This report may contain sensitive ecological information; it is the responsibility of the Local Authority to determine if this should be made publicly available.

ID Planning

Woodhouse Garden Suburb Extension

Ecological Appraisal

June 2018

THIS PAGE HAS INTENTIONALLY BEEN LEFT BLANK

FPCR Environment and Design Ltd
Registered Office: Lockington Hall, Lockington, Derby DE74 2RH
Company No. 07128076. [T] 01509 672772 [F] 01509 674565 [E] mail@fpcr.co.uk [W] www.fpcr.co.uk

Rev	Issue Status	Prepared / Date	Approved/Date
	Draft	IH / 08.06.18	JSE / 14.06.18

THIS PAGE HAS INTENTIONALLY BEEN LEFT BLANK

CONTENTS

1.0 EXECUTIVE SUMMARY 2

2.0 INTRODUCTION 3

3.0 METHODOLOGY 3

4.0 RESULTS 8

5.0 DISCUSSION AND RECOMMENDATIONS 19

6.0 APPENDIX A – PHASE 1 HABITAT SURVEY SPECIES LISTS 35

FIGURES

Figure 1: Site Location and Consultation Results Plan

Figure 2: Phase 1 Habitat Plan

TABLES

Table 1: Bat Survey Protocol for Trees

Table 2: Summary of Relevant Species Records

Table 3: Hedgerow Survey Summary

Table 4: Summary of Bat Roosting Potential in Trees Following Initial Assessment

Table 6: Pond Descriptions and HSI Scores

PHOTOGRAPHS

Photograph 1: Semi-natural Broadleaved woodland to the East of the Site (Target Note 1).

Photograph 2: Bradley Wood (Target Note 2).

Photograph 3: Semi-improved Neutral Grassland around Anchor Pit (Target Note 6).

Photograph 4: Continuous Scrub – Self-set sycamore (Target Note 4)

Photograph 5: Improved Grassland and hedgerow H21, Viewed from the east (Target Note 9).

Photograph 6: Poor semi-improved grassland with scrub encroachment (Target Note 10).

Photograph 7: Bradley Park Dike, within the north-eastern section of the site, viewed from the south.

Photograph 8: Unmanaged hedgerows H11 & H12, viewed from the west..

APPENDICES

Appendix A: Phase 1 Habitat Survey Species List

1.0 EXECUTIVE SUMMARY

1.1 The Ecological Appraisal was undertaken in order to identify any potential ecological constraints and opportunities relating to the promotion of the site for residential development as part of Calderdale Local Plan.

1.2 The majority of the site is of limited botanical value, owing to the predominance of large intensively managed fields under arable production or supporting improved and poor semi-improved grassland. Two fields along the Bradley Park Dike riparian corridor featured grassland habitats of increased species richness and perhaps greater conservation value. More detailed surveys undertaken during June will be required to confirm the status of the grassland habitats, although the initial survey indicates that these areas are unlikely to be of high conservation value. Other areas of greater interest were noted, including areas of woodland (both on-site and adjacent to the site boundary), hedgerows, running water and mature trees.

1.3 Owing to the large extent of the site and the habitats which are present, it is of value to a range of fauna. The presence of some species and groups is known locally and, as result, it will be necessary to determine their status within the site and implication, if any, that this may have on development proposals. Further survey is therefore recommended for the following groups:

- Breeding birds
- Herpetofauna – Focused on both great crested newts and reptiles
- Bats – Focused on: determining the status of roosting bats should they be present within the onsite trees which are to be lost to proposals; and general bat activity within the site.

1.4 As well as retaining areas identified as having conservation value, where possible consideration should be given to ensuring that proposals seek to enhance as far as possible, the structurally varied nature of habitats within the site which are likely to increase the functionality of the Calderdale Wildlife Habitat Network.

1.5 The retention of the majority of the habitats of conservation interest and subsequent appropriate management, in conjunction with the adoption of mitigation measures during construction should ensure that the conservation status of the majority of the notable species which may be present on-site is enhanced.

1.6 The level of development proposed could fund both the implementation costs of the habitat creation together with contributions towards its long-term maintenance.

1.7 In summary, the scale of the proposals presents an opportunity to provide tangible benefits for a range of flora and fauna, including a number of Species of Principal Importance. In line with planning policies, the developments generous proposed green infrastructure would ensure the protection of several Habitats of Principal Importance and would also maintain and enhance the sites contribution to local and regional ecological networks.

2.0 INTRODUCTION

2.1 The following report has been prepared by FPCR Environment and Design Ltd on behalf of ID Planning. It provides the results of an Extended Phase 1 Habitat survey and an assessment of trees with bat potential undertaken at a site at Woodhouse, Brighouse (central grid reference: SE 152 213) undertaken on the 1st and the 8th May 2018. The report is intended to outline the potential ecological constraints and opportunities relating to the promotion of the site for residential development as part of the emerging Calderdale Local Plan.

2.2 The study area is 62.8ha in extent and is agricultural in nature, with a mixture of arable and permanent and temporary grassland habitats. Bradley Park Dike forms the sites southern boundary with Bradley Wood located just offsite to the south. A number of residential properties and farm complexes were recorded within the site. The field boundaries on the site are formed predominately by hedgerows with dry stone walls also well represented. The suburb of Woodhouse is present to the north-west of the site with an industrial area along the River Calder corridor to the north. The M62 was located Beyond Bradley wood to the south, with the landscape beyond being characterised by Bradley Park golf club. A number of Public Rights of Way (PRoW) cross the site, including the Brighouse Boundary Walk.

2.3 The objective of the assessment was to gain an understanding of the baseline ecology of the site and immediate surrounding area and to determine whether the site supports, or has the potential to support, protected species. This assessment involved a desk study, Extended Phase 1 habitat survey, badger *Meles meles* survey and a ground-level assessment of trees for their potential to support roosting bats.

3.0 METHODOLOGY

Overview

3.1 The study has largely followed the guidelines for undertaking Preliminary Ecological Appraisals, as recommended by the Chartered Institute of Ecology and Environmental Management (CIEEM)[1]. In summary, the key parts of that process have been:

- Gathering baseline ecological information via a desktop study and a field survey;
- Evaluation of the baseline information; and
- Discussion of the results and subsequent conclusions and recommendations.

Desk Study

3.2 To support the field survey and further compile existing baseline information relevant to the site, ecological information was sought from third parties, including records of protected or notable species and sites designated for nature conservation interest. Organisations contacted included:

- West Yorkshire Ecology Service (WYES)

Online sources of ecological data were also sought including:

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

- Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk);

3.3 The search area of interest varied depending upon the likely significance and zone of influence of the data requested, as follows:

- A minimum of a 10km radius around the site was searched for sites with an international statutory designation; Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar sites;
- A minimum of a 2km radius around the site for sites of national/regional importance with a statutory designation of Site of Special Scientific Importance (SSSI) or National Nature Reserve (NNR);
- Up to a 1km radius around the site for sites of local importance with statutory designation of Local Nature Reserve (LNR), or non-statutory designation of Site of Importance for Nature Conservation (SINC) or the equivalent Local Wildlife Site (LWS); and
- 1km search area for records of notable / protected species (i.e. including Species of Principal Importance under S41 of the Natural Environment and Rural Communities Act (NERC) 2006 and local biodiversity action plan species.

Field Survey – Habitats/Flora

Extended Phase 1 Survey

3.4 Extended Phase 1 habitat survey is a survey technique recommended by Natural England that largely follows guidance from JNCC 2010[2], with the scale of recording of habitat parcels adjusted to provide more detail for smaller sites. The survey comprised a walkover of the site, mapping the principal habitat types present and identifying a representative species list for each habitat. The abundance of species was recorded using the DAFOR scale, ranging from Dominant to Abundant, through Frequent and Occasional to Rare.

3.5 Any habitats suitable for, or features with the potential to support, protected or notable species were also assessed and recorded with the survey undertaken on 1st and 8th May 2018 by a suitably experienced ecologist from FPCR.

Hedgerows

3.6 Hedgerows were surveyed using the Hedgerow Evaluation and Grading System (HEGS)[3]. This method of assessment includes noting down canopy species composition, associated ground flora and climbers, structure of the hedgerow including height, width and gaps, associated features including number and species of mature trees, banks, ditches and grass verges.

3.7 Each hedgerow is given a grade using HEGS with the suffixes '+' and '-', representing the upper and lower limits of each grade respectively. These grades represent a continuum on a scale from 1+ (the highest score and denoting hedges of the greatest nature conservation priority) to 4- (representing the lowest score and hedges of the least nature conservation priority) as follows:

2 JNCC, (2010), Handbook for Phase 1 habitat survey - a technique for environmental audit, ISBN 0 86139 636 7

3 Clements, D.K. & Tofts, R.J. (1992) Hedgerow Evaluation and Grading System (HEGS): A methodology for the ecological survey, evaluation and grading of hedgerows.

- Grade 1 – High to very high value
- Grade 2 – Moderately high to high value
- Grade 3 – Moderate value
- Grade 4 – Low value

3.8 Hedgerows graded 1 or 2 are considered to be a priority for nature conservation.

3.9 The hedgerows were also assessed against the Wildlife and Landscape criteria contained within Statutory Instrument No: 1160 – The Hedgerow Regulations 1997[4] to determine whether they qualified as 'Important Hedgerows' under the Regulations.

Field Survey – Fauna

Badgers

3.10 Land within the development area was surveyed on 1st and 8th May 2018 following the methodology outlined by Harris *et al* (1989)[5]. This involves a walkover of the site searching for field signs which would indicate the presence of badgers as follows:

- Setts: including earth mounds and evidence of bedding and or runways between identified setts;
- Latrines: often located close to setts; at territory boundaries or adjacent to favoured feeding areas;
- Prints and established track or runways;
- Hairs caught on rough wood or fencing;
- Other evidence: including snuffle holes, feeding and playing areas and scratching posts. The identification of these latter signs on their own does not necessarily provide conclusive evidence of the presence of badgers. A number of such signs need to be seen in conjunction before badgers can be confirmed as being present.

Bats

Ground Level Assessment of Trees

3.11 The tree assessments for roost potential were undertaken from ground level on 1st and 8th May 2018, with the aid of a torch and binoculars where required. During the survey Potential Roosting Features (PRFs) for bats such as the following were sought[6]:

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems);

[4] DEFRA (1997) *The Hedgerow Regulations 1997: A Guide to the Law and Good Practice, London, HMSO*

[5] Harris, S., Cresswell, P. & Jefferies, D. 1989. Surveying for badgers. Occasional Publication of the Mammal Society No. 9. Mammal Society, Bristol.

[6] BS 8596:2015, (October 2015): Surveying for bats in trees and woodland, Pg 16

- Woodpecker holes;
- Cracks/splits in stems or branches (horizontal and vertical);
- Partially detached, loose or bark plates;
- Cankers (caused by localised bark death) in which cavities have developed;
- Other hollows or cavities, including butt rots;
- Compression of forks with occluded bark, forming potential cavities;
- Crossing stems or branches with suitable roosting space between;
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk);
- Bat or bird boxes;
- Other suitable places of rest or shelter.

3.12 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features, may enhance or reduce the potential value.

3.13 Based on the above, trees were classified into general bat roost potential groups based on the presence of these features. Table 1 (below) broadly classifies the potential categories as accurately as possible as well as discussing the relevance of the features. This table is based upon Table 4.1 and Chapter 6 in Bat Surveys for Professional Ecologists: Good Practice Guidelines[7].

3.14 Although the British Standard Document groups trees with moderate and high potential, these have been separated below (as per Table 4.1 in The Bat Conservation Trust Guidelines) to allow more specific survey criteria to be applied.

Table 1: Bat Survey Protocol for Trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A Natural England derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) **and** nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence.

[7] Collins J, (2016), Bat Surveys for Professional Ecologists: Good Practice Guidelines. Bat Conservation Trust

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
		Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence. **However,** where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be possible.
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers (if appropriate) **and** / **or** nocturnal survey during appropriate period (May to August). Following additional assessments, a tree may be upgraded or downgraded based on findings. If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from Natural England will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers **and / or** nocturnal survey during appropriate period (May to August). Following additional assessments, a tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from Natural England will be required.

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

NB: The Conservation of Habitats & Species Regulations 2017 affords protection to "breeding sites" and "resting places" of bats. The EU Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places "where there is a reasonably high probability that the species concerned will return".

3.15 In combination with the above, all trees within the site were visually assessed for the existence of large cavities with the potential for use by nesting or roosting barn owl. Additional signs, such as pellets and faecal splashing were also searched for on or around potential perches.

4.0 RESULTS

Desk Study

4.1 A summary of relevant ecological information is provided below; original data provided by the consultees has not been included in this report. Locations of non-statutory designated sites referred to in the following section are illustrated on Figure 1.

Statutory Designated Sites

4.2 No designated sites of international nature conservation importance were located within 10km of the site.

4.3 No designated sites of national/regional nature conservation importance were located within 2km of the site.

Non-Statutory Designated Sites

4.4 In West Yorkshire, 1st tier non-statutory designated sites of County importance are termed Sites of Ecological or Geological Importance' (SEGI). The county is currently in the process of merging 2nd and 3rd tier sites into a single Local Wildlife Site (LWS) designation.

4.5 Three non-statutory designated sites for nature conservation interest were identified within the 1km search area, these included:

- Clifton Lagoon LWS/SEGI – Located 320m northeast of the site boundary - Is a reclaimed site designated for its relatively diverse grassland communities; scrub and open water. The site

contains a number of regionally rare plant species, such as rigid hornwort *Ceratophylum demersum* and pepper saxifrage *Silaum silaus*.

- Bradley Park Woods LWS – located 360m south-east of the site boundary – Comprises two small areas of more extensive woodland within Bradley Park Golf Club, which qualify as a LWS due to the bluebell *Hyacinthoides non-scripta* coverage recorded.
- The Calder and Hebble Navigation Canal LWS/SEGI is located at a minimum distance of 960m N of the site boundary and featured a wide range of diverse plant communities, including some regional rarities. The canal supports a wide range of invertebrates including the Swan Mussel, *Anodonta cygnaea*, and a diverse odonatan population.

4.6 Within Calderdale and Kirklees, sites which do not meet the criteria for selection as a SEGI/LWS, but still have biodiversity value, particularly in connecting existing sites of ecological and geological importance are mapped under the Calderdale/Kirklees Wildlife Habitat Networks. Two pasture fields, located to the east of Firth House are mapped under the Calderdale Wildlife Habitat Network. Bradley Wood located off-site along the sites Southern boundary and three fields located off-site to the north are mapped under the Kirklees and Calderdale Wildlife Habitat Networks respectively.

Protected Species

4.7 Records of protected and priority faunal species derived from the desk study consultees are provided in Table 2 below. Species records have been filtered to comprise protected and / or notable species within 1km of the site boundary from the last 20 years.

Table 2: Summary of Relevant Species Records

Species	Conservation Status	Total Number of Records within 1km	Location / Minimum distance of records from study area
Amphibians & Reptiles			
Common Toad *Bufo bufo*	NERC, LBAP	1	One record from 2002 located 560m NE within Clifton Lagoon LWS
Common Frog *Rana temporaria*	LBAP	3	Records ranging from 2002 to 2007, the closest record located 120m NW
Palmate Newt *Triturus helveticus*	LBAP	1	One record located 560m SE with Bradley Park Golf Club
Smooth Newt *Triturus vulgaris*	LBAP	1	One record from 2002 located 560m NE within Clifton Lagoon LWS
Bats			
Common Pipistrelle *Pipistrellus pipistrelle*	Regs, WCA Sch 5, LBAP	12	Records from 2003-2017, the closest being a record 560m NW. The closest known roost is 850m S.
Daubenton *Myotis daubentonii*	Regs, WCA Sch 5, LBAP	1	Single record from 2012 along the River Calder 940m NW of Site.

Species	Conservation Status	Total Number of Records within 1km	Location / Minimum distance of records from study area
Noctule *Nyctalus noctula*	Regs, WCA Sch 5, LBAP	3	Records from 2008 to 2013 the closest being 630m S
Unidentified Bat sp.	Regs, WCA Sch 5	4	Records between 2003 and 2006 the closest record is 360m W with the nearest known roost being 770m S.
Mammals			
Otter *Lutra lutra*	WCA Sch 5, NERC, LBAP	2	Records from 2012 located 940m N on the River Calder.
Invertebrates			
Wall *Lasiommata megera*	NERC	3	Records between 2001-2002, the closest 540m SE from Bradley Park Golf Club
Small Heath *Coenonympha pamphilus*	NERC	1	A single record from 2002, located 560m NE within Clifton Lagoon LWS
Butterbur *Hydraecia petasitis*	LBAP	1	A single record from 2005, located 970m NW.
Ghost Moth *Hepialus humuli*	NERC	1	A single record from 2002, located 540m E within Bradley Park Golf Club
Cinnabar *Tyria jacobaeae*	NERC	1	A single record from 2002, located 540m E within Bradley Park Golf Club
Plants			
Bluebell *Hyacinthoides non-scripta*	Sch8 – Section 13(2) only	2	Two records from 2008, located within the site boundary

Status Key: Regs = The conservation of Habitats and Species Regulations 2017. WCA = Wildlife and Countryside Act 1981 (as amended). Sch1 = Schedule 1 of the WCA. Sch5 = Schedule 5 of WCA. Sch8 = Schedule 8 of WCA. NERC = Natural Environment and Rural Communities Act (2006). LBAP = Calderdale Biodiversity Action Plan.

Field Survey - Habitats

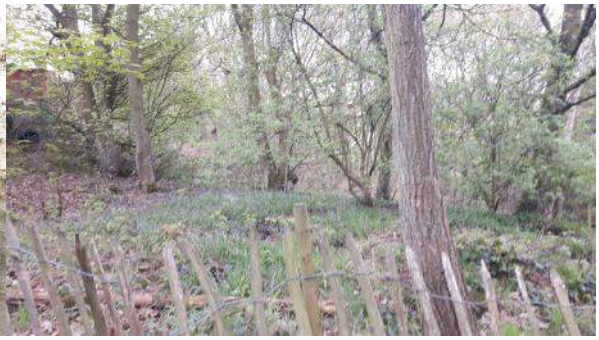
Semi-natural Broadleaved Woodland

4.8 To the west of the site, an area of semi-natural broadleaved woodland was recorded along the banks of Bradley Park Dike (Target Note 1). Sycamore *Acer pseudoplatanus* was the most abundant canopy species with frequent pedunculate oak *Quercus robur* and alder *Alnus glutinosa* recorded as a rarity. Rhododendron *Rhodendron ponticum* was frequent, particularly to the west, where it formed dense stands, in places excluding all other woody species. Elsewhere, hawthorn *Crataegus monogyna* was frequent with holly *Ilex aquifolium* and dog rose *Rosa canina* occasional. A single extensive patch of field rose *Rosa arvensis* was also noted. Under the

rhododendron, the ground flora was sparse, consisting of bare leaf-litter with scattered bramble *Rubus fruticosus agg.* and cow parsley *Anthriscus sylvestris*. Further east, a more typical woodland flora develops, with common ivy *Hedera helix* becoming frequent along with hedge woundwort *Stachys sylvatica*, greater stitchwort *Stellaria holostea*, bluebell and enchanter's-nightshade *Circaea lutetiana* recorded at low frequencies.

4.9 Bradley Wood (Target Note 2) was recorded offsite along the southern slope leading down to Bradley Park Dike, which forms the site's southern boundary. Bradley Wood Scout Camp is located within the wood and as such there was limited public access. The woodland canopy was characterised by frequent pedunculate oak and sycamore, with silver birch *Betula pendula*, goat willow *Salix caprea* and beech *Fagus sylvatica* being occasional. Hawthorn was frequent within the shrub layer with rhododendron having a local distribution. Bluebell and creeping soft-grass *Holcus mollis* were frequent within the ground flora, with pignut *Conopodium majus* and broad buckler-fern *Dryopteris dilatata* occasionally recorded. Both ramsons *Allium ursinum* and great wood-rush *Luzula sylvatica* were locally frequent, the former towards the bottom of the slope with the latter within the steeper sections, where it grew with wavy hair-grass *Deschampsia flexuosa* and common bent *Agrostis capillaris*. The invasive plant Himalayan balsam *Impatiens glandulifera* was frequent at the bottom of the slope, along the brook. The northern extent of the woodland had been fenced off and featured no ground flora, perhaps due to being used to house pigs, although no pigs were observed during the survey.

Photograph 1: Semi-natural Broadleaved woodland to the East of the Site (Target Note 1).



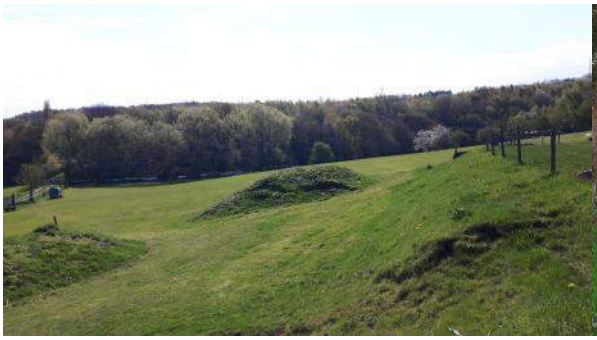
Photograph 2: Bradley Wood (Target Note 2).

Plantation Broadleaved Woodland

4.10 A strip of offsite plantation broadleaved woodland was recorded adjacent to the sites western boundary, along the A641 (Target Note 3). Sycamore is the sole species within the canopy, with hawthorn and horse chestnut *Aesculus hippocastanum* forming a sparse shrub layer. The ground flora was species poor, featuring frequent cow parsley, cleavers *Galium aparine* and occasional broad-leaved dock *Rumex obtusifolius* and bramble.

Continuous Scrub

4.11 Extensive patches of scrub were encroaching within the large unmanaged poor semi-improved field recorded to the west of the site (described in greater detail below). Along Shepherds Thorn Lane, this scrub was characterised by an abundance of self-set sycamore (Target Note 4), from the neighbouring row of mature trees. Bramble was frequent throughout the field, but along the northern extent of hedgerow H20, it formed tall extensive patches (Target Note 5).



Photograph 3: Semi-improved Neutral Grassland around Anchor Pit (Target Note 6).

Photograph 4: Continuous Scrub – Self-set sycamore (Target Note 4)

Semi-improved Neutral Grassland

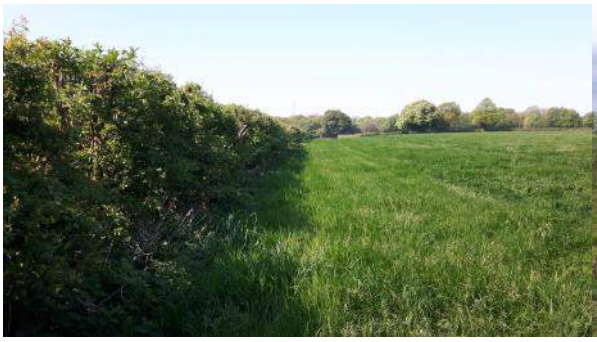
4.12 The north eastern section of the site, around the former anchor pit site, featured an area of semi-improved neutral grassland, grazed by a small number of goats, sheep and a llama (Target Note 6). Yorkshire-fog *Holcus lanatus* was the most frequent grass within the sward together with sweet vernal-grass *Anthoxanthum odoratum*, perennial rye-grass *Lolium perenne*, common bent, smooth meadow-grass *Poa pratensis*, cock's-foot *Dactylis glomerata* and meadow foxtail *Alopecurus pratensis*, all of which were occasional. The sward was moderately diverse, with a high percentage of herbs recorded within the sward with common knapweed *Centaurea nigra*, meadow buttercup *Ranunculus acris* and common sorrel *Rumex acetosa* being the most frequent species recorded. Species recorded at lower frequencies included ribwort plantain *Plantago lanceolata*, yarrow *Achillea millefolium*, field wood-rush *Luzula campestris*, meadow vetchling *Lathyrus pratensis*, red clover *Trifolium pratense* and bulbous buttercup *Ranunculus bulbosus*.

4.13 Further south-west, along Bradley Park Dike, a further area of semi-improved neutral grassland was recorded along the south-west facing slope that runs down to the dike (Target Note 7). The grassland was cattle grazed and again was characterised by frequent Yorkshire-fog with a diverse mix of minor components. Herbaceous diversity within the grassland was relatively high, albeit lower than at Target Note 6, with dandelion *Taraxacum officinale agg*, common sorrel, bulbous buttercup and field wood-rush all frequent. The grazing cattle had resulted in some localised areas of poaching and tall ruderal vegetation; and the dike corridor featured frequent Himalayan balsam.

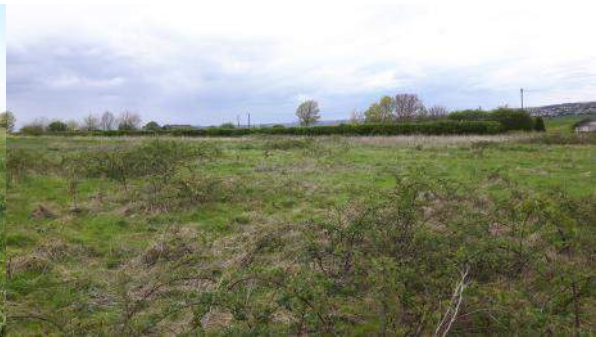
Improved Grassland

4.14 Five fields of rye-grass leys, (mapped as improved grassland, rather than arable to avoid confusion) were recorded across the site, with a large single field present to the north-east (Target Note 8) and four smaller fields located to the south-west (Target Note 9). Within all these fields Italian rye-grass *Lolium multiflorum* was dominant forming lush uniform swards, generally with annual meadow-grass *Poa annua* the only other grass present, scattered amongst the sward. Herbaceous diversity was severely limited throughout, with common chickweed *Stellaria media* and common mouse-ear *Cerastium fontanum* generally the only species recorded. Common ramping fumitory *Fumaria muralis* was recorded as locally frequent at the margins of the habitat within the south-western fields.

4.15 A field of improved grassland was recorded to the east of Firth house, grazed by horses to the west and cattle within the more extensive eastern compartment. Perennial rye-grass was abundant throughout, with Yorkshire-fog and meadow foxtail frequent associates. White clover *Trifolium repens* was frequent and the only other herb recorded above rare was common ragwort *Senecio jacobaea*.



Photograph 5: Improved Grassland and hedgerow H21, Viewed from the east (Target Note 9).



Photograph 6: Poor semi-improved grassland with scrub encroachment (Target Note 10).

Poor Semi-improved Grassland

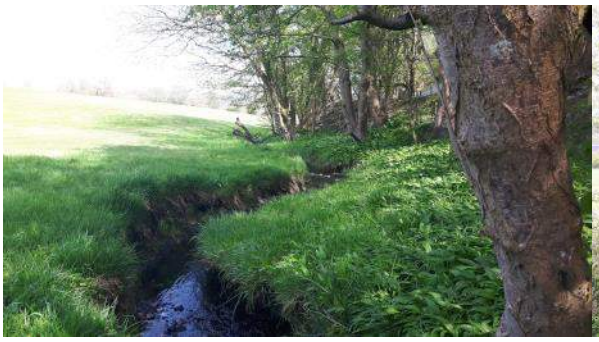
4.16 A large field to the west of Firth house supported what would broadly be described as poor semi-improved grassland (Target Note 10). The field was, up until approximately 6 years ago, under arable production, but since that time has been left unmanaged and now supports a rough grassland community with a high proportion of tall ruderal herbs and significant scrub encroachment. Common couch *Elytrigia repens* was the most abundant species recorded across this area, often forming large dense stands. Creeping thistle *Cirsium arvense* and great willowherb *Epilobium hirsutum* also formed frequent single species patches. Creeping bent *Agrostis stolonifera* was locally frequent, together with creeping buttercup *Ranunculus repens* in areas of restricted drainage. As described above, the lack of management has enabled significant amounts of scrub encroachment across the habitat, but most extensively, with bramble along hedgerow H20 and sycamore along Shepherds thorn Lane.

4.17 To the north of Firth House Lane, a small area of unmanaged former pasture was noted in association with a disused stable (Target Note 11). Cock's-foot was abundant, forming a rank tussocky sward, together with frequent meadow foxtail and more occasionally false-oat grass *Arrhenatherum elatius*. Common nettle was frequent along with other ruderal species such as broad-leaved dock, creeping thistle and cleavers at lower frequencies. Locally wet areas at the margins supported frequent reed sweet-grass *Glyceria maxima* and great willowherb. The invasive plant Himalayan balsam was frequent in the area to the north-east of the stable building.

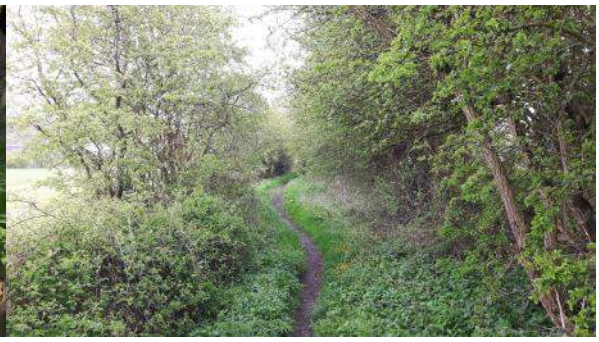
4.18 Further west along Firth House Lane, another area of unmanaged grassland was recorded to the north of hedgerow H15 (Target Note 12). Frequent cock's-foot and occasional false oat-grass and meadow foxtail formed a rank tussocky sward with frequent cow parsley scattered throughout.

Running Water

4.19 Bradley Park Dike forms the majority of the sites southern boundary, running from south-west to north-east. The channel was approximately 1m wide, with water to a depth of about 20cm with a moderate flow. Floating sweet-grass *Glyceria fluitans* was occasional and was the only species recorded within the channel. Himalayan balsam and creeping buttercup were locally frequent along the margins of the water course with opposite leaved golden-saxifrage *Chrysosplenium oppositifolium*, wild angelica *Angelica sylvestris*, gypsywort *Lycopus europaeus*, and meadowsweet *Filipendula ulmaria* recorded at low frequencies.



Photograph 7: Bradley Park Dike, within the north-eastern section of the site, viewed from the south.



Photograph 8: Unmanaged hedgerows H11 & H12, viewed from the west.

Arable

4.20 A significant area of the site was under arable production, the majority of which, at the time of survey, had a standing crop of wheat. The margins of the habitat were generally very narrow, consisting of a 0.5-1m wide band of poor semi-improved grassland along the margins of the hedgerows. Typical coarse grass species and common forbs were present comprising frequent common couch and perennial rye-grass with occasional Yorkshire-fog and cock's-foot. Herbaceous diversity was low with frequent patches of common nettle and cleavers and occasional cow parsley and common chickweed.

Gardens

4.21 A number of gardens were recorded across the survey area, associated with the residential properties at Firth House, Raths-Ryg and Toothill Green Cottage. A full assessment of the gardens was not made as part of the assessment as impacts to these habitats are anticipated to be negligible. However, the gardens included a number of mature trees, predominantly sycamore, but also including beech *Fagus sylvatica*, leyland cypress *Cupressus* × *leylandii* and ash *Fraxinus excelsior*. The majority of the properties had well managed lawns with herbaceous planting and a small orchard was noted within the grounds of Raths-Ryg.

Hedgerows

4.22 Unusually for the area, hedgerows were the most common field boundary within the site with a total of 28 hedgerows recorded. The hedgerows to the north of the site tended to be tall and unmanaged with the hedgerows elsewhere on site managed through cutting. The hedgerows generally displayed low species diversity, in terms of woody species present, with no hedgerows

having on average five or more species per 30m sample section. The hedgerow network had a reasonable distribution of associated tree standards and generally had some form of connectivity to other habitats. Consequently, under the HEGS assessment ten hedgerows (H3, H4, H11, H12, H16, H18, H19, H20, H24 and H25) have moderately high to high conservation value (Grade 2) and therefore a priority for nature conservation. Of the remaining hedgerows seventeen had moderate conservation value (Grade 3) with one hedgerow (H15) having low conservation value (Grade 4). Hedgerows H5, H11, H12 and H13 qualified as 'Important Hedgerows' under the Hedgerow Regulations 1997, primarily due to the number of species they supported and being located adjacent to Public Rights of Way.

4.23 As is typical in Yorkshire hedges, hawthorn was the prominent component of all of the hedges but many of the other recorded woody species are well represented with elder being an occasional associate. Other species, such as dog-rose, pedunculate oak and ash, were present in many of the hedges but at lower frequencies. Service-tree *Sorbus domestica,* an uncommon tree with a restricted native range was recorded within hedgerow H18, although it appeared to have been planted.

4.24 The hedge bottom flora present was often ruderal in nature with common nettle, cleavers and cow parsley a few examples of the species present. A reasonable diversity of woodland plants was recorded with woodland indicators such as bluebell being present in a high proportion of hedgerows surveyed and species such as wood avens *Geum urbanum*, dog's mercury *Mercurialis perennis* and hedge woundwort also recorded.

4.25 Further information regarding the quality and ecological value of the hedgerows is provided below in Table 3.

Table 3: Hedgerow Survey Summary

Ref	Canopy Sp.(from most abundant to least abundant)	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	HEGS Grade	Important Hedgerow
H1	*Cm, Sn, Rf, Ug, Ia*	4/2-3	100	2	Unmanaged, 11% gaps, one young standard, two connections, adjacent to PRoW.	3	No
H2	*Cm, Rf, Sn, Ia, Rc, Tb, Sa*	2-4/2-3	135	2.5	Unmanaged, 11% gaps, four connections, no tree standards.	3+	No
H3	*Cm, Rf, Rc, Sn, Ia, Ap*	2-4/2-3	98	4	Unmanaged, 10% gaps, four end connections, two standards.	2+	No
H4	*Cm, Rf, Sn, Ap, Fe, Rc, Qr, Ia*	2-4/2-3	171	3	Unmanaged, 22% gaps, two end connections, one mature and seven young tree standards.	2	No
H5	*Cm, Rc, Sn, Rf, Fe*	2-4/2-3	88	3	Unmanaged, <10% gaps, one end connection, no tree standards, dry ditch, adjacent to PRoW.	3	Yes
H6	*Cm, Sn, Ca, Qr, Bp, Pa*	4/1-2	115	2	Unmanaged defunct, 32% gaps, two end connections, two mature and three young tree standards.	-3	No

Ref	Canopy Sp.(from most abundant to least abundant)	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	HEGS Grade	Important Hedgerow
H7	*Cm, Rf, Fe, Ap, Qr, Sn*	4/1-2	80	2	Unmanaged, <10% gaps, three end connections, two mature and two young standards, adjacent to ProW.	3+	No
H8	*Cm, Rf, Sn, Rc, Ia, Ap*	2-4/2-3	325	2.33	Cut, <10% gaps, one young standard, one end connection, adjacent PRoW.	3	No
H9	*Cm, Rf, Sn, Sc*	2-4/1-2	442	1.66	Cut, <10% gaps, no end connections, no standards.	-3	No
H10	*Cm, Rf, Sn, Ap, Qr*	2-4/1-2	78	2	Unmanaged, <10% gaps, one end connection, one young tree standard, adjacent to PRoW.	3	No
H11	*Cm, Sn, Rf, Ps, Ia, Qr, Ac*	4/2-3	192	3.5	Unmanaged, <10% gaps, two end connections, one young tree standard, adjacent to PRoW, parallel hedge.	-2	Yes
H12	*Cm, Qr, La, Ca, Rf, Ac, Rc, Ap*	4/2-3	152	4	Unmanaged, 13% gaps, two end connections, six mature and three young tree standards, adjacent to PRoW, parallel hedge.	2	Yes
H13	*Cm, Rf, Sn, Ca, Qr, Rc, Ac, Ia*	2-4/2-3	63	4	Unmanaged, <10% gaps, two connections, two mature standards, adjacent to PRoW, parallel hedge.	3+	Yes
H14	*Cm, Sn, Rf*	2-4/2-3	56	2	Unmanaged, 39% gaps, two connections, no standards, adjacent to PRoW, parallel hedge.	-3	No
H15	*Cm, Fe*	1-2/1-2	129	1	Cut, <10% gaps, no standards, no connections, adjacent to PRoW, parallel hedge.	-4	No
H16	*Cm, Ap, Ia, Rf, Ps, Fe, Rr*	4/2-3	211	1.66	Cut, <10% gaps, eight young standards, one end connection, adjacent to PRoW, parallel hedge.	2	No
H17	*Cm, Rf*	2-4/1-2	150	1	Cut, no gaps, no standards, one end connection, parallel hedge.	3	No
H18	*Cm, Rf, Pa, Apl, Sn, Fe, Sd*	2-4/1-2	58	4	Cut, no end connections, one mature and six young standards, parallel hedge	2	No
H19	*Cm, Pa, Apl, Sn, Fe*	2-4/1-2	71	3	Cut, no gaps, three mature and seven young standards, no end connections parallel hedge.	2	No
H20	*Cm, Ap, Sn, Fe, Rc, Rf*	4/2-3	343	2	Unmanaged, 12% gaps, two end connections, six mature and one young standard.	2	No
H21	*Cm, Sn, Rf*	1-2/1-2	194	2	Cut, <10% gaps, three end connections, no standards.	3	No
H22	*Cm, Sn, Ah, Qr*	2-4/1-2	50	3	Cut, 30% gaps, two mature standards, one end connection.	-3	No

Ref	Canopy Sp.(from most abundant to least abundant)	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	HEGS Grade	Important Hedgerow
H23	*Cm, Sn, Te,*	2-4/1-2	77	2	Cut, no gaps, one mature standards, two end connections.	3	No
H24	*Cm, Lc, Sn, Te, Ah, Qr, Ap, Ia, Fe*	4/2-3	147	2	Cut, garden hedgerow, no gaps, six mature & one young standard, two end connections.	2+	No
H25	*Cm, Lc, Pc, Sn, Ap*	4/2-3	52	2	Cut, garden hedgerow, no gaps, seven mature & one young standard, three end connections.	2+	No
H26	*Cm, Sn, Ia, Rf, Ap*	4/2-3	98	2	Unmanaged, <10% gaps, no standards, one end connection.	3	No
H27	*Cm, Sn, Rf*	2-4/1-2	97	2	Cut, <10% gaps, no standards, two end connections.	3	No
H28	*Cm, Sn, Rf*	2-4/1-2	30	2	Unmanaged, <10% gaps, no standards, no end connections.	-3	No

Species Key: *Ac Acer campestre – field maple, Ah Aesculus hippocastanum* – horse chestnut, *Ap Acer pseudoplatanus* – sycamore, *Apl Acer platanoides* – Norway maple, *Bp Betula pendula* – silver birch, *Ca Corylus avellana* – hazel, *Cm Crataegus monogyna* – hawthorn**,** *Fe Fraxinus excelsior* – ash, *Ia Ilex aquifolium* – holly, *Lc Cupressus × leylandii* – Leyland cypress, *Pa Prunus avium* – wild cherry, *Ps – Prunus spinosa* – blackthorn, *Qr Quercus robur* – pedunculate oak, *Rc Rosa canina* – dog-rose, *Rf Rubus fruticosus agg.* – bramble*, Rr Ribes rubrum* - red currant, *Sa Sorbus aria* – common whitebeam, *Sc Salix caprea* – goat willow, *Sd Sorbus domestica* – service-tree, *Sn Sambucus nigra* – elder, *Tb Taxus baccata* – yew, *Te Tilia x europaea* - lime.

Mature Trees and Scattered Scrub

4.26 Along the north-eastern boundary of the site a row of trees was recorded along the margins of the neighbouring cricket pitch, before extending along the railway line (Target Note 13). Pedunculate oak and sycamore were frequent with ash and wild cherry *Prunus avium* occasionally recorded. A scattered understorey of occasional hawthorn, wild cherry and dog rose was present with a ground flora characterised by frequent cleavers and Yorkshire-fog.

4.27 Outside of the woodland and hedgerows habitats, the occurrence of scattered mature trees was more limited. The majority were focused along field boundaries. Sycamore was the most common species, with beech, wild cherry and ash recorded occasionally. The mature trees generally were in good condition, lacking extensive amounts of deadwood. All mature trees outwith the woodland habitats were assessed for their potential to support roosting bats, which is discussed later in the report.

Field Survey - Fauna

Birds

4.28 The hedgerows, mature trees and woodland were considered to provide plentiful nesting opportunities to support an assemblage of farmland and urban edge species. Hedgerows, woodland, mature trees and grassland habitats provided potential foraging opportunities for a

range of birds. It is considered that the arable and grassland fields provide sub-optimal potential nesting opportunities for ground nesting species due to their intensive management.

Badgers

4.29 The woodland, hedgerows and permanent grassland communities provide suitable foraging habitat for badgers with the arable habitats likely to represent a more seasonal foraging resource.

4.30 A three hole sett was recorded just offsite within Bradley wood, on the opposite side of Bradley park Dike (See Figure 2). The holes had the correct dimensions for badger, however the holes had no fresh digging and had become partially blocked with leaf litter, indicating that the sett was partially active. No further evidence of badger was recorded within the vicinity of the sett or elsewhere on-site.

Bats

Habitats

4.31 The hedgerows, mature trees, woodland and semi-improved neutral grassland would provide foraging/commuting habitat for local bat populations and linkages into the wider area. Due to their intensively managed nature, the improved grassland and arable habitats recorded across the site are unlikely to support a high diversity of invertebrate species and therefore are less likely to provide a significant foraging resource.

Assessment of Trees

4.32 Twelve mature trees present within the site supported features that are potentially suitable for roosting bats. A summary of the bat roosting potential provided by the trees are provided in Table 4 below, and indicative locations are shown on Figure 2.

Table 4: Summary of Bat Roosting Potential in Trees Following Initial Assessment

Bat Roosting Potential Category	Trees within category	Number of trees with category
Moderate	T2, T4, T5, T7, T8, T9, T10, T11, T12	9
High	T1, T3 & T6	3

Buildings

4.33 A number of buildings were recorded within the site, primarily associated with Firth House, Raths-Ryg and Toothill Green Cottage. A full assessment of the bat roosting potential of the buildings was not undertaken as preliminary discussions have indicated that all buildings will be retained within the scheme.

Great Crested Newts

4.34 The woodland, hedgerows and the unmanaged grassland habitats (Target Notes 10, 11 & 12) provide suitable terrestrial habitat for great crested newt to reside and forage. The improved

grassland and arable habitats recorded across the study area generally provide only sub-optimal terrestrial habitat, as they are intensively managed and lack the structural diversity required by this species. No waterbodies were recorded within the site boundary during the survey.

4.35 Examination of the 1:25000 OS map and aerial photography identified three waterbodies within 500m of the site boundary. The closest waterbody is an ornamental pond located within the grounds of the gatehouse, approximately 30m east of the site. The Calder and Hebble Navigation Canal is located 60m to the north of the site with the third waterbody being the lagoon within Clifton Lagoon LWS/SEGI and is located at a minimum distance of 430m north-east of the site boundary, beyond the River Calder and the M62.

Reptiles

4.36 The arable and majority of grassland habitats recorded across the site were not considered suitable to support reptile species due the lack the habitat ecotones required by this group. However the unmanaged grassland habitats (Target Notes 10, 11 & 12) together with the edge habitats associated with the woodland and hedgerows could provide the structural diversity required to support reptiles.

Otter

4.37 The dense underscrub recorded within the woodland habitats along Bradley Park Dike, provided suitable cover for otters with the mature trees within the woodland providing potentially suitable places for holts or laying up sites. The Dike itself provides a potential food source with several small species of fish potentially present. Bradley Park Dike is unlikely to provide a significant commuting route as the watercourse is primarily spring fed from a small spring located to the west of the site.

4.38 No evidence of otter, such as spraints or prints, was recorded in association with the habitats within the survey area.

Additional Protected / Notable Species

4.39 No evidence of, or potential for other protected species was observed on site at the time of surveying.

5.0 DISCUSSION AND RECOMMENDATIONS

Background

5.1 The degree to which habitats and species receive consideration within the planning system relies on many mechanisms, including:

- Inclusion within a specific policy, for example veteran trees, ancient woodland and linear habitats within the National Planning Policy Framework (NPPF), or local planning policies;
- A non-statutory site designation (e.g. Local Wildlife Site);
- Habitats considered as Habitats of Principal Importance for the conservation of biodiversity and species considered as Species of Principal Importance for the conservation of biodiversity as listed within Section 41 of the NERC Act (2006);

- Habitats identified as being a Priority Habitat and species identified as being a Priority Species within the local Biodiversity Action Plan; and
- Local planning initiatives.

Planning Policy

National Planning Policy Framework (NPPF)

5.2 Embedded within the NPPF is the premise of '*presumption in favour of sustainable development*' which is laid out in twelve central land-use planning principles which underpin the production of development plans and decision taking.

5.3 Within this strand of sustainable development the NPPF aims to "*seek positive improvements in the quality of the built, natural and historic environment*." which, amongst others, includes, "*…moving from a net loss of bio-diversity to achieving net gains for nature*."

5.4 Within the NPPF there are clear objectives for conserving and enhancing the natural environment:

"The planning system should contribute to and enhance the natural and local environment by:

- *protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *recognising the wider benefits of ecosystem services;*
- *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate".*

Local Planning Policy

5.5 Presently, within Calderdale all planning decisions are based on the Replacement Calderdale Unitary development plan[8] and the NPPF, with the key local policies concerned with ecology being Policies NE13 to NE23.

5.6 The Draft Calderdale Local Plan, which is scheduled for approval in 2019, will deliver the requirements of the NPPF in relation to biodiversity at a local level and it is anticipated that it is these policies on which the proposed scheme will be judged. The current draft polices which relate to ecology and have relevance to the study area, state:

Policy GN2:

A joined up green infrastructure network

8 Calderdale Council (2009) Replacement Calderdale Unitary development plan

The Council will ensure that the Green Infrastructure network is joined up. Existing spaces should be interlinked allowing biodiversity and humans safe access to, and transit between, a range of valued spaces. To achieve this, decisions upon development proposals shall have particular regard to:

- *Seeking to connect biodiversity habitats;*
- *Maintaining critical biodiversity assets and providing long term security for these as identified in the Calderdale Biodiversity Action Plan;…*

…The concept of Wildlife Habitat Networks will be used by the Council in assisting the integration of otherwise isolated areas of wildlife interest. Development will not be permitted in a Wildlife Habitat Network if it would damage the physical continuity of the Network; or impair the functioning of the Network by preventing movement of species; or harm the nature conservation value of the Network.

Policy GN3:

Natural Environment

The Council will seek to achieve better management of Calderdale's natural environment by expecting developments to:

Conserve and enhance the biodiversity and geological features of the Borough by protecting and improving habitats, species, sites of wildlife and geological value and maximising biodiversity and geodiversity opportunities in and around new developments;

Conserve, enhance and restore the habitats, physical structure and local distinctiveness of the Borough's canal and river corridors as natural floodplains, functioning ecosystems and important strategic wildlife habitat networks allowing the free movement of wildlife;

Ensure there are no residual adverse impacts resulting from a proposed development, where in exceptional circumstances the reasons for the proposed development clearly outweigh the value of the ecological feature adversely affected and there are no appropriate alternatives. The adverse impacts of the development must be proportionately addressed in accordance with the hierarchy of: mitigation, compensation and finally offsetting. When appropriate, conditions will be put in place to make sure appropriate monitoring is undertaken and make sure mitigation, compensation and offsetting is effective;

Take appropriate steps to maintain or enhance the favourable conservation status of populations of protected species;

Protect, restore and enhance other features of natural environmental importance, in line with local environmental priorities;

Design-in wildlife, maximise multi-functionality and provide appropriate management, ensuring development follows the mitigation hierarchy and achieves net gains in biodiversity:

Contribute towards the targets set out for Habitats and Species of Principal Importance and the environmental priorities of Local Nature Partnerships and biodiversity offsetting schemes, as appropriate;

Deliver enhancement and compensation, commensurate with their scale, which contributes towards the achievement of a coherent and resilient ecological network;

Protect and enhance the distinctive landscape character of Calderdale;

Adopt good environmental site practices as appropriate, including in the form of a Construction Environmental Management Plan (CEMP) where appropriate; and

Be informed by adequate ecological information, prepared by a competent ecology professional, conforming to British Standard BS42020, Biodiversity - Code of practice for planning and development.

Development proposals which are likely to have a significant adverse impact on a site with one or more of the following designations, habitats or species will not be permitted except in exceptional circumstances where the reasons for the proposed development clearly outweigh the value of the ecological feature adversely affected and there are no appropriate alternatives:

- *Local Nature Reserves (LNR);*
- *Local Wildlife Sites (LWS);*
- *Local Geological Sites (LGS);*
- *Calderdale Wildlife Habitat Network (or similar designation);*
- *Priority habitats and species within the Calderdale Biodiversity Action Plan;*
- *Habitats and Species of Principal Importance within the UK Biodiversity Action Plan;*
- *Habitats and species listed in respect of Section 41 of The Natural Environment and Rural Communities Act 2006;*
- *Legally protected species;*
- *Areas of Ancient and Semi-Natural Woodland; and*
- *Nature Improvement Areas.*

Development proposals which are likely to have a significant adverse impact on a site with one or more of the following national or international designations will not be permitted:

- *Special Protection Areas (SPAs);*
- *Special Areas of Conservation (SACs);*
- *Sites of Special Scientific Interest (SSSI); and*

Sites identified, or required, as compensatory measures for adverse effects on European sites.

An ecological assessment will be required for development located within the 2.5km South Pennine Moors (phase 2) SPA & SAC buffer and outside the designated urban area in order to establish if the land is of functional importance to designated South Pennine Moors (phase 2) SPA species.

Any proposed development which may directly or indirectly compromise the conservation objectives of a SAC or SPA will not be permitted unless the proposal meets the conditions specified in regulation 61 and 62 of the Conservation of Habitats and Species Regulations 2010 (Habitats Regulations).

Calderdale Biodiversity Action Plan

5.7 The Calderdale Biodiversity Action Plan[9] seeks to deliver benefits for biodiversity via a series of specific Calderdale Biodiversity Action Plan Habitat and Species Action Plans. and based on the habitats which are most prevalent within the study area the following are the most relevant:

- Hedgerows;
- Native Woodlands;
- Rivers and Streams; and
- Unimproved Grassland.

5.8 The Habitat Action Plan has targets and indicates a series of objectives for each of these which broadly concern maintaining the extent and condition of the existing resource and creating / restoring additional habitat.

5.9 An updated list of priority species within Calderdale can be found within the Species Audit for Calderdale[10], which includes all species in Calderdale of National, Regional and Local Importance.

Statutory Sites

5.10 The degree to which designated sites receive consideration under the planning system and legislative protection depends on the designation itself and its level of importance and value. This ranges from sites of international importance protected by UK legislation that transposes European directives, to protection under UK legislation or national and local planning policy.

5.11 No designated sites of international nature conservation importance are located within 10km and no designated sites of national nature conservation importance within 2km of the survey site. As such no impacts on statutory designated sites are anticipated.

Non-statutory Sites

5.12 Whilst not necessarily protected in law, non-statutory designated sites do generally receive policy protection (as “Local Sites”), as reflected in the National Planning Policy Framework (NPPF). NPPF suggests that Local Sites can have a fundamental role to play in meeting overall national biodiversity targets and that appropriate weight should be attached to designated sites when making planning decisions.

5.13 Three non-statutory designated sites were located within the 1km search area. Bradley Park Woods LWS/SEGI is located 360m from the site boundary and has connectivity to the Site through the PRoW which extends from the south of the site. As the proposed development is residential, the development is likely to lead to an increase in the local population and a potentially greater number of people utilising the LWS for walking and recreation. However, an increase in visitors passing through the site is unlikely to significantly impact upon the botanical interest of the LWS, given the number of alternative public footpaths in close proximity to the Site, so Bradley Park Woods would not necessarily receive all of the extra visitor usage. The provision

9 Calderdale Council (2007) Calderdale’s Natural Heritage – A Biodiversity Action Plan for Calderdale Version 1.5.
[10] Colin P Duke and Hugh Firman (Amended 2015) A Species Audit for Calderdale. Calderdale Council.

of public open space within the site, designed to incorporate an integrated circular walk will allow for activities such as dog walking, exercise and recreation to be undertaken onsite, also limiting impacts on Bradley Park Woods.

5.14 The Calder and Hebble Navigation Canal SEGI/LWS, which is located at a minimum distance of 960m N of the study area and featured a wide range of diverse plant communities. Potential risks that may result from the proposed scheme could include increased recreational pressure, litter and fly tipping, which could affect the plant communities. However, it is not considered that the development of the site will significantly increase the risk of these impacts from that which is already present within the surrounding urban environment. Pollution is not considered to be a potential impact, as the study area does not share any direct hydrological connection to the SEGI/LWS.

5.15 Clifton Lagoon LWS/SEGI is designated for its mosaic of habitats and is publicly accessible via a number of permissive footpaths. However as Clifton Lagoon is located on the opposite bank of the River Calder no direct negative impacts are anticipated.

5.16 The Lawton report[11] published in 2010 and the government white paper[12], which followed from it, established the need for a greater focus on producing more resilient ecological networks. The Calderdale and Kirklees Wildlife Habitat Network provides a landscape scale approach to the creation, protection, enhancement and management of networks of biodiversity and green infrastructure. Two fields within the site boundary were mapped under the Wildlife Habitat Network. Bradley Wood along the southern boundary of the site and three off-site fields to the north were also mapped as part of the network (See Figure 1).

5.17 Policy GN2 of the Draft Local Plan states:

Development will not be permitted in a Wildlife Habitat Network if it would damage the physical continuity of the Network; or impair the functioning of the Network by preventing movement of species; or harm the nature conservation value of the Network.

5.18 It is therefore recommended that to support the objectives of the Wildlife Habitat Network that all areas of biodiversity value, as discussed below, are retained within the emerging masterplan.

5.19 The results of the Extended Phase 1 habitat survey have indicated that the two on-site fields mapped under the Wildlife Habitat Network contain improved grassland, which is considered to be of low value to biodiversity. As such, it is considered that, should this area be lost to proposals, the physical continuity of the network would not be damaged. In this instance, the retention and long term favourable management of the two areas identified as semi-improved neutral grassland (Target Notes 6 & 7), which are not mapped under the Wildlife Habitat Network would be of greater benefit to the functionality of the network.

5.20 The implementation of the following recommendations within the detailed design of the development would maintain and significantly enhance the functionality of the Wildlife Habitat Network:

- The riparian corridor along Bradley Park Dike could be managed through the reduction of grazing via fencing to encourage more diversity of floral species and provide a taller and

11 J. Lawton et al. (2010) Making Space for Nature: a Review of England's Wildlife Sites and Ecological Network. Report to Defra.London: Department for Environment, Food and Rural Affairs.

12 DEFRA (2011) Government response to the Making Space for Nature review. Department for Environment, Food and Rural Affairs

denser sward to increase its importance as connecting habitat. This would be in line with the objectives of the Wildlife Habitat Network and more than adequately off-set any small loss of PSI as a result of the proposed residential scheme.

- The planting of new species rich hedgerows or a tree belt, with a view to connecting Bradley Park to the south with the offsite areas to the north, would increase connectivity between areas mapped under the network. Implementation of an appropriate management plan, as part of proposals with a view to creating tall wide hedgerows that provide a continuous supply of fruit, berries and nectar to local wildlife.
- Any new habitats created as part of the green infrastructure of the site should aim to increase the diversity of habitats present and provide structural diversity, with scrub, woodland and grassland areas and should be designed in a way to have connectivity with each other and existing habitats on site.
- Securing the long-term management of all habitats associated with the Wildlife Habitat Network through development related funding will ensure the continuity, longevity and robustness of this valuable ecological resource. By doing so, the aims of Policy GN2 will be met through maintaining the continued movement of species through the network by avoiding damage to its continuity or harming its nature conservation value.

Habitats

Semi-natural and Plantation Broadleaved Woodland

5.21 All of the areas of semi-natural broadleaved woodland recorded within and adjacent to the site: increase the sites biodiversity; connectivity through the local area; and provide structural diversity and opportunity for sheltering and foraging wildlife. These areas of woodland would be considered as Lowland Mixed Deciduous woodland Habitat of Principal Importance as listed on Schedule 41 of the NERC Act (2006) as the canopies are composed predominately of native trees; with the ground flora containing a good diversity of species typically associated with established semi-natural woodland. Native woodland, specifically Lowland Mixed Deciduous, is also a priority habitat under the Calderdale Biodiversity Action Plan, further indicating its importance within the county. The strip of plantation broadleaved woodland, present along the western boundary of the site, would not be considered a Habitat of Principal Importance, as the canopy is comprised entirely of non-native trees.

5.22 Given their importance, it is recommended that the emerging masterplan should retain the small area of woodland present within the site boundary and protect the offsite woodlands from adverse impacts of development through the retention of generous buffer zones in addition to recommendations detailed in BS5837 Trees in Relation to Construction. Enhancement of the ecological value of the woodland within the site can be achieved through the application of appropriate long term management. Such management could include the removal of the dense stands of Rhododendron within the on-site woodland, which would create some open areas where new growth can thrive and diversify the age structure.

Grassland Habitats

5.23 The majority of the grassland fields recorded across the site were assessed as being improved or poor semi-improved in nature. Such grasslands are of low to negligible nature conservation

value, due to the dominance of low numbers of common plant species. Consequently, loss of these habitats is unlikely to be a significant ecological constraint to development. Moreover, any loss of these habitat types can be more than compensated for by the creation of species-rich grassland within the green infrastructure of the site. The implementation of appropriate management plans for new areas of such grassland will, over time, lead to substantial positive effects to biodiversity.

Semi-improved Neutral Grassland

5.24 Two fields along the Bradley Park Dike riparian corridor were assessed as supporting semi-improved neutral grassland. The grassland community to the north of the site at Target Note 6 supports a slightly more species-diverse sward than recorded further south at Target Note 7, where localised patches of tall ruderal vegetation and poached ground is having a detrimental effect on the community recorded.

5.25 A grasslands conservation value can be assessed through a number of means with the best examples qualifying as a Habitat of Principal Importance through the presence of a particular National Vegetation Classification (NVC) community. Grasslands of importance at a more regional/local level are identified as being of Local Wildlife Site quality or being considered a priority habitat within the local BAP. Semi-improved grasslands which fall outside of these categories, still have value to biodiversity, particularly at a local level, but are not afforded a great degree of consideration within local or national planning policy.

5.26 The results of the Extended Phase 1 habitat Surveys would suggest that the semi-improved neutral grasslands recorded within the site would fall into the latter category and consequently would be considered of local value. An additional, detailed survey during June, would be recommended prior to any planning application in order to robustly confirm this assessment. However, provisionally it is recommended that these two areas of grassland are retained within the scheme and that proposals present an opportunity to enhance the biodiversity of the local area by securing the long term future management needed to maintain and enhance the ecological interest of these grassland habitats through the implementation of an appropriate management plan.

Hedgerows

5.27 All 28 hedgerows within and bordering the site are greater than 20m in length and comprised native species, as a result, all hedgerows qualify as a habitat of Principal Importance under the NERC Act 2006. 36% of the hedges were found to be of high ecological value (ten hedgerows were assessed as Grade 2 under the HEGS methodology and four deemed to be 'Important' under the Hedgerow Regulations). None of the hedgerows recorded within the site met the criteria to be classified as 'species rich' hedgerows (hedgerows with greater than 5 species per 30m sample point) and therefore are not considered a Priority Habitat within the Calderdale BAP.

5.28 The network of hedgerows within the application site is intact generally with few gaps. This network provides suitable habitat for many species, but is likely to be of particular importance to farmland birds and commuting and/or foraging bats. The network also provides a strong connectivity through the site and with the wider adjacent landscape. As such, it is recommended that the retention and buffering of hedgerows should form a key element of the emerging Masterplan. Any breaches required for access should be kept to a minimum and any subsequent

loss compensated for by management of retained hedges to enhance their ecological value and new hedgerow planting within the development. It is also recommended that hedgerows are retained and protected from adverse impacts from development in accordance with BS5837 Trees in Relation to Construction. The inclusion of existing hedgerows within gardens should be avoided where possible as this can lead to partial removal, mis-management and gradual deterioration in quality and connectivity value of the habitat. Similarly, development design should avoid gardens which immediately abut hedges as this leaves no provision for access to manage hedges and frequently results in garden encroachment or anti-social behaviour such as the dumping of garden waste within the hedge.

5.29 Enhancements to the hedgerow network can be achieved through the planting of species rich hedgerows, with a view to connecting existing areas of value to wildlife. For example the creation of a species rich hedgerow from hedgerow H6 to the row of trees at Target Note 13, would over time, create a functional green corridor and be considered a significant ecological gain. Further enhancements are possible through the gapping up of the hedgerows across the site, particularly hedgerows H1, H2, H4, H6, H12, H14, H20 & H22; which all had more than 10% gaps. Any hedgerow planting should include native species similar to those currently present such as hawthorn, elder, field maple and holly.

5.30 Long-term enhancement to the structure of the retained hedgerows would be achieved by adoption of an appropriate long term sympathetic management plan with the aim to increasing the height and width of the hedgerows, as well as maintaining a continuous supply of fruits and flowers for foraging wildlife.

Running water

5.31 Bradley Park Dike, which forms the sites southern boundary, is a tributary of the River Calder, a river that is likely to qualify as NERC listed habitat of principal importance. As such, it is recommended that is retained, unmodified with a significant buffer zone. This will allow for a green corridor of habitat to maintain connectivity for wildlife along the watercourse, protect the bankside vegetation and will allow access for maintenance. Watercourses should not be incorporated into rear gardens of residential properties as this severs connectivity and can lead to pollution, mismanagement of bankside vegetation and erosion. Due to the nature of the proposed works, the watercourses could be at risk from pollution during works as a result of soil-runoff or accidental spillages, with adverse impacts on dependent fauna associated with the watercourses or within those wetland habitats sharing connectivity, such as The River Calder. Adoption of sound site management principles and adherence to current best practice guidelines for working near water should also help to prevent negative impacts on the associated wetland habitats from pollution events during construction, as will good working practice to prevent soil contamination in the event of, for example, a fuel spill.

Mature Trees

5.32 The mature, free standing trees recorded across the study area provide potential habitats for invertebrates, nesting birds and other local wildlife in addition to providing structural diversity and continuity of habitat. Some over-mature specimens were present and such trees often provide important micro-habitats for fungi, lichens and invertebrates such as deadwood associated beetles and flies. It is recommended that the mature tree resource within the site is retained where feasible, subject to arboricultural assessment, and protected from damage and from soil

compaction during works by maintaining fenced Root Protection Areas (RPAs) in accordance with current best practice and guidelines (BS5837 Trees in Relation to Construction).

Schedule 9 Plants

5.33 The invasive plant Himalayan balsam was recorded within the habitats along Bradley Park Dike and within the rough grassland community at Target Note 11. Under Section 14, Schedule 9 of the Wildlife and Countryside Act 1981 it is an offence to plant or otherwise cause these species to grow in the wild. It is recommended that as part of the proposals a strategy is included which contains a proposed management plan for the eradication or control of this species prior to, during and after development.

5.34 Further information can be gained from the Guidance on Japanese Knotweed, Giant Hogweed and Other Invasive Species produced by DEFRA[13].

Protected Species

5.35 Principal pieces of legislation protecting wild species are Part 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2017. Some species, for example badgers, also have their own protective legislation (Protection of Badger Act 1992). The impact that this legislation has on the Planning system is outlined in ODPM 06/2005 Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.

5.36 This guidance states that as the presence of protected species is a material consideration in any planning decision, it is essential that the presence or otherwise of protected species, and the extent to which they are affected by proposals is established prior to planning permission being granted. Furthermore, where protected species are present and proposals may result in harm to the species or its habitat, steps should be taken to ensure the long-term protection of the species, such as through attaching appropriate planning conditions.

5.37 In addition to protected species, there are those that are otherwise of conservation merit, such as species of principal importance for the purpose of conserving biodiversity under the Natural Environment and Rural Communities (NERC) Act 2006. These are recognised in the National Planning Policy Framework (NPPF), which advises that when determining planning applications, LPA's should aim to conserve and enhance biodiversity by applying a set of principles including:

- *If significant harm resulting from a development cannot be avoided……., adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *Development proposals where the primary objective is to conserve or enhance biodiversity should be encouraged.*

5.38 The implications that various identified species or those that are thought reasonably likely to occur may have for developmental design, planning and programming considerations are outlined below:

Birds

[13] Department of Food and Rural Affairs, 2013, Guidance: Japanese knotweed, Giant Hogweed and Other Invasive Species available at https://www.gov.uk/japanese-knotweed-giant-hogweed-and-other-invasive-plants

5.39 All wild bird species are protected while nesting by the Wildlife and Countryside Act 1981 (as amended). This legislation protects wild birds and their eggs from intentional harm, and makes it illegal to intentionally take, damage, or destroy a wild bird nest while it is in use or being built. Species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) have additional protection and makes it is an offence to intentionally or recklessly disturb the species, on or near an 'active' nest.

5.40 The desk study returned no records of notable bird species from within the search area. The Phase 1 habitat survey has demonstrated that the study area provides potential breeding habitat for a range of notable urban edge and farmland birds, including Species of Principal Importance. Therefore, in order to identify presence and distribution of birds on the site, identify areas of ornithological interest and make recommendations to minimise the potential impact of development, a suite of breeding bird surveys are recommended, consisting of three survey visits over the period April – June, inclusive.

5.41 A change of land use of the site as a result of development is likely to alter the assemblage of bird species utilising the site, with fewer typical farmland species and more garden and urban edge species. It is not usually possible to mitigate for loss of farmland bird habitat on a development site, as the assemblage is a product of the land use and features such as expansive open space for ground nesting and provision of seed and grain from crops and fallow. Retention of trees, scrub and hedgerows will prevent harm to non-ground nesting birds whilst breeding and will help to maintain some value of the site for breeding birds post-development. Additional soft landscaping in private gardens and around public spaces will also provide additional bird nesting habitat. Creation of wildflower-rich grassland or meadow habitat within areas of open space would provide an additional food resource for seed and insect feeding birds and is recommended. Production and implementation of a habitat management plan would be required to ensure appropriate management of the meadow to maintain a diverse and valuable sward. Overall, whilst there would be an impact on the farmland bird assemblage, this impact is not anticipated to be significant and the development provides an opportunity to increase the value of the site for a range of urban edge species.

Badger

5.42 Badgers and their active setts are protected under the Protection of Badgers Act 1992, making it an offence to kill, injure or take badgers or to damage or obstruct access into a badger sett. The Act also prohibits disturbance of a badger whilst it is occupying a sett.

5.43 The majority of the study area offers suitable foraging habitat to badgers and a three hole, partially active sett was recorded just offsite to the north-east. It is recommended that the sett is buffered by a minimum of 20m from the sett entrance holes to the most peripheral boundaries of the built environment. Connectivity to the sett should ideally be maintained via the creation of buffer zones along the Bradley Park Dike Corridor and along hedgerow H6. The retention of the neighbouring semi-improved neutral grassland and creation of new areas of species rich grassland within the sites POS will provide a year round foraging resource for badger post-development.

5.44 Should retention of the sett not be feasible, the exclusion of badger from the sett and subsequent destruction of the sett would have to be undertaken under licence from Natural England and may

require further survey of the site and wider area and the implementation of appropriate mitigation measures.

5.45 Licences are normally only granted by Natural England to undertake sett closure outside of the breeding season, i.e. outside July to November (inclusive). If the sett is confirmed to be active, no works within approximately 30m of the sett will be permitted until the licence has been granted and proposed activities under the licence have been completed and the sett has been confirmed as disused.

5.46 The incorporation of key habitats on-site into the scheme design, such as the hedgerows and semi-improved neutral grassland will help maintain foraging areas and corridors of movement across the site and into the wider countryside. The provision of extensive areas of green infrastructure across the site offers opportunities to provide a substantial net gain in habitat for this species, in replacing the largely seasonal food source, provided by the arable habitat, with more permanent foraging habitat.

5.47 In accordance with best practice, a full badger survey should be conducted prior to each stage of the development process.

Bats

5.48 All species of bats and their roosts are listed on the Conservation of Habitats and Species Regulations 2017 making it illegal to deliberately disturb any such animal or damage / destroy a breeding site or roosting place of any such animal. Bats are also afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is illegal to recklessly or intentionally kill, injure or take a species of bat or recklessly or intentionally damage or obstruct access to or destroy any place of shelter or protection or disturb any animal whilst they are occupying such a place of shelter or protection. Some bat species, including soprano pipistrelle, are species of principal importance under the NERC Act. A number of bat species are priority species within the Calderdale BAP.

5.49 20 records of common pipistrelle, noctule, Daubenton's and unknown bat species were returned from within the search area.

<u>Bat Activity</u>

5.50 The hedgerows, woodland, scrub, mature trees and semi-improved and unmanaged grassland habitats offer suitable foraging habitat for bat species with the woodland and hedgerow habitats offering suitable commuting habitat. The intensively managed arable and improved grassland habitats were considered to offer few opportunities for foraging and commuting bats.

5.51 As a result, bat activity surveys (fixed point static and walked transect surveys) are recommended to determine the current usage of the site by commuting and/or foraging bats. This will help to determine which areas or habitats within the site are of most importance and will inform any necessary mitigation or habitat enhancement measures. The level of survey effort based on the current good practice guidelines (Bat Conservation Trust, 2016) and the Site's moderate habitat suitability for bats would entail one transect survey visit and one static recording period per month (April to September).

<u>Bats Roosts in Trees</u>

5.52 Twelve mature, free standing trees recorded within the study area had features that could potentially be used by roosting bats, (Figure 2). It is recommended that these trees are retained and buffered by areas of public open space with connectivity to the wider habitats maintained. Should the trees be affected by proposals either directly (i.e. removal or arboricultural remediation works to facilitate proposals), indirectly (i.e. isolation through removal of connecting hedgerows) or if it was to be subject to direct lighting, then the presence or likely absence of roosting bats should first be ascertained via either detailed climbing inspection to internally view all cavities, or if not possible, using emergence/return to roost surveys. Inspection survey can be carried out at any time of year and emergence/return to roost survey would need to be carried out in the optimal bat active season from May to August, inclusive. If bats or evidence of previous presence of bats is found within the tree's features, impacts to the roost would need to be avoided, or a European Protected Species (EPS) licence would need to be obtained from Natural England to legitimise derogation from the legislation to disturb the bats or remove the roost. Appropriate mitigation measures would also need to be implemented.

Bat Roosts in Buildings

5.53 A high number of buildings and structures were recorded within the study boundary and it was considered beyond the scope of the assessment to assess the potential each building provides to roosting bats. Preliminary discussions have indicated that all buildings and structures within the site are to be retained, together with the surrounding supportive habitat (such as gardens, woodland etc). As such, it is anticipated that the likely impact upon any bat roosts within the buildings recorded in the study area would be negligible, given appropriate mitigation and development design, based on the results of the bat activity surveys. In the event that proposals change and the loss of any building within the site cannot be avoided or should any structures be left isolated by development (thereby potentially isolating any bat roost present), then further survey would be recommended to establish the likely presence / absence of roosting bats. A suitably experienced and licensed ecologist should first inspect each building externally and internally, in order to establish its potential suitability for roosting bats, including any evidence of occupation by bats and the location of all potential access points and roosting sites.

5.54 The inspections will classify the suitability of each building for bats as either high, moderate, low, negligible or confirmed roost, which will inform the need (if any) for any further inspection or nocturnal surveys. The recommended period for nocturnal surveys for buildings is between May – August.

5.55 The minimum number of nocturnal surveys required to establish the likely presence / absence of bats is dependent upon the potential suitability of the buildings, as follows:

- High potential – 3 dusk and / or pre-dawn re-entry surveys
- Medium potential – 2 dusk and / or pre-dawn re-entry surveys
- Low potential – 1 dusk and / or pre-dawn re-entry surveys

5.56 In the event that a bat roost is confirmed to be present then further survey and / or mitigation may be required. Mitigation for work affecting a roost would need to be covered by a Natural England EPS licence. The final detail of mitigation would depend upon the nature of any affected roost, but would typically involve the appropriate timing and supervision of works and the replacement of any affected roosts. Full planning permission and the discharge of any relevant nature

conservation conditions must be in place prior to any EPS licence applications. Given the scale and extent of the development and the provision of substantial areas of green infrastructure, it is anticipated that appropriate compensatory habitat could be easily incorporated into the development design to accommodate a range of roost types and species including those of a higher status or species rarity, should they be encountered.

Great Crested Newts

5.57 Great crested newts are afforded legal protection by Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and under the Conservation of Habitats and Species Regulations 2017. Great crested newts are also listed as a species of principal importance under the NERC Act and a priority species under the Calderdale Biodiversity Action Plan.

5.58 Consultation with WYES returned no records of great crested newts within 1km of the study area. The woodland, unmanaged grassland habitats and hedgerows provide suitable terrestrial habitat for great crested newt to reside and forage. However, the majority of the site is formed by intensively managed arable and grassland habitats, which provide sub-optimal terrestrial habitat for great crested newt.

5.59 Three waterbodies were identified within 500m of the site boundary, the closest being a small ornamental pond located within the grounds of 'the gatehouse', approximately 30m from the site boundary. Aerial imagery suggests that the pond has a steep raised perimeter reducing its suitability for great crested newt. The Calder and Hebble Navigation canal is located 60m to the north of the site and is not considered to be suitable for great crested newt as it has steep engineered banks along the southern bank and supports a number of fish species. The third waterbody is Clifton Lagoon, located 430m north-west of the site boundary, beyond the River Calder and the M62 which are significant barriers to amphibian dispersal.

5.60 As such, it is considered that great crested newt are likely to be absent from the site. However, given the strong legal protection afforded to the species, and the presence of a pond within 30m of the site boundary a robust approach would be to determine the presence of great crested newt within pond P1 through great crested newt eDNA surveys.

5.61 eDNA sampling should be carried out in accordance with the protocol recommended by Natural England[14], comprising a single visit between 15th April – 30th June to collect samples of water from around each pond, before being transported under suitable conditions to a reputable provider for analysis.

5.62 Given the substantial areas of green infrastructure to be incorporated into the scheme, it is anticipated that impacts to GCN, should they be present, could be mitigated for and suitable long-term habitat provision made in order to offset development impacts and ensure the maintenance of Favourable Conservation Status

Common Toad

5.63 There are records of common toad, a species of principal importance under the NERC act and a priority species under the Calderdale Biodiversity Action Plan, from within the survey area.

14 Biggs J, etal, (2014) Analytical and Methodological Development for Improved Surveillance of the Great Crested Newt. Appendix 5: Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA, Freshwater Habitats Trust, Oxford

Although not subject to the same level of protection as reptiles or great crested newt, consideration should be given to maintaining the national conservation status of this species and conserving its habitat. Retention of connectivity through the site via retention and buffering of the woodland, hedgerows and the creation of well-connected onsite open space will help to maintain provision of terrestrial habitat for common toad in the long-term.

Reptiles

5.64 All British reptiles are protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended) and are listed as species of principal importance for the conservation of biodiversity under the NERC Act, indicating that public bodies, such as the Local Planning Authority, have a duty to have regard to the conservation of these species. Common lizard *Zootoca vivipara* and grass snake *Natrix helvetica* are priority species in the Calderdale BAP.

5.65 Consultation with WYES returned no records of reptiles from within the search area. The unmanaged grassland habitats associated with Target Notes 10, 11 & 12 together with the margins of the woodland and hedgerows could provide the structural diversity required to support reptile species.

5.66 It is therefore recommended that further surveys, to determine the presence / likely absence of reptiles and in their confirmed presence determine the extent of the impacts arising from proposals. The results of the surveys would inform any mitigation which will be required to avoid contravention of the legislation protecting them and prevent any net loss of local conservation status of any reptile species found within the study area. Such mitigation may include passive displacement of reptiles where small numbers of reptiles or small areas of more extensive reptile habitats are affected. Or, where more extensive areas or larger populations are affected, the trapping / translocation of the population to a receptor site, which supports suitable habitats off-setting those lost.

5.67 Reptile surveys are seasonally restricted to the period of April to September, with the April, May and September being the optimal periods. The surveys entail installing a number of artificial refugia (squares of roofing felt or other appropriate material) in areas of suitable habitats at a density of 5 -10 per hectare. These refugia are then checked on a minimum of seven occasions throughout the period of April to September during suitable weather conditions.

5.68 In the event that reptiles are confirmed to be present then mitigation will be required to ensure that they are adequately protected from harm during development. Any mitigation or compensation can be provided within the GI to ensure the favourable conservation status of this species is maintained.

Otter

5.69 Otter are afforded legal protection by Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) under which it is an offence to intentionally kill, injure or take an otter (or attempt to), possess or control any live or dead specimen or anything derived from an otter, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter, intentionally or recklessly disturb this species while it is occupying a structure or place which it uses for that purpose. Otter is also a European Protected Species, and under the Conservation of Habitats and Species Regulations 2017 it is an offence to deliberately capture or kill,

deliberately disturb or take an otter, or damage or destroy a breeding site or resting place. Otter are also listed as a species of principal importance under the NERC Act.

5.70 There are two records of otter from within the search area, both of which are from the River Calder 940m north of the site boundary. Bradley Park Dike provides suitable habitat for otter, possibly as part of a wider territory within the Calder catchment. Bradley wood along the banks of the Dike, also provides holt creation opportunities.

5.71 Should proposals affect Bradley Park Dike or its associated woodland habitats then further surveys are recommended to confirm their likely presence / absence. Otter surveys should be carried out at any time of year and involves searching areas of suitable habitat for any evidence of otter, including: otter holts, laying-up sites / couches, prints, slides and spraints.

5.72 In the event that otters are confirmed to be present then further survey or mitigation may be required. Mitigation may involve the adoption of safe working distance and appropriate timing of works. In the unlikely event that the proposals affect a regularly used place of shelter, such as a holt or couch, then this would need to be covered by a Natural England EPS licence.

6.0 APPENDIX A – PHASE 1 HABITAT SURVEY SPECIES LISTS

The principal habitat types were mapped within the site and a representative species list for each habitat recorded. Species lists are not exhaustive of all flora present in each habitat type. Refer to Figure 2 – Phase 1 Habitat Plan for location of target notes.

Abundance is described on the DAFOR scale.
D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare. (L = Locally)

Semi-natural Broadleaved Woodland – Target Note 1

Common Name	Scientific Name	DAFOR
Canopy		
Sycamore	*Acer pseudoplatanus*	A
Pedunculate oak	*Quercus robur*	F
Alder	*Alnus glutinosa*	R
Ash	*Fraxinus excelsior*	R
Understory		
Hawthorn	*Crataegus monogyna*	F
Rhododendron	*Rhodendron ponticum*	LF
Field-rose	*Rosa arvensis*	LF
Holly	*Ilex aquifolium*	O
Dog rose	*Rosa canina*	O
Bramble	*Rubus fruticosus agg.*	O
Elder	*Sambucus nigra*	R
Ground flora		
Common ivy	*Hedera helix*	LF
Honesty	*Lunaria annua*	LF
Creeping buttercup	*Ranunculus repens*	LF
Cow parsley	*Anthriscus sylvestris*	O
Bluebell	*Hyacinthoides non-scripta*	O
Common nettle	*Urtica dioica*	O
Cleavers	*Galium aparine*	O
Ramsons	*Allium ursinum*	R
Dandelion	*Taraxacum officinale agg.*	R
Cock's-foot	*Dactylis glomerata*	R
Ivy-leaved speedwell	*Veronica hederifolia*	R
Hedge woundwort	*Stachys sylvatica*	R
Enchanter's-nightshade	*Circaea lutetiana*	R
Greater stitchwort	*Stellaria holostea*	R

Semi-natural Broadleaved Woodland – Bradley Wood- Target Note 2

Common Name	Scientific Name	DAFOR
Canopy		
Sycamore	*Acer pseudoplatanus*	F
Pedunculate oak	*Quercus robur*	F
Silver birch	*Betula pendula*	O
Goat willow	*Salix caprea*	O
Beech	*Fagus sylvatica*	O
Wild cherry	*Prunus avium*	R
Ash	*Fraxinus excelsior*	R
Alder	*Alnus glutinosa*	R
Crack-willow	*Salix fragilis*	R
Downy birch	*Betula pubescens*	R
Understory		
Hawthorn	*Crataegus monogyna*	F
Rhododendron	*Rhodendron ponticum*	LF
Holly	*Ilex aquifolium*	O

Common Name	Scientific Name	DAFOR
Hazel	*Corylus avellana*	R
Sycamore	*Acer pseudoplatanus*	R
Elder	*Sambucus nigra*	R
Bramble	*Rubus fruticosus agg.*	R
Ground flora		
Bluebell	*Hyacinthoides non-scripta*	F
Creeping soft-grass	*Holcus mollis*	F
Ramsons	*Allium ursinum*	LF
Himalayan balsam	*Impatiens glandulifera*	LF
Great wood-rush	*Luzula sylvatica*	LF
Wavy hair-grass	*Deschampsia flexuosa*	O
Pignut	*Conopodium majus*	O
Common bent	*Agrostis capillaris*	O
Field wood-rush	*Luzula campestris*	O
Broad buckler-fern	*Dryopteris dilatata*	O
Common hogweed	*Heracleum sphondylium*	R
False brome	*Brachypodium sylvaticum*	R
Wood speedwell	*Veronica montana*	R
Herb-robert	*Geranium robertianum*	R
Male-fern	*Dryopteris filix-mas*	R
Soft-rush	*Juncus effusus*	R

Plantation Broad-leaved Woodland – Target Note 3

Common Name	Scientific Name	DAFOR
Canopy		
Sycamore	*Acer pseudoplatanus*	A
Understory		
Hawthorn	*Crataegus monogyna*	O
Horse chestnut	*Aesculus hippocastanum*	R
Ground flora		
Cow parsley	*Anthriscus sylvestris*	F
Cleavers	*Galium aparine*	F
Dandelion	*Taraxacum officinale agg.*	O
Bramble	*Rubus fruticosus agg.*	O
Broad-leaved dock	*Rumex obtusifolius*	R

Row of Trees – Target Note 13

Common Name	Scientific Name	DAFOR
Canopy		
Pedunculate oak	*Quercus robur*	F
Sycamore	*Acer pseudoplatanus*	F
Ash	*Fraxinus excelsior*	O
Wild cherry	*Prunus avium*	O
Wych elm	*Ulmus glabra*	R
Beech	*Fagus sylvatica*	R
Understory		
Hawthorn	*Crataegus monogyna*	O
Dog rose	*Rosa canina*	O
Wild cherry	*Prunus avium*	O
Elder	*Sambucus nigra*	R
Wych elm	*Ulmus glabra*	R
Ash	*Fraxinus excelsior*	R
Rowan	*Sorbus aucuparia*	R
Ground flora		
Cleavers	*Galium aparine*	F
Yorkshire-fog	*Holcus lanatus*	F
Common hogweed	*Heracleum sphondylium*	O

Common Name	Scientific Name	DAFOR
Bluebell	*Hyacinthoides non-scripta*	O
Cow parsley	*Anthriscus sylvestris*	O
Cock's-foot	*Dactylis glomerata*	O
Meadow foxtail	*Alopecurus pratensis*	O
Common nettle	*Urtica dioica*	O
Common vetch	*Vicia sativa*	R
Dandelion	*Taraxacum officinale agg.*	R
Red dead-nettle	*Lamium purpureum*	R
Bracken	*Pteridium aquilinum*	R

Semi-improved Neutral Grassland – Target Note 6

Common Name	Scientific Name	DAFOR
Yorkshire-fog	*Holcus lanatus*	F
Common knapweed	*Centaurea nigra*	F
Meadow buttercup	*Ranunculus acris*	F
Common sorrel	*Rumex acetosa*	F
Dandelion	*Taraxacum officinale agg.*	O
Perennial rye-grass	*Lolium perenne*	O
Sweet vernal-grass	*Anthoxanthum odoratum*	O
Smooth meadow-grass	*Poa pratensis*	O
Ribwort plantain	*Plantago lanceolata*	O
Meadow foxtail	*Alopecurus pratensis*	O
Common bent	*Agrostis capillaris*	O
Red clover	*Trifolium pratense*	O
Cock's-foot	*Dactylis glomerata*	O
Common mouse-ear	*Cerastium fontanum*	R
Creeping thistle	*Cirsium arvense*	R
White clover	*Trifolium repens*	R
Field wood-rush	*Luzula campestris*	R
Yarrow	*Achillea millefolium*	R
Common ragwort	*Senecio jacobaea*	R
Broad-leaved dock	*Rumex obtusifolius*	R
Spear thistle	*Cirsium vulgare*	R
Bulbous buttercup	*Ranunculus bulbosus*	R
Common nettle	*Urtica dioica*	R
Common vetch	*Vicia sativa*	R
Meadow vetchling	*Lathyrus pratensis*	R

Semi-improved Neutral Grassland – Target Note 7

Common Name	Scientific Name	DAFOR
Yorkshire-fog	*Holcus lanatus*	F
Dandelion	*Taraxacum officinale agg.*	F
Common sorrel	*Rumex acetosa*	F
Field wood-rush	*Luzula campestris*	F
Bulbous buttercup	*Ranunculus bulbosus*	F
Broad-leaved dock	*Rumex obtusifolius*	LF
Common nettle	*Urtica dioica*	LF
Creeping thistle	*Cirsium arvense*	LF
Creeping buttercup	*Ranunculus repens*	LF
Himalayan balsam	*Impatiens glandulifera*	LF
Cock's-foot	*Dactylis glomerata*	O
Pignut	*Conopodium majus*	O
Common bent	*Agrostis capillaris*	O
Red fescue	*Festuca rubra*	O
Sweet vernal-grass	*Anthoxanthum odoratum*	O
Meadow foxtail	*Alopecurus pratensis*	O
Bluebell	*Hyacinthoides non-scripta*	R

Common Name	Scientific Name	DAFOR
Lesser celandine	*Ficaria verna*	R
Meadow buttercup	*Ranunculus acris*	R
Ribwort plantain	*Plantago lanceolata*	R
Cat's-ear	*Hypochaeris radicata*	R
Bramble	*Rubus fruticosus agg.*	R
Tufted hair-grass	*Deschampsia caespitosa*	R
White clover	*Trifolium repens*	R
Common mouse-ear	*Cerastium fontanum*	R

Unmanaged Poor Semi-improved Grassland with Scrub Encroachment– Target Notes 4, 5 & 10

Common Name	Scientific Name	DAFOR
Encroaching Scrub		
Bramble	*Rubus fruticosus agg.*	F-LA
Sycamore	*Acer pseudoplatanus*	O-LA
Hawthorn	*Crataegus monogyna*	R
Raspberry	*Rubus idaeus*	R
Pedunculate oak	*Quercus robur*	R
Grassland		
Common couch	*Elytrigia repens*	A
Creeping thistle	*Cirsium arvense*	F
Hairy bitter-cress	*Cardamine hirsuta*	O
Common nettle	*Urtica dioica*	O
Yorkshire-fog	*Holcus lanatus*	O
Common ragwort	*Senecio jacobaea*	O
A meadow-grass	*Poa sp.*	O
Creeping bent	*Agrostis stolonifera*	O-LF
Creeping buttercup	*Ranunculus repens*	R
Perennial rye-grass	*Lolium perenne*	R
Cut-leaved Crane's-bill	*Geranium dissectum*	R
Red dead-nettle	*Lamium purpureum*	R
Compact rush	*Juncus conglomeratus*	R
Bluebell	*Hyacinthoides non-scripta*	R
Water figwort	*Scrophularia auriculata*	R
Bush vetch	*Vicia sepium*	R
Bulbous buttercup	*Ranunculus bulbosus*	R
Wild teasel	*Dipsacus fullonum*	R
Spear thistle	*Cirsium vulgare*	R
Cock's-foot	*Dactylis glomerata*	R
False oat-grass	*Arrhenatherum elatius*	R
Wood avens	*Geum urbanum*	R
Pendulous sedge	*Carex pendula*	R
Herb-robert	*Geranium robertianum*	R
Great willowherb	*Epilobium hirsutum*	R-LF

Unmanaged Poor Semi-improved Grassland – Target Note 11

Common Name	Scientific Name	DAFOR
Cock's-foot	*Dactylis glomerata*	A
Common nettle	*Urtica dioica*	F
Meadow foxtail	*Alopecurus pratensis*	F
Great willowherb	*Epilobium hirsutum*	LF
Creeping buttercup	*Ranunculus repens*	LF
Reed sweet-grass	*Glyceria maxima*	LF
Himalayan balsam	*Impatiens glandulifera*	LF
Broad-leaved dock	*Rumex obtusifolius*	O
Cow parsley	*Anthriscus sylvestris*	O
A meadow-grass	*Poa sp.*	O
Creeping thistle	*Cirsium arvense*	O

Common Name	Scientific Name	DAFOR
Cleavers	*Galium aparine*	O
Hairy bitter-cress	*Cardamine hirsuta*	O
False oat-grass	*Arrhenatherum elatius*	O
Dandelion	*Taraxacum officinale agg.*	R
Ribwort plantain	*Plantago lanceolata*	R

Unmanaged Poor Semi-improved Grassland – Target Note 12

Common Name	Scientific Name	DAFOR
Cock's-foot	*Dactylis glomerata*	F
Cow parsley	*Anthriscus sylvestris*	F
Broad-leaved dock	*Rumex obtusifolius*	O
Red fescue	*Festuca rubra*	O
False oat-grass	*Arrhenatherum elatius*	O
Common nettle	*Urtica dioica*	O
Meadow foxtail	*Alopecurus pratensis*	O
Creeping thistle	*Cirsium arvense*	R
Common vetch	*Vicia sativa*	R
Dandelion	*Taraxacum officinale agg.*	R
Wavy bitter-cress	*Cardamine flexuosa*	R
Meadow buttercup	*Ranunculus acris*	R

Improved Grassland – rye grass ley – Target Note 8

Common Name	Scientific Name	DAFOR
Italian rye-grass	*Lolium multiflorum*	D
Common chickweed	*Stellaria media*	O
Annual Meadow-grass	*Poa annua*	O
Common mouse-ear	*Cerastium fontanum*	O
Sticky mouse-ear	*Cerastium glomeratum*	R
Cock's-foot	*Dactylis glomerata*	R
Meadow foxtail	*Alopecurus pratensis*	R
Creeping buttercup	*Ranunculus repens*	R

Improved Grassland – rye grass ley – Target Note 9

Common Name	Scientific Name	DAFOR
Italian rye-grass	*Lolium multiflorum*	D
Red dead-nettle	*Lamium purpureum*	LF
Common ramping-fumitory	*Fumaria muralis*	LF
Annual Meadow-grass	*Poa annua*	O
Rough meadow-grass	*Poa trivialis*	O
Common chickweed	*Stellaria media*	R
Broad-leaved dock	*Rumex obtusifolius*	R
Dandelion	*Taraxacum officinale agg.*	R
Cleavers	*Galium aparine*	R
Barren brome	*Anisantha sterilis*	R

Improved Grassland – Target Note 14

Common Name	Scientific Name	DAFOR
Perennial rye-grass	*Lolium perenne*	A
Meadow foxtail	*Alopecurus pratensis*	F
White clover	*Trifolium repens*	F
Yorkshire-fog	*Holcus lanatus*	F
Annual Meadow-grass	*Poa annua*	O
Cock's-foot	*Dactylis glomerata*	O
Common ragwort	*Senecio jacobaea*	O
Dandelion	*Taraxacum officinale agg.*	O
Red fescue	*Festuca rubra*	O
Soft-brome	*Bromus hordeaceus*	O

Common Name	Scientific Name	DAFOR
Broad-leaved dock	*Rumex obtusifolius*	R
Common chickweed	*Stellaria media*	R
Daisy	*Bellis perennis*	R
Greater plantain	*Plantago major*	R
Meadow buttercup	*Ranunculus acris*	R
Selfheal	*Prunella vulgaris*	R
Spear thistle	*Cirsium vulgare*	R
Common nettle	*Urtica dioica*	R-LF

Running Water – Bradley Park Dike

Common Name	Scientific Name	DAFOR
Himalayan balsam	*Impatiens glandulifera*	LF
Creeping buttercup	*Ranunculus repens*	LF
Floating sweet-grass	*Glyceria fluitans*	O
Lesser celandine	*Ficaria verna*	O
Creeping bent	*Agrostis stolonifera*	O
Wood speedwell	*Veronica montana*	R
Hart's-tongue	*Asplenium scolopendrium*	R
Pendulous sedge	*Carex pendula*	R
Opposite-leaved golden-saxifrage	*Chrysosplenium oppositifolium*	R
Meadowsweet	*Filipendula ulmaria*	R
Gypsywort	*Lycopus europaeus*	R
Wood avens	*Geum urbanum*	R
Foxglove	*Digitalis purpurea*	R
Wild angelica	*Angelica sylvestris*	R

Arable Margins

Common Name	Scientific Name	DAFOR
Common couch	*Elytrigia repens*	F
Perennial rye-grass	*Lolium perenne*	F
Cleavers	*Galium aparine*	F
Annual Meadow-grass	*Poa annua*	O
Yorkshire-fog	*Holcus lanatus*	O
Cock's-foot	*Dactylis glomerata*	O
Common chickweed	*Stellaria media*	O
Cow parsley	*Anthriscus sylvestris*	O
Common nettle	*Urtica dioica*	O-LF
Great willowherb	*Epilobium hirsutum*	R
Scentless mayweed	*Tripleurospermum inodorum*	R
Greater plantain	*Plantago major*	R
Shepherd's-purse	*Capsella bursa-pastoris*	R
Hairy bitter-cress	*Cardamine hirsuta*	R
Bramble	*Rubus fruticosus agg.*	R
Creeping bent	*Agrostis stolonifera*	R-LF

Hedgerows and Scattered Trees

Common Name	Scientific Name
Annual Meadow-grass	*Poa annua*
Ash	*Fraxinus excelsior*
Beech	*Fagus sylvatica*
Blackthorn	*Prunus spinosa*
Bluebell	*Hyacinthoides non-scripta*
Bracken	*Pteridium aquilinum*
Bramble	*Rubus fruticosus agg.*
Broad-leaved dock	*Rumex obtusifolius*
Cleavers	*Galium aparine*
Common couch	*Elytrigia repens*

Common Name	Scientific Name
Common hogweed	*Heracleum sphondylium*
Common ivy	*Hedera helix*
Common mouse-ear	*Cerastium fontanum*
Common nettle	*Urtica dioica*
Common vetch	*Vicia sativa*
Common whitebeam	*Sorbus aria*
Cow parsley	*Anthriscus sylvestris*
Creeping bent	*Agrostis stolonifera*
Creeping thistle	*Cirsium arvense*
Dog rose	*Rosa canina*
Dog's mercury	*Mercurialis perennis*
Elder	*Sambucus nigra*
False oat-grass	*Arrhenatherum elatius*
Field maple	*Acer campestre*
Garlic mustard	*Alliaria petiolata*
Goat willow	*Salix caprea*
Ground-ivy	*Glechoma hederacea*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Hedge woundwort	*Stachys sylvatica*
Herb-robert	*Geranium robertianum*
Himalayan balsam	*Impatiens glandulifera*
Holly	*Ilex aquifolium*
Horse chestnut	*Aesculus hippocastanum*
hybrid black-poplar	*Populus x canadensis*
Lesser celandine	*Ficaria verna*
Leyland cypress	*Cupressus × leylandii*
Lime	*Tilia x europaea*
Meadow foxtail	*Alopecurus pratensis*
Norway maple	*Acer platanoides*
Pedunculate oak	*Quercus robur*
Red currant	*Ribes rubrum*
Red dead-nettle	*Lamium purpureum*
Service-tree	*Sorbus domestica*
Silver birch	*Betula pendula*
Sycamore	*Acer pseudoplatanus*
Tufted hair-grass	*Deschampsia caespitosa*
Wild cherry	*Prunus avium*
Wood avens	*Geum urbanum*
Wood dock	*Rumex sanguineus*
Wych elm	*Ulmus glabra*
Yew	*Taxus baccata*

Key

- Woodhouse Site boundary
- 1km Buffer Woodhouse
- Local Wildlife Site
- Site of Ecological or Geological Importance (SEGI)
- Calderdale Willdlife Habitat Network
- Kirklees Wildlife Habitat Network

FPCR Environment and Design Ltd, Lockington Hall, Lockington, Derby, DE74 2RH ■ t:01509 672 772 ■ f:01509 674 565 ■ e: mail@fpcr.co.uk ■ w: www.fpcr.co.uk
masterplanning ■ environmental assessment ■ landscape design ■ urban design ■ ecology ■ architecture ■ arboriculture

0 250 500 750 1000 m

P:\8400\8413\QGIS\Plans\8413-E-01 Woodhouse Consultation Result Plan.qgs

client
ID Planning

project
Woodhouse Garden Suburb Extension

drawing title
SITE LOCATION AND CONSULTATION RESULTS PLAN

Scale	drawn	issue
NTS	IH	25/6/2018

drawing / figure number
Figure 1

rev
-

THIS PAGE HAS INTENTIONALLY BEEN LEFT BLANK

Key

- Site Boundary
- Broadleaved woodland - plantation
- Broadleaved woodland - semi-natural
- Buildings
- Hardstanding/Road
- Gardens
- A Arable
- I Improved grassland
- SI Neutral grassland - semi-improved
- SI Poor semi-improved grassland
- Scrub - dense/continuous
- Broadleaved trees
- Dry stone wall
- Running water
- Hedges: Introduced shrub
- Hedgerow - HEGS Score 3
- Hedgerow - HEGS Score 2
- Fence
- Hedgerow - HEGS Score 4
- Coniferous trees
- Scrub - scattered
- Badger Sett
- Broadleaved tree
- Target Notes
- Bat with Bat Potential

0 50 100 m

client: ID Planning
project: Woodhouse Garden Suburb Extension
drawing title: PHASE 1 HABITAT PLAN
scale: NTS | drawn: IH | issue: 25/6/2018
drawing / figure number: **Figure 2** | rev: -

FPCR Environment and Design Ltd, Lockington Hall, Lockington, Derby, DE74 2RH ▪ t:01509 672 772 ▪ f:01509 674 565 ▪ e: mail@fpcr.co.uk ▪ w: www.fpcr.co.uk
masterplanning ▪ environmental assessment ▪ landscape design ▪ urban design ▪ ecology ▪ architecture ▪ arboriculture

0 100 200 300 400 m

K:\8400\8413\QGIS\Plans\8413-E-02 Woodhouse Phase 1 Habitat Plan.qgs

THIS PAGE HAS INTENTIONALLY BEEN LEFT BLANK