Tim Outlaw- Freelance Ecologist
103 Turnshaw Road, Kirkburton, Huddersfield, West Yorkshire, HD8 0TL

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Ecological Assessment

Former Darfield Colliery Site, Darfield, South Yorkshire

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Produced on behalf of GL Hearn Limited
By Tim Outlaw BSc (Hons) MIEEM,
Freelance Ecological Consultant

Tim Outlaw- Freelance Ecologist
103 Turnshaw Road, Kirkburton, Huddersfield, West Yorkshire, HD8 0TL

Contents

1.0 Introduction

2.0 Methodology

3.0 Existing Conditions

4.0 Effects During Construction

5.0 Mitigation during construction

6.0 Effects After Opening of the Development

7.0 Mitigation after opening

8.0 Residual Effects

References

Appendix 1	Extended Phase 1 Target Notes
Figure 1	Extended Phase 1 Habitat Plan
Figure 2	Locations of bat registrations during survey.

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1.0 Introduction

1.1 An ecological assessment was undertaken at the former Darfield Colliery site south of Pitt Street, Darfield, South Yorkshire.

1.2 The purpose of the survey was to identify the existing baseline ecological value of the site via field survey and desk study, to identify the need for any further surveys to inform the existing ecological conditions and to identify the requirement for any mitigation as a result of the proposals.

2.0 Methodology

Desk Study

2.1 The desk study involved the study of the English Nature, National Biodiversity Network, UKBAP and MAGIC websites to reveal any sites with statutory protection or other conservation designations within 2km of the site. Barnsley Metropolitan Borough Council was also contacted for information regarding any protected species records and locally designated sites within 2km. The Barnsley Bat Group and Barnsley Bird Study Group were also contacted for records of designated species within the area. The Barnsley Naturalist and Scientific Society were also contacted but did not provide any records for the desk study. The RSPB were contacted for information on protected and designated species and habitats at Old Moor RSPB reserve, Wombwell Ings and Gypsy Marsh.

2.2 The Barnsley area does not currently have a specific ecological records centre which reduces the availability of ecological records for the site and its surrounding area.

Extended Phase 1 Survey

2.3 The field survey was based on Phase 1 Habitat Survey Methodology (JNCC, 1993) and was extended to assess faunal potential. This involved walking the site, mapping and describing different habitats (for example: woodland, grassland, scrub). Evidence of fauna and faunal habitat was also recorded, such as droppings, tracks or specialist habitat such as ponds for breeding amphibians.

2.4 In an adaptation from the standard methodology target notes were used not only to identify areas requiring additional survey but also to indicate areas of habitats described in the text on the Phase 1 habitat plan.

Bat Activity Survey

2.5 Following receipt of desk study records of bat roosts within 1km of the survey area and despite a lack of potential roost sites (i.e. buildings or mature trees with potential access points), a bat activity survey was undertaken across the whole site to provide an indication of the site's value to foraging and commuting bats.

2.6 The bat activity survey consisted of two evening survey visits running from dusk until 00:30, in good weather conditions i.e. temperatures over 15°C, no rain or high winds. The survey was undertaken using Duet Batbox heterodyne detectors.

2.7 On each visit a route was followed that passed along the edges of all plantation woodland and grassland within the survey area and alongside the River Dove. As the only structure within the survey area with any significant potential to hold roosting bats, both surveys began at the existing bridge over the River Dove adjacent to the south-west corner of the site, to watch for any emergent bats.

2.8 All bats seen or heard were identified to species, where possible, and their locations and activity were marked on a plan of the site.

2.9 Following the survey an assessment was made, based on the number of records and their locations, to identify any key areas for bats within the survey area and as to whether the proposals would be likely to have any significant impact on the existing populations of bats using the site or roosting in the surrounding area.

Breeding Bird Survey

2.10 The desk study revealed records of breeding, designated species within 1km of the site and the presence of an RSPB reserve within 2km of the site. The survey area does not hold habitats likely to provide breeding sites or feeding habitats for most of the key species from the RSPB reserve.

2.11 A breeding bird survey was undertaken to provide an overview of the existing breeding bird baseline within the survey area, with particular emphasis on protected and/or designated species and species or communities of significance to the nearby reserve.

2.12 This survey involved a registration mapping method adapted from the BTO/RSPB Breeding Bird Survey and Common Bird Census. A route was followed which passed within 50m of all parts of the site and all birds seen or heard were recorded on a plan of the survey area, along with any behaviour which indicated active breeding i.e. territorial singing, displays, juvenile birds, carrying food/nest material etc.. The route was followed in the opposite direction during the second visit to reduce any bias.

2.13 The survey involved two early morning visits (within 3 hours of dawn), in suitable conditions i.e. no rain or high winds.

Amphibian Survey

2.14 No records of Great Crested Newt were received during the desk study. However, due to a lack of availability of ecological records and the presence of ponds within 50m and 200m of the site and a wet and apparently non-flowing ditch adjacent to the closer pond, an amphibian survey was undertaken of the site.

2.15 The ponds were considered to be generally unsuitable for Great Crested Newt and therefore two visits were undertaken, (rather than a full survey of four visits typical of sites with higher value), to confirm the lack of any such populations or other notable populations of other amphibians. Survey visits were undertaken on the 1st and 9th June 2007.

2.16 The survey involved torchlight survey, netting and bottle trapping of the closer of the two ponds and adjacent ditch and torchlight survey and netting of the furthest pond. The survey was undertaken by a surveyor holding the appropriate Natural England Great Crested Newt Licence (licence number: 20070666).

Water Vole Survey

2.17 No records of Water Vole were received during the desk study other than from the RSPB reserve at Old Moor (over 2km from the site). However, due to a lack of availability of ecological records and the presence of apparently permanent watercourses (i.e. the River Dove and Bulling Dyke), within or adjacent to the site, a survey for this species was undertaken.

2.18 The survey was based on the methodology described in The Water Vole Conservation Handbook (Strachan 1998). This involves the recording of all signs of Water Vole from both banks of the surveyed watercourse, including: sightings of animals, latrines, tunnel entrances, "lawns", feeding remains, paths and tracks.

2.19 All data would be recorded on a form showing the stretch of watercourse and its associated features i.e. bank type, substrate, emergent and bank side vegetation etc. The survey was undertaken at the most appropriate time of year i.e. between April and July.

Baseline Valuation of Ecological Features

2.20 Following the gathering of information relating to the ecological features present on the site from desk study and field surveys an assessment was made regarding the ecological value of each feature. This assessment is based on the IEEM (2002) *Guidelines for Ecological Evaluation and Assessment* and IEEM (2006) *Guidelines for Ecological Impact Assessment*.

2.21 Each feature was awarded a value based on the scale of its importance from International to Negligible (see Table 1).

Table 1 Valuation of Ecological Features.

VALUATION OF ECOLOGICAL RECEPTORS	
Level of value	Examples
International	An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site, Biogenetic Reserve). A sustainable area of a habitat listed in Annex I of the Habitats Directive, or smaller areas of such habitat which are essential to maintain the viability of a larger whole A sustainable population of an internationally important species. I.e. a UK Red Data Book species or species listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP) which is listed in Annex IV of the Habitats Directive, or as being of unfavourable conservation status in Europe, of uncertain conservation status or of global conservation concern in the UK BAP. Also sites supporting a breeding population of such a species or supplying a critical element of their habitat

	requirements.
National	A nationally designated site (SSSI, ASSI, NNR, Marine Nature Reserve) or a discrete area which meets the selection criteria for national designation (e.g. SSSI selection guidelines) A sustainable area of a priority habitat identified in the UK BAP, or of smaller areas of such habitat which are essential to maintain the viability of a larger whole A sustainable population of a nationally important species or a site supporting such a species, i.e. a species listed on Schedules 5 & 8 of the 1981 W&CA (as amended) which is a UK Red Data Book species (excluding scarce species) that is not listed as being of unfavourable conservation status in Europe, of uncertain conservation status or of global conservation concern in the UK BAP. A non-Red Data Book species that is listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP). Also sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements.
Regional	Sustainable areas of key habitat identified in the Regional BAP or smaller areas of such habitat which are essential to maintain the viability of a larger whole Sustainable areas of key habitat identified as being of Regional value in the appropriate Natural Area profile A population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation. Sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements. Sites which exceed the County-level designations but fall short of SSSI selection guidelines, where these occur
County / Metropolitan	Semi-natural ancient woodland greater than 0.25 ha County/Metropolitan sites and other sites which meet the ecological selection criteria for designation A sustainable area of habitat identified in County BAP A population of a species which is listed in a County/Metropolitan "red data book" or BAP on account of its regional rarity or localisation. Also sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements.
District / Borough	Semi-natural ancient woodland smaller than 0.25 ha. Sustainable areas of habitat identified in a sub-County (District/Borough) BAP or in the relevant Natural Area profile Sites/features that are scarce within the District/Borough or which appreciably enrich the District/Borough habitat resource. A diverse and/ or ecologically valuable hedgerow network A population of a species that is listed in a District/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation. Also sites supporting a breeding population of such a species or supplying a critical element of their requirements.
Parish / Neighbourhood	Areas of habitat considered to appreciably enrich the habitat resource within the context of the Parish or neighbourhood. E.g. species-rich hedgerows

N.B where species or habitats occur in more than one category above, the highest value is applicable.

3.0 Existing Conditions

Desk Study

3.1 The MAGIC website was searched for the presence of a number of conservation designations as shown in Table 2:

Table 2. Results of MAGIC designated sites search from within a 2km radius around the site.

Search category	Number Recorded within 2km of site.	Details of designated site/area.
Ancient Woodland	0	None found within 2km
Grassland Inventory sites	1	Gypsy Marsh; Located c.1900m to the south-east of the survey area.
Important Bird Areas	0	None found within 2km
Local Nature Reserves (LNR),	0	None found within 2km
Lowland Grazing Marsh	1	Wombwell Ings; located c.800 to the east of the survey area.
RSPB Reserves	1	Old Moor (including Wombwell Ings and Gypsy Marsh).
Sites of Special Scientific Interest (SSSI)	0	None found within 2km
Special Areas of Conservation (SAC)	0	None found within 2km
Special Protection Areas (SPA)	0	None found within 2km

Statutorily Protected Sites

3.2 No statutorily protected sites i.e. Sites of Special Scientific Interest (SSSI), Special Protection Ares (SPA) or Special Areas for Conservation (SAC), were located within 8km of the survey area.

Natural England Natural Area

3.3 The entire survey area falls within the Coal Measures Natural Area as designated by Natural England. The Key nature conservation features of local significance within this area are:

- Acid grassland
- Fen, marsh and swamp
- Lowland heathland
- Neutral grassland
- Rivers and streams
- Standing open water and canals
- Wet woodland.

3.4 The only significant area of any of these habitats recorded within the survey area was the stretch of the River Dove running adjacent to part of the proposal site.

Locally Designated Sites

3.5 Barnsley Metropolitan Borough Council provided details of the proposed Natural Heritage Site: Parkhill Nature Reserve. It is located c.500m south-east of the proposal site. No other existing local nature conservation sites were received.

3.6 Parkhill Nature Reserve is designated for its scrub, grassland and particularly wetland habitats. It also includes district level breeding bird populations including the UK Red List species Grasshopper Warbler and Grey Partridge and county level populations of a nationally protected species, water vole. The site is also used for hunting by the Schedule 1 (Wildlife and Countryside Act 1981) species, Barn Owl. Grass snake has been reported as being abundant within the site. The buildings and chimney within the site are believed to hold two species of roosting bats.

3.7 The proposed development site contains areas of seeded grassland and amenity grassland and, in part, runs adjacent to the River Dove. The new access road would cross the river and at least one wet drainage ditch. Due to the presence of these features which are similar to those located within Parkhill Nature Reserve, a water vole survey and breeding bird survey were undertaken. In addition during a bat activity survey of the site specific attention was made to watching for any barn owl activity and evidence of barn owls roosting within the site was looked for during the extended Phase 1 and other surveys.

3.8 The Old Moor RSPB reserve lies c.2km from the survey area on the eastern side of the A6195. The RSPB also manages Wombwell Ings and Gypsy Marsh which are located c.800m and c.1700 to the East of the survey area respectively.

3.9 These areas are designated and managed for their bird and other wildlife interests. The most important bird populations of these sites are the passage and wintering waders (particularly Golden Plover), breeding wetland species and designated passerine breeding species such as Grasshopper Warbler, Tree Sparrow and Willow Tit.

3.10 Discussions with the warden of the reserve (Dave Waddington) revealed that there were records of Water Vole from Old Moor and that they may have been recorded at Wombwell Ings, but it was unlikely that the River Dove or connected tributaries would hold this species due to Mink activity in the area. Dave also said that Otter were returning to the local river system but had not been seen close to the site and that no Great Crested Newt had been recorded from any of the sites managed by the RSPB in the desk study area in recent times. He also said that the valley still held populations of Barn Owl and that kingfisher was known to breed on the River Dove, with possibly a pair every 2km of water. He mentioned that Grass Snake was common in the area.

Bat Records

3.11 Barnsley bat group provided records of 10 roosts from within 2km of the survey area. Only two of these roosts were located within 1km: a roost of 1 undetermined species in Snape Hill Road, Darfield and a roost of 9 Daubenton's

Bats at Park Hill Brickworks, Wombwell (See Parkhill Nature Reserve above). All other roosts consisted of Pipistrelle or "undetermined species" bats with the most notable being up to 360 at Park Hollow, Wombwell and 30-40 at Derwent Place, Wombwell.

Breeding Birds

3.12 In addition to consultation with the RSPB, Barnsley Bird Study Group provided records of designated species from within 1km of the survey area. No details of the exact locations of the birds were provided. The records received are shown in Table 3 below.

Table 3. Barnsley Bird Study Group records of designated species from within 1km of site.

Red List	UKBAP	Barnsley BAP
Grey Partridge 2-4 pair	*	*
Skylark several pair	*	*
Song Thrush 2-4 pair	*	*
Willow Tit 1-2 pair		
Starling in excess of 20 pair	*	
House Sparrow in excess of 30 pair	*	
Linnet 2-4 pair	*	*
Bullfinch 2-6 pair	*	
Yellowhammer 6-10 pair	*	
Reed Bunting 4-6 pair	*	

Natural England Consultation

3.13 Brian Davis of Natural England was consulted via a phone conversation on 20th July 2007. He was informed of the general habitats present within the survey area and informed of the surveys undertaken to date i.e. Phase 1, Bat Activity, Amphibians, Breeding Birds and Water Vole. He was asked whether he was happy with this scope of surveys and he said that he thought they were appropriate based on the habitats and desk study information.

3.14 When asked for his opinions on mitigation he was happy that edge habitats/corridors would be maintained and that native woodland would be planted in the designated areas. He suggested that if it were possible the new woodland areas should be created as wet woodland habitats in order to facilitate an increase in this biodiversity action plan habitat within the wider area.

3.15 He also mentioned that erecting bat roost and bird nesting boxes throughout the new woodlands, on the buildings and any other suitable sites would also increase the potential for these groups within the proposal boundary and beyond.

3.16 There was also mention that otters were returning to the local river systems and it would be preferable that long term disturbance to the River Dove from paths along the banks adjacent to the site should be as restricted as possible; in order to offer higher potential for resting otter should they return.

Field Survey

Extended Phase 1 Habitat Survey

3.17 During the field visit, the following habitats were recorded from within the survey area:

- Plantation woodland;
- Improved Grassland (Seeded);
- Amenity Grassland;
- Trees; and
- Running Water.

3.18 In addition due to the potential for protected species a pond and wet ditch just west of the survey area were also surveyed.

3.19 Appendix 1 provides descriptions of target notes and Figure 1 shows a plan of the habitats recorded during the extended Phase 1 survey.

Plantation Woodland

3.20 The former colliery is surrounded by plantation woodland of c.15-20 years of age. The species used within the planting include a mix of native species of the local area, British species not naturally occurring in the area and non-native species which are planted in differing proportions in different areas.

3.21 The area of planting between the Wombwell by-pass and trans-pennine trail (Target note 1), consists of a dense mix of field maple (*Acer campestre*), alder (*Alnus glutinosa*), hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*) with frequent willow (*Salix* sp.), birch (*Betula pendula*) and oak (*Quercus* sp.). The planting is extremely dense particularly closer to the by-pass and therefore ground flora is extremely patchy and poor, being dominated by Yorkshire fog (*Holcus lanatus*), false oat-grass (*Arrhenatherum elatius*), hogweed (*Heracleum sphondylium*), nettle (*Urtica dioica*) and cleavers (*Galium aparine*). Birch dominates along the line of the Bulling Dyke and drainage ditches running adjacent to the trans-pennine trail.

3.22 The plantation woodland along the route of the proposed new access road and dismantled railway (Target note 2), consists of a wider range of species including many non-native trees. In addition to the species found at Target note 1, species include aspen (*Populus tremula*), grey poplar (*Populus* x *calescence*), pea tree (*Caragana arborescens*), false acacia (*Robinia pseudoacacia*) and Shadbush (*Amelanchier canadensis*), Corsican pine (*Pinus nigra maritima*), cherry (*Prunus* sp.), guelder rose (*Viburnum opulus*) and more scrubby species such as sea buckthorn (*Hippophae rhamnoides*), Laurustinus (*Viburnum tinus*), *Cotoneaster* sp.. The planting of this area is most dense along the proposed route of the access road and becomes sparser as it moves eastwards towards the footpath running from Littlefield Lane. Under the denser planting, ground flora is sparse being dominated by Yorkshire fog, tufted hair-grass (*Deschampsia cespitosa*), red fescue (*Fistulae rubra* agg.) and cock's-foot (*Dactylis glomerata*).

3.23 The largest block of woodland within the site is located to the west of the survey area between the River Dove and Pitt Street (Target note 3).This woodland is very densely planted and dominated by alder, Italian alder (*Alnus cordata*), grey poplar and willow. Less frequently occurring species include holm oak (*Quercus ilex*), red oak (*Quercus rubra*) and false acacia. The edges of this woodland have additional species including sea buckthorn, hawthorn, snowberry (*Symphoricarpos* sp.), guelder rose, hazel (*Corylus avellana*), red-berried elder (*Sambucus racemosa*) and wych elm (*Ulmus glabra*). Due to the density of this plantation the ground flora has low diversity and is dominated by nettle, cleavers, bramble (*Rubus fruticosus* agg.), rough meadow-grass (*Poa trivialis*), creeping thistle (*Cirsium arvensis*) and herb-robert (*Geranium robertianum*).

3.24 Plantation woodland also occurs in strips bordering the field in the middle of the colliery site and also along the eastern edge of the site (Target note 4). This area holds a similar mix of species to the area at Target Note 3 with additional Corsican pine (especially along the Pitt Street boundary) and pedunculate oak (*Quercus robur*). This area is again densely planted and no ground flora of significant ecological interest was seen.

3.25 The woodland blocks outside of the proposal site to the west contain more mature semi-natural habitats dominated by sycamore (*Acer pseudoplatanus*), oak (*Quercus* sp.), elder and hawthorn with other occasional species including sweet chestnut (*Castanea sativa*), birch and willow. The ground flora is species-poor and sparse being dominated by ivy (*Hedera helix*), bramble, nettle, cleavers and occasional ferns (*Dryopteris* sp.).

Trees

3.26 This designation refers to trees which are either not included within blocks of plantation woodland or differ significantly in age from the surrounding woodland. The only areas included within this category were recorded within the amenity grassland at the western boundary of the site and on the banks of the River Dove.

3.27 Along the western boundary are a few mature poplar (*Populus* sp.) trees. These trees are in excellent condition and do not appear to contain any rot holes or broken limbs etc. likely to be of use to roosting bats.

3.28 Along the section of the River Dove which marks part of the southern boundary of the survey area were a few semi-mature willow and poplar trees adjacent to and/or overhanging the water. These trees were also interspersed by more mature elder and hawthorn trees. These trees had a few broken branches and cracks although inspection with binoculars did not reveal any clear potential access points for roosting bats and no other evidence of bats was found i.e. staining, scratches or droppings. Whilst a couple of the larger trees did have a few exposed roots it was thought that they were not sufficiently large or complex to offer any potential for otter holts at this time. These trees are unlikely to face any impact from the proposals.

Improved Grassland (seeded)

3.29 All of the grassland within the survey area has been included within this category due to the fact that it has been almost entirely recreated through seeding in the past c.20years, and shows no signs of extensive fertilization at this stage. Several areas are currently subject to management e.g. mowing and cutting and may in the future develop swards more closely resembling "classic" improved and amenity grasslands i.e. lower species diversity and fewer herb species. It is clear that a number of different seed mixes were used during reclamation due to the differences in constituent species between several areas of grassland.

3.30 The centre of the former colliery site holds a field of seeded grassland which has been cut for animal feed (Target note 5). The sward is dominated by Yorkshire fog, red fescue, and cock's-foot with other commonly occurring grass species including perennial rye-grass (*Lolium perenne*), meadow foxtail (*Alopecurus pratensis*), brome (*Bromus* sp.), false oat-grass and less frequently *Vulpia* sp. Herb species within the sward included the abundant dandelion (*Taraxacum* agg.) and common vetch (*Vicia sativa* agg.) with occasional docks (*Rumex* sp.), creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), cow parsley (*Anthriscus sylvestris*), tare (*Vicia* sp.), cat's-ear (*Hypochaeris radicata*) and rarely sorrel (*Rumex acetosa).*

3.31 An area adjacent to the footbridge over the River Dove near the south-eastern corner of the site, along with the bund surrounding the middle field, has also been seeded with a similar mix to the main field. This sward did appear to have a somewhat higher proportion and diversity of herb species which included; common knapweed (*Centaurea nigra*), creeping cinquefoil (*Potentilla reptans*), willowherbs (*Epilobium* spp.) and hogweed (*Heracleum sphondylium*)

3.32 Grassland also occurs in narrow strips which, appear to be scrubbing over between the trans-pennine trail, Bulling Dyke and the plantation woodland/scrub adjacent to the Wombwell by-pass (Target note 7). This habitat is largely unmanaged and is becoming relatively rank compared to other grasslands in the survey area. Dominant grass species are Yorkshire fog, false oat-grass and red fescue with occasional tufted hair-grass. This area has a more limited herb component including dock, creeping buttercup, cleavers, hogweed and bramble.

3.33 To the east of the proposed access route where plantation woodland is more sparse is a sward dominated by Yorkshire fog with cock's-foot, sweet vernal grass (*Anthoxanthum odoratum*), meadow-grasses and common bent (*Agrostis capillaris*) (Target note 8). The herb species here are representative of a more ruderal community, again most likely to have been created by seeding and include most frequently, melilot (*Melilot* spp.), common centaury (*Centaurium erythraea*), ribwort plantain, cat's-ear, lesser trefoil, yarrow (*Achillea millefolium*), daisy and occasional wild carrot (*Daucus carota*). This area includes large amounts of very young scrub plants including birch, willow, hawthorn, sea buckthorn and poplar and it is considered that within a few years this grassland would be replaced by dense scrub and eventually woodland.

3.34 All of the grasslands within the survey area lack maturity and a natural diversity of higher value unimproved grassland. They are heavily managed through

originally seeding and subsequent amenity mowing and hay/silage cutting. No species considered to be of local importance were found within the sward and no significant faunal species were recorded or suspected e.g. skylark or unusual butterflies. Due to the lack of maturity and current management, most of the grassland lacks a thatch layer at the base of the sward which would provide cover for small mammals and possibly amphibians and therefore higher potential for foraging species such as barn owl or grass snake. The presence of tawny owl (seen and heard during field surveys along the western boundary) in close proximity to these grasslands also greatly reduces their potential for foraging barn owl as tawny owl is often highly aggressive towards this species.

3.35 The grassland adjacent to Bulling Dyke does have a small amount of thatch, but this is likely to be lost over the next few years as the trees and scrub continue to grow and shade out the ground flora. In addition, this grassland is of insufficient area to provide useful hunting habitat for barn owl and does not occur close enough to water bodies likely to hold amphibians for hunting grass snake.

3.36 The lack of important species and sward features and the low potential for protected faunal species at this stage of the grassland's maturity means the grassland is considered to be of Parish Value for its ecological importance.

Amenity Grassland

3.37 The area of grassland to the west of the plantation woodland at Target note 3, and adjacent to the proposed access route, where a proposed car park would be placed, is managed as amenity grassland and is regularly mown (Target note 6). The sward is dominated by perennial rye-grass, meadow-grasses (*Poa* spp.), Yorkshire fog, red fescue and crested dog's tail (*Cynosurus cristatus*). The most commonly occurring herb species are white clover (*Trifolium repens*), daisy (*Bellis perennis*), ribwort plantain (*Plantago lanceolata*), greater plantain (*Plantago major*), lesser trefoil (*Trifolium dubium*) and bird's-foot trefoil (*Lotus corniculatus*).

Running Water

3.38 The River Dove runs alongside the southern boundary of the main survey area. Along this stretch the river is generally about 4-6m in width and the banks vary between c.2m in height at the western end to 3m further east. The substrate of the river is mostly stony with silt and sand bars. The water depth during early survey visits was generally about 20-30 cm increasing to c.50cm where deeper pools had formed. During later visits after extremely heavy rain the depth was estimated to be over 1m in depth and at some point the water level had clearly exceeded the banks on both sides.

3.39 The flooding after the heavy rain also caused significant damage to the banks within the stretch and had swept away some reinforcements particularly at the bridge to the west of the site.

3.40 The banks are made from mud with reinforcement along much of the length by rocks and bricks.

3.41 Most of the banks along this stretch are lined with overhanging trees and scrub with understorey vegetation dominated by bramble, nettles, cleavers, hogweed, occasional bracken (*Pteridium aquilinum*) and patches of Himalayan balsam (*Impatiens glandulifera*). No significant emergent or submerged vegetation was recorded along the stretch of river.

3.42 The banks were more open with fewer trees and scrub near the footbridge to the east of the stretch of river. Here the banks held large stands of Himalayan balsam and some grass dominated by false oat-grass, cock's-foot and Yorkshire fog.

3.43 Both sides of the river had fairly well worn footpaths along the banks. Adjacent to the footpath on the northern bank and located c.10m inland from the bank itself was a stand of giant hogweed (*Heracleum mantegazzianum*) (Target note 9). This species is dangerous to humans as its sap can cause serious irritation and burns to the skin. It is illegal under The Wildlife and Countryside Act 1981 to cause giant hogweed to grow or to cause it to spread. It is recommended that the Environment Agency is consulted with regard to controlling this plant, especially if workers or members of the public are likely to come into close contact with it.

3.44 As part of the wider river system this stretch of the River Dove has intrinsic value. However, no notable species were suspected to be resident within or adjacent to the river during the surveys (See existing conditions reports for Water Vole and Bats below.). The river should not be subject to any significant direct impacts as a result of the proposals except the construction of a bridge for the new access route at the western end of the surveyed stretch.

3.45 Drainage ditches run either side of the trans-pennine trail and would be crossed by the new access route. The drainage ditch along the northern side of the trail was dry during the survey (except for a couple of inches immediately after the flooding) and holds no vegetation species indicative of regular immersion. The ditch contained species largely concurrent with the adjacent amenity grassland area.

3.46 The ditch running along the southern side of the trail flows from west to east and splits at approximately the crossing point of the proposed access route. Part of the ditch is culverted and comes out as Bulling Dyke c.100m to the north-east while the remainder continues along the southern side of the trans-pennine trail. Before the culvert and where it continues along adjacent to the trail the ditch held c.5-15cm of water. Emergent vegetation was patchy and sparse, particularly where the ditch was heavily shaded by adjacent young trees. Emergent species included bulrush (*Typha latifolia*), great willowherb (*Epilobium hirsutum*), rush (*Juncus* sp.) and lesser water-parsnip (*Berula erecta*). The ditch is shallow and narrow (less than 1m wide) and heavily shaded along most of its length and is likely to be almost dry during normal summer conditions. It therefore has limited potential for significant aquatic fauna populations and no significant faunal species were recorded during the survey.

Pond

3.47 A pond is located c.20m west of the survey area within a copse of mature trees in Netherwood Country Park (Target note10). The pond is c.50m long and 15m wide although following the heavy rain it did increase in size and flood most of the copse. The pond is poorly defined and does not have any clear banks. It's depth appeared to be between 10cm and 30cm but it was not possible to see the bottom in the centre due to its size and the turbid water.

3.48 Its substrate was mud although the entire bottom was covered by a thick build up of leaf litter. There was no emergent vegetation whatsoever except for 2 or 3 Iris plants at the western end. The pond is heavily shaded across its entirety and is considered to have low potential for amphibians and invertebrates.

3.49 Between the pond and Pitt Street and still within the copse was the end of a large drainage ditch (Target note 11), also filled with leaf litter and heavily shaded with no standing water except after heavy rain. This ditch in this area was also considered to be of little ecological value in its current condition.

Surrounding Habitats

3.50 On the northern side of Pitt Street are horse paddocks and a field of semi-improved grassland. The paddocks are heavily managed (and grazed) improved grassland fields with limited ecological value. The semi-improved grassland is predominantly covered with tall grass dominated by cock's-foot with other commonly occurring grass species including Yorkshire fog, common bent, false oat-grass, perennial rye-grass and meadow-grasses. The area also includes a high proportion of herb species such as cow parsley, hogweed, docks, dandelion, sorrel, ragwort (*Senecio jacobaea*), creeping thistle (*Cirsium arvensis*), spear thistle (*Cirsium vulgaris*), greater plantain, creeping buttercup, willowherbs (*Epilobium* spp.) and teasel (*Dipsacus fullonum*). Rose (*Rosa* sp.) and bramble are beginning to colonise in some areas. No notable species were recorded during the survey but the habitat has a reasonable diversity which may provide a locally important feeding and hunting area for invertebrates, small mammals and potentially grass snake. This area is considered to be of somewhat higher ecological value to the proposal site due to it holding a less managed and possibly more mature sward.

3.51 To the west and south of the proposal site lies the remainder of Netherwood Country Park. The park is dominated by areas of plantation woodland, (similar to those within the proposal site), areas of more mature plantation woodland and seeded grassland used as an amenity site, as described under Target note 6. It also holds a fishing pond c.200m west of the proposal site. This pond is clearly heavily stocked with fish and the surrounding grassland is generally heavily managed and mown short. These factors coupled with the lack of records of Great Crested Newt from the vicinity makes it extremely unlikely that this species would occur within this pond and even more unlikely that they would travel from this site to the proposal area in search of terrestrial habitat.

3.52 To the east of the proposal site is an area of housing and roads separating the survey area from Wombwell Ings.

3.53 The habitats recorded within the survey area are considered to be of **ParishValue** in their current states with the exception of the stretch of the River Dove which, due to its connections to other habitats beyond the site and the relative importance of river systems, is considered to be of County/Metropolitan level importance despite a lack of notable features within the surveyed stretch.

Bat Activity Survey

3.54 During the first visit a total of five bats were recorded (See Figure 2). Three Noctule bats were recorded flying from west to east high over the site at 21:56, 22:13 and 22:32. These bats were considered to have left a roost outside of the survey area and were then heading towards feeding grounds, possibly in the region of Wombwell Ings or beyond. None of the Noctule bats were recorded feeding as they passed.

3.55 Single Common Pipistrelle bats were recorded foraging at the extreme north-eastern corner of the site and along the western boundary of the site at 22:54 and 22:36 respectively. The latter of these bats was recorded still foraging along the plantation edge at 23:23.

3.56 During the second visit a total of four bats were recorded. These records were of two Common Pipistrelle bats at 22:15 and again at 23:04, foraging along the western boundary of the site and a single Common Pipistrelle and a single Daubenton's bat at 22:35 and 22:39 respectively, feeding over the river which was now considerably higher due to the heavy rain over previous days.

3.57 No bats were seen leaving any roosts at the bridge during either survey visit. The bats recorded during the survey were either passing through or foraging along linear features. Only low numbers were recorded during the survey and the survey area is not thought to currently provide an important foraging site for local bat populations. The area is currently considered to be of **Parish Value** as bat foraging habitat and to have no current value for roosting bats.

Breeding Birds

3.58 A total of 25 species were recorded during the survey. Of these species, 20 were recorded as exhibiting territorial behaviour and therefore considered likely to be breeding within the survey area. Of the other five species; tawny owl and great spotted woodpecker, were considered most likely to be breeding within the more mature plantations to the immediate west of the survey area and swallow, house martin and swift were considered to be breeding in nearby buildings outside of the site. In addition a kingfisher was seen flying east along the river Dove during a later bat survey visit. No kingfisher nest holes were seen in the banks of the river adjacent to the survey area and it was suspected that the recent flooding prior to this sighting may have flooded the kingfishers nest elsewhere and caused it to move on.

3.59 Of the species recorded as potential breeders during the breeding bird survey, none were listed on Schedule 1 (Wildlife and Countryside Act 1981). Two species are listed on the BTO Red List of species of conservation concern and UK Biodiversity Action Plan; bullfinch and song thrush, and a further three

species were listed on the BTO Amber List; dunnock, goldcrest and willow warbler. Song thrush is also listed on the Barnsley Biodiversity Action Plan.

3.60 The BTO lists and BAP's are not designed to indicate the rarity of a species but rather that it has undergone significant reductions in numbers over the past 25 years or is otherwise subject to threats usually associated with habitat loss or agricultural processes. All of the species recorded during the survey are common and widespread throughout the region and are typical of the habitats found within the survey area.

3.61 The vast majority of breeding birds are located within the plantation woodlands throughout the site.

3.62 Willow tit was highlighted as a species of local importance by Dave Waddington of the RSPB. No willow tit was recorded during the survey and the trees within the plantation woodlands are considered to be largely unsuitable as nest sites for this species due to a lack of specific rot holes due to their young age, with the possible exception of a few older trees adjacent to the river, which would be retained within the proposals.

3.63 The survey area is considered to be of **Parish Value** for its breeding bird populations.

Amphibian Survey

3.64 The survey of the ponds and ditch provided the following results:

Table 4. Amphibian Survey Results.

Visit	Waterbody	Amphibians
01/06/07	Pond 1 (Target note 10)	1 Common Frog
01/06/07	Ditch (Target note 11)	No amphibians
01/06/07	Pond 2	4 Common Frog, 1 Smooth Newt
09/06/07	Pond 1 (Target note 10)	1 Common Frog
09/06/07	Ditch (Target note 11)	No amphibians
09/06/07	Pond 2	2 Common Frog.

3.65 The survey indicates that the pond and ditch closest to the proposal site have very low importance for amphibians. The habitat conditions are considered to be extremely poor for great crested newt due to the lack of emergent vegetation, heavy shading and heavily managed surrounding grassland beyond the trees. The results of the survey combined with the poor habitat conditions and lack of desk study records suggests that these waterbodies are of **lower than Parish Value** for amphibians.

3.66 The further pond c.200m west of the proposal site appeared to hold small populations of common frog and smooth newt. This pond is heavily stocked with fish and is separated from the site predominantly by heavily managed grassland which provides poor potential for terrestrial habitat. It is considered extremely unlikely due to the presence of fish and the isolation of this pond from the site that there would be any great crested newts using the proposal site or the pond.

The pond does hold emergent vegetation likely to be of some use to breeding amphibians and it is considered to be of **Parish Value** for this faunal group.

Water Vole Survey

3.67 No evidence of water vole was found anywhere along the ditches and river adjacent to the site or crossed by the proposed access road. Large numbers of rat holes were found in the banks of the river. The majority of the banks within the survey area are heavily shaded and do not hold the grassy vegetation preferred by water vole. In addition the information gathered from Dave Waddington of the RSPB also suggests that mink are present on the river, which is likely to greatly reduce the areas potential for water vole.

3.68 Following the flooding of the river (after the survey was undertaken) large sections of the bank were washed away or entirely flooded, causing further reduction in the short term potential of this stretch to hold water vole.

3.69 The surveyed ditches and river are considered currently to have **Negligible** value for Water Vole. Should conditions change in the future i.e. reduction/eradication of mink, then the area may hold colonizing populations, although the lack of ideal bankside habitat is likely to restrict colonization to low populations without significant changes in management.

4.0 Potential Effects During Construction

4.1 Due to the low ecological value of the site the effects on the existing value is likely to be limited.

4.2 Likely effects during construction would be:

- Loss of immature/semi-mature plantation woodland.
- Loss of seeded grasslands.
- Disturbance to banks of river during demolition of existing bridge and construction of new access road bridge.
- Loss of nesting habitat and potential disturbance to nesting birds

5.0 Mitigations for Construction Impacts

- Planting of native tree species of local provenance for all amenity planting and woodland blocks. The woodland blocks should be created as naturally as possible i.e. by using appropriate species to create a canopy and scrub layer typical of natural woodlands in the area.
- Habitat corridors and edges dominated by trees such as those along the boundaries of the central field and adjacent to the River Dove should be retained in some form to continue to offer commuting and foraging routes for bats and other faunal groups such as birds and small mammals.
- The grasslands likely to be lost during construction are not considered to have high ecological importance in their existing condition and maturity. The majority of this grassland would be replaced with amenity grassland used as sports pitches, which is likely to have a similar ecological value to existing heavily managed grasslands although with probably a more limited species diversity. Where possible, areas of grassland within the proposal boundary not required for use as sports pitches could be seeded with native species-rich mixes and managed to maximise their ecological potential.
- A pre-works survey should be undertaken on the banks of the River Dove a short period before construction begins in order to check that no ecologically important species (particularly water vole) have colonised the banks since the original surveys were undertaken. Should any important species be found then further appropriate mitigation would be undertaken.
- A pre-demolition bat survey should be undertaken on the existing bridge over the River Dove in order to check for any signs of roosting bats having begun to use the structure. If any sign of bats is found then mitigation suitable for the

roost would need to be designed and agreed, under appropriate licences if required.

- All works involving the cutting and clearance of any shrubby vegetation or trees should either be undertaken outside of the nesting bird season i.e. clear between September and end February, or only cleared following close inspection by a suitably qualified ecologist in order to highlight existing active nests and form appropriate exclusion perimeters as required.

6.0 Potential Effects After Opening of the Development

6.1 Likely effects after opening of the proposals would be:

- Disturbance to River Dove
- Littering of area
- Increase in potential for roosting bats
- Increase in potential for nesting birds
- Increase in potential for and quality of terrestrial habitat for amphibians
- Increase in potential for grass snake

7.0 Mitigations for Operational Impacts

- The school grounds should be fenced from the River Dove and where possible access along the northern bank prevented or restricted so as to prevent disturbance to any faunal groups using the river and banks in this stretch i.e. potentially otter.
- Littering should be kept to an absolute minimum via appropriate policy and practical measures within and around the school. Regular litter collection should be undertaken to prevent the spread of litter from the school onto any surrounding habitats particularly the River Dove.
- Good numbers of a variety of bird boxes and bat boxes should be erected around the new proposals and on new buildings and structures. In particular, bat boxes should be placed beneath the new bridge over the River Dove.
- Ecological monitoring should be undertaken to assess the success of mitigation measures listed above and suitable maintenance and management of boxes etc. should be undertaken to maintain the positive impacts of these measures.

8.0 Residual Effects

8.1 It is considered most likely that if the mitigation measures outlined above during both construction and operational phases of the proposals are implemented, the proposals will result in an overall positive effect on the ecology and nature conservation of the survey area and immediate surroundings.

References:

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Tim Outlaw- Freelance Ecologist
103 Turnshaw Road, Kirkburton, Huddersfield, West Yorkshire, HD8 0TL

Appendix 1

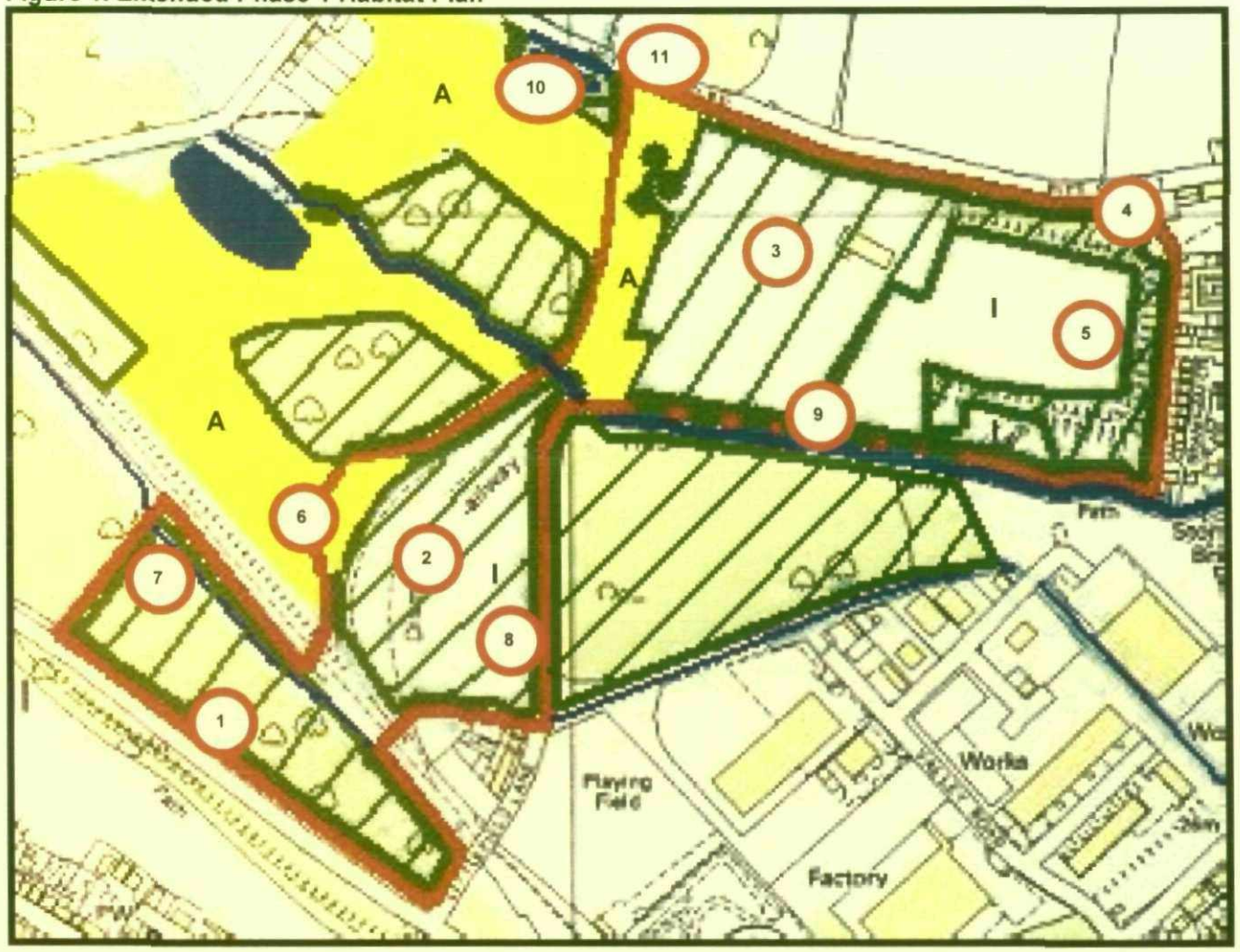
Extended Phase 1 Survey Target Notes

Target Note Number	Description
1	Dense, scrubby plantation woodland between the Wombwell by-pass and trans-pennine trail. Dominated by: field maple (*Acer campestre*), alder (*Alnus glutinosa*), hawthorn (*Crataegus monogyna)* and elder (*Sambucus nigra*) with frequent willow (*Salix* sp.), birch (*Betula pendula*) and oak (*Quercus* sp.). The planting is most dense closest to the by-pass which is bordered by a wooden fence within the planted trees. The density of woody species makes the ground flora extremely sparse and absent from large areas. Most frequent ground flora spp. Include Yorkshire fog (*Holcus lanatus*), false oat-grass (*Arrhenatherum elatius*), hogweed (*Heracleum sphondylium*), nettle (*Urtica dioica*) and cleavers (*Galium aparine*).
2	Plantation woodland along the route of the proposed new access road and dismantled railway. Consists of the species listed under target note 1 plus; aspen (*Populus tremula*), grey poplar (*Populus* x *canescens*), pea tree (*Caragana arborescens*), false acacia (*Robinia pseudoacacia*) and Shadbush (*Amelanchier canadensis*), corsican pine (*Pinus nigra maritima*), cherry (*Prunus* sp.), guelder rose (*Viburnum opulus*) and more scrubby species such as sea buckthorn (*Hippophae rhamnoides*), Laurustinus (*Viburnum tinus*) and *Cotoneaster* sp. The planting of this area is most dense along the proposed route of the access road and becomes sparser as it moves eastwards towards the footpath running from Littlefield Lane. Under the denser planting, ground flora is sparse being dominated by Yorkshire fog, tufted hair-grass (*Deschampsia cespitosa*), red fescue (*Festuca rubra* agg) and cock's-foot (*Dactylis glomerata*). See target note 8 for ground flora in more sparsely planted area.
3	The largest block of woodland within the site. This woodland is very densely planted and dominated by alder, Italian alder (*Alnus cordata*), grey poplar and willow with some holm oak (*Quercus ilex*), red oak (*Quercus rubra*) and false acacia. The edges of the woodland have some scrubby planting of sea buckthorn, hawthorn, snowberry (*Symphoricarpos* sp.), guelder rose, hazel (*Corylus avellana*), red-berried elder (*Sambuscus racemosa*) and wych elm (*Ulmus glabra*). The ground flora has low diversity and is dominated by nettle, cleavers, bramble (*Rubus fruticosus* agg.), rough meadow-grass (*Poa trivialis*), creeping thistle (*Cirsium arvensis*) and herb-robert (*Geranium robertianum*).
4	Plantation woodland bordering the main grassland field at the centre of the site. This planting holds a similar mix of species to that at Target Note 3 with additional Corsican pine (especially along the Pitt Street boundary) and pedunculate oak (*Quercus robur*). This area is again densely planted and no ground flora of significant ecological interest was seen.
5	Field at centre of colliery site. Seeded and mown. The sward is dominated by Yorkshire fog, red fescue, and cock's-foot with other commonly occurring grass species including perennial rye-grass (*Lolium perenne*), meadow foxtail (*Alopecurus pratensis*), brome (*Bromus* sp.), false oat-grass and less frequently *Vulpia* sp. Herb species include abundant dandelion (*Taraxacum* agg.) and common

	vetch (*Vicia sativa* agg.), occasional docks (*Rumex* sp.), creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), cow parsley (*Anthriscus sylvestris*), tare (Vicia sp.), cat's-ear (*Hypochaeris radicata*) and rarely sorrel (*Rumex acetosa*).
6	Heavily managed, amenity grassland west of the proposed access route. Sward is dominated by perennial rye-grass, meadow-grasses (*Poa* spp.), Yorkshire fog, red fescue and crested dog's tail (*Cynosurus cristatus*). Commonly occurring herb species are white clover (*Trifolium repens*), daisy (*Bellis perennis*), ribwort plantain (*Plantago lanceolata*), greater plantain (*Plantago major*), lesser trefoil (*Trifolium dubium*) and bird's-foot trefoil (*Lotus corniculatus*).
7	Narrow strips of grass amongst scrubby planting between the trans-pennine trail, Bulling Dyke and the plantation woodland/scrub adjacent to the Wombwell by-pass. This habitat is largely unmanaged and is becoming relatively rank compared to other grasslands in the survey area. Dominant grass species are Yorkshire fog, false oat-grass and red fescue with occasional tufted hair-grass. This habitat has a limited herb component including dock, creeping buttercup, cleavers, hogweed and bramble.
8	Grassland sward with some ruderal herb species (presumably from seed mix), amongst sparse and young planting to the east of the proposed access route. Sward is dominated by Yorkshire fog with cock's-foot, sweet vernal grass (*Anthoxanthum odoratum*), meadow-grasses and common bent (*Agrostis capillaris*). Herb species include melilot (*Melilot* spp.), common centaury (*Centaurium erythraea*), ribwort plantain, cat's-ear (*Hypochaeris radicata*), lesser trefoil, yarrow (*Achillea millefolium*), daisy and occasional wild carrot (*Daucus carota*). This area includes large amounts of very young scrub plants including birch, willow, hawthorn, sea buckthorn and poplar and it is considered that within a few years this grassland would be replaced by dense scrub and eventually woodland.
9	Stand of c.6-10 plants of giant hogweed (*Heracleum mantegazzianum*) adjacent to the footpath on the northern bank of River Dove and located c.10m inland from the bank and c.5m from the south-west corner of the field.
10	Heavily shaded pond c.50m long and 15m wide. The pond is poorly defined and does not have any clear banks. It's depth appeared to be between 10cm and 30cm but it was not possible to see the bottom in the centre due to its size and the turbid water. Substrate was mud although the entire bottom was covered by a thick build up of leaf litter. Emergent vegetation restricted to just 2 or 3 Iris plants at the western end. The pond is heavily shaded across its entirety and is considered to have low potential for amphibians and invertebrates.
11	End of drainage ditch between the pond and Pitt Street. The ditch is filled with leaf litter and heavily shaded with no standing water except after heavy rain. This ditch, in this area, was considered to be of little ecological value in its current condition.

Tim Outlaw- Freelance Ecologist
103 Turnshaw Road, Kirkburton, Huddersfield, West Yorkshire, HD8 0TL

Figure 1. Extended Phase 1 Habitat Plan



Key:

- Plantation Woodland
- A — Amenity Grassland
- Running Water
- 1 — Target note.
- I — Improved Grassland
- Trees
- Ponds

Figure 2. Locations of bat registrations recorded during survey.

