i>	Greater Reedmace	F
<i>Berula erecta</i>	Lesser Water-parsnip	O
<i>Callitriche</i> sp.	Water Starwort species	O
<i>Carex otrubae</i>	False Fox-sedge	O
<i>Elodea nutallii</i>	Nuttall's Pondweed	O
<i>Fraxinus excelsior</i>	Ash	O
<i>Glyceria fluitans</i>	Floating Sweet-grass	O
<i>Lycopus europaeus</i>	Gypsywort	O
<i>Mentha aquatica</i>	Water Mint	O
<i>Quercus robur</i>	English Oak	O
<i>Salix fragilis</i>	Crack Willow	O
<i>Sparganium erectum</i>	Branched Bur-reed	O
<i>Urtica dioica</i>	Nettle	O
<i>Angelica sylvestris</i>	Wild Angelica	R
<i>Artemisia vulgaris</i>	Mugwort	R
<i>Azolla filiculoides</i>	Water-fern	R
<i>Betula pendula</i>	Silver Birch	R
<i>Chamerion angustifolium</i>	Rosebay Willowherb	R
<i>Heracleum sphondylium</i>	Hogweed	R
<i>Impatiens glandulifera</i>	Himalayan Balsam	R
<i>Iris pseudacorus</i>	Yellow Flag Iris	R
<i>Stachys palustris</i>	Marsh Woundwort	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 24	
Habitat:	Standing water	
Species List:		
Scientific Name	Common Name	Frequency
<i>Typha latifolia</i>	Greater Reedmace	A
<i>Crataegus monogyna</i>	Hawthorn	F
<i>Elodea nutallii</i>	Nuttall's Pondweed	F
<i>Alisma plantago-aquaticum</i>	Water-plantain	O
<i>Angelica sylvestris</i>	Wild Angelica	O
<i>Callitriche</i> sp.	Water Starwort species	O
<i>Callitriche stagnalis</i>	Common Water Starwort	O
<i>Cotula coronopifolia</i>	Buttonweed	O
<i>Epilobium hirsutum</i>	Great Willowherb	O
<i>Glyceria maxima</i>	Reed Sweet-grass	O
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup	O
<i>Salix cinerea</i>	Grey Willow	O
<i>Berula erecta</i>	Lesser Water-parsnip	R
<i>Eleocharis palustris</i>	Common Spike-rush	R
<i>Prunus spinosa</i>	Blackthorn	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Target Note:	TN 25	
Habitat:	Standing water	
Species List:		
Scientific Name	Common Name	Frequency
<i>Glyceria maxima</i>	Reed Sweet-grass	A
<i>Typha latifolia</i>	Greater Reedmace	A
<i>Crataegus monogyna</i>	Hawthorn	F
<i>Fraxinus excelsior</i>	Ash	O
<i>Hydrocotyle ranunculoides</i>	Floating Pennywort	O
<i>Rubus fruticosus</i> agg.	Bramble	O
<i>Salix fragilis</i>	Crack Willow	O
<i>Fallopia japonica</i>	Japanese Knotweed	R
<i>Filipendula ulmaria</i>	Meadowsweet	R
<i>Sambucus nigra</i>	Elder	R

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

Target Note:	TN 26	
Habitat:	Semi-improved neutral grassland	
Species List:		
Scientific Name	Common Name	Frequency
<i>Holcus lanatus</i>	Yorkshire-fog	F
<i>Lolium perenne</i>	Ryegrass	F
<i>Plantago lanceolata</i>	Ribwort Plantain	F
<i>Plantago major</i>	Greater Plantain	F
<i>Ranunculus repens</i>	Creeping Buttercup	F
<i>Achillea millefolium</i>	Yarrow	O
<i>Centaurea nigra</i>	Knapweed	O
<i>Hypochaeris radicata</i>	Common Cat's-ear	O
<i>Phleum pratense</i>	Timothy	O
<i>Potentilla anserina</i>	Silverweed	O
<i>Ranunculus acris</i>	Meadow Buttercup	O
<i>Rumex crispus</i>	Curled Dock	O
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O
<i>Senecio jacobaea</i>	Ragwort	O
<i>Trifolium pratense</i>	Red Clover	O
<i>Bellis perennis</i>	Daisy	R
<i>Dysenterica pulicaria</i>	Fleabane	R
<i>Lathyrus pratensis</i>	Meadow Vetchling	R
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	R
<i>Odontites verna</i>	Red Bartsia	R
<i>Potentilla reptans</i>	Creeping Cinquefoil	R
<i>Prunella vulgaris</i>	Selfheal	R
<i>Trifolium repens</i>	White Clover	R

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

Target Note:	TN 27	
Habitat:	Dense scrub (grey willow carr)	
Species List:		
Scientific Name	Common Name	Frequency
<i>Salix cinerea</i>	Grey Willow	D
<i>Bare ground</i>	Bare ground	A
<i>Glyceria fluitans</i>	Floating Sweet-grass	R
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare		

Management Issues:

There is a public footpath along the old towpath of the canal and a network of public footpaths along some of the field boundaries of the land to the south of the site which is used frequently by various people. There are also desire lines within the site, through much of the pastoral farmland north of the canal, where there are no public footpaths.

Invasive non-native species Japanese knotweed, Himalayan balsam, Nuttall's pondweed and floating pennywort are present on site. Floating pennywort is in the central section of the canal where it is the locally dominant aquatic species. Nuttall's pondweed is present in a section of the old route of the River Dearne. There are small stands of Japanese knotweed along the canal towpath in the eastern end of the site; there is another stand in the far east of the site adjacent to the fishing lake which borders the site. Himalayan balsam is abundant amongst the swamp in the eastern stretch of the canal; there are also some small stands on the River Dearne in the east of the site.

Scrub removal in the fields south of the canal would protect the grassland habitats present.

Diversity:

This site has a broad diversity of habitats for its size, and rich species diversity. There are some well established wetland/swamp areas with a good mix of aquatic and marginal species. The area to the north of the River Dearne and the old course of the River Dearne are of the most ecological interest. These areas also offer habitat for a range of invertebrate, amphibian and bird species.

The pastoral fields and grasslands to both the north and south of the canal have high species diversity. Between 20 and 35 species were noted per field, with a mix of both acid and neutral species present.

The scrub and broadleaved woodland habitats present provide habitat for nesting birds.

Naturalness:

The meandering old course of the River Dearne, although no longer forming an active part of the river since its channelization upstream, still displays many natural processes and the fairly large area of swamp and standing water that remains has a very natural appearance. The large area of swamp north of the river offers a natural habitat that has not been drained for farming like much of the surrounding land. There are smaller areas of ponds and swamp/marshy areas found throughout the site which display this naturalness but to a slightly lesser degree.

Another area displaying natural processes and appearance is a small area of established broadleaved woodland south of the canal in the western end of the site. Running through this woodland is a small gently meandering stream that has formed some swamp areas either side.

Rare or Exceptional Features:

A section of the disused Barnsley Canal runs the length of the site.

Fragility:

The two main areas of standing water/swamp on site, the old course of the River Dearne and the disused canal are both vulnerable to drying out as there is little supply of fresh water into these habitats. Natural build up of organic matter will occur and the swamp habitat will encroach into the standing water and over time succession of these areas into scrub will follow. Management of these habitats will be required to retain their current mix of swamp and standing water.

Typicalness:

Horse grazed pastoral fields are a fairly typical use of land in the Barnsley area. However the mix of more-acid areas and wet areas within the fields on site and the diversity of the species present is less typical of the area.

There is an area of grey willow (*Salix cinerea*) carr in the west of the site, just to the south of the canal. This is a relatively uncommon habitat in the borough.

The swamp habitat that occurs in the disused canal and the within the old course of the river is not a scarce habitat within the Borough and there are a number of wetland/swamp sites that have a similar mix of species to those that are on this site. However the way in which these habitats have come about at this site is fairly unusual.

Recorded History & Cultural Associations:

Barnsley Canal was closed in 1953 following many problems with mining subsidence. The section of the canal within the site has since been left largely unmanaged. Only a few sections of open water remain and a build up of silt and organic matter has occurred so that much of the canal has now been populated by aquatic and marginal plants.

The surrounding pastoral fields appear established and are likely to have been grazed (low intensity grazing) for many years.

Connectivity within the Landscape:

The neighbouring land is largely agricultural and pastoral farmland. The River Dearne and the disused Barnsley Canal provide good connectivity to the wider environment, linking the site to other natural areas along the Dearne Valley.

Value for appreciation of Nature and Learning:

There is a public footpath along the old towing path of the canal. There is also a network of public footpaths in the south of the site. The east of the site is adjacent to the residential area of Honeywell.

A small car park off Smithies Lane, near the east of the site, makes the site accessible to people who do not live locally and is big enough for a mini-bus. There is a height restriction though, which will restrict vehicular access.

Recommendations:

This site has a number of different habitats, both terrestrial and aquatic which are valuable and have a recreational value for the local communities.

The scrub in the southern section should be managed to prevent encroachment and the hedge-line on the southern boundary should be re-laid and the gaps filled in.

The waterbodies will most likely require some amount of management to maintain their function and to avoid siltation and succession. The site has the potential to be significant part of Barnsley's amphibian interest and, following survey, would most likely satisfy the site selection criteria on this basis alone. The presence of UKBAP bird species is also significant.

The site is also an important natural corridor through the landscape, for wildlife and people.

Action:

Retain as a Local Wildlife Site

Conduct an amphibian survey

Work with landowners/managers to manage the site for enhanced biodiversity

