

WOLD ECOLOGY LTD

Chris Toohie
2 Redwood Gardens, Drifffield,
East Riding of Yorkshire. YO25 6XA
07795 071504



Richard Baines
5 Coastguard Cottages, Flamborough,
East Riding of Yorkshire. YO15 1AW
01262 850937

www.woldecology.co.uk

Bradley Park Golf Course, Huddersfield

EXTENDED PHASE 1 HABITAT SURVEY

January 2016


	Staff Member	Position
Extended Phase 1 Habitat Survey:	Chris Toohie MSc MCIEEM Dan Lombard BSc MCIEEM	Ecologist
Report prepared by :	Chris Toohie MSc MCIEEM Dan Lombard BSc MCIEEM	Ecologist
Signed off by :	Chris Toohie MSc MCIEEM	
Notes.	This report contains sensitive information concerning protected species and caution should be exercised when copying and distributing to third parties.	

Table of Contents.

1.0	Executive Summary	3
2.0	Introduction	5
3.0	Company Profile	7
4.0	Survey Methodology	10
5.0	Limitation of Field Survey	11
6.0	Survey Results	12
7.0	Evaluation of Survey Results	38
8.0	Bibliography	60
9.0	Appendices	62

1.0 EXECUTIVE SUMMARY.

- 1.1 In January 2016, Wold Ecology was commissioned by O'Neill Associates to undertake an Extended Phase 1 Habitat Survey on Bradley Park Golf Course, Huddersfield (national grid reference SE 16032 21025) in West Yorkshire.
- 1.2 In order to accomplish the brief, a desk top study, consultation and an extended Phase 1 field survey was undertaken by Wold Ecology staff.
- 1.3 The habitats within the Allocated Area comprise amenity grassland interspersed and bounded with introduced shrub, scattered trees, plantation woodland, semi-natural woodland, buildings, watercourses and ponds. There are no statutory or non-statutory sites within the site boundary.
- 1.4 The proposed development involves partial site clearance of the golf course and the erection of residential dwellings, associated infrastructure and urban greenspace.
- 1.5 The surrounding habitat is potentially important and the development area may impact upon mobile species. Consequently, the extended phase 1 assessment targeted the following species relevant to the Allocated Area and proposed development:
- Bats
 - Great crested newts
 - Badger
 - Birds
 - Reptiles
 - Hedgehogs
 - White clawed crayfish
- 1.6 The report recommends a number of further surveys required to support the planning application, guide management/site landscaping and measures which should be adopted to ensure potential adverse impacts to wildlife are avoided:
- **Bats**
 - It is not possible to predict the full pre-, mid-development and long term impacts on bat populations based on daytime surveys conducted in December. In order to prevent any potential impacts occurring to bats present, it is recommended that an activity survey (emergence and dawn) are completed in spring/summer (May to August) period. This will provide further information on bats at the site and must target any buildings or trees which are to be demolished, converted or felled.
 - Boundary features, woodlands, watercourses and rough grassland habitats is suitable for foraging and commuting habitat. In order to determine the value of this habitat to commuting and foraging bats, bat transect surveys should be undertaken between April and October. This will enable targeted management on site, retention of optimum bat habitats including dark corridors and enhanced foraging and dispersal routes.
 - **Birds**
 - Any trees and shrubs to be removed should be cleared outside of the bird nesting season (i.e. clearance should be undertaken between mid-September and early February inclusive) or be carefully checked by an ecologist to confirm no active nests are present - prior to removal during

the summer period. If nesting birds are found during the watching brief, works will need to stop until the young have fledged.

- The Phase 1 survey recorded habitats potentially valuable to protected and/or birds of conservation concern. Wold Ecology recommends a breeding bird survey is undertaken to establish the breeding status of Protected Schedule 1 species and Species of Conservation Concern/BAP species within the Allocated Area.
- **Great Crested Newt**
 - In order to comply with the requirements of the latest Natural England guidance, a full presence or absence surveys comprising four survey visits to the Allocated Area during the period mid-March to mid-June, with at least two visits during the period between mid-April to mid-May must be undertaken on all watercourses within 500m of the Allocated Area. As the extended phase 1 survey was undertaken outside this specific time period, a great crested newt presence/absence survey has not been completed.
- **White clawed Crayfish**
 - In order to comply with the requirements of the latest Natural England guidance, a full presence or absence survey must be undertaken on all watercourses on site. Crayfish surveys are best carried out during the period July to October, the peak time of activity and minimal disturbance. This will be conducted by a crayfish licence holder and will involve searching refugia across the river bed and carrying out torchlight surveys during the night.
- **Invertebrates**
 - An invertebrate survey is recommended for this site, primarily to determine which species and communities are present to aid future management and mitigation works on the site.
- **Flora**
 - Both Japanese knotweed and Himalayan balsam are recorded on site. Japanese knotweed in particular has the potential to cause damage to buildings and new site infrastructure. It is recommended that a specialist contractor is employed to remove the Japanese knotweed and Himalayan Balsam off site.

1.7 The data collected to support the output of this report is valid for 18 months. This report is valid until **June 2017**. After this time, additional surveys need to be undertaken to confirm that the status of the site, for European protected species, has not changed.

1.8 Species list within this report may be forwarded to the local biodiversity records centre to be included on their national database. No personal information will be sent. Please contact Wold Ecology if you do not wish the species accounts and six figure grid references to be shared.

2.0 INTRODUCTION

2.1 In January 2016, Wold Ecology was commissioned by O'Neill Associates to undertake an Extended Phase 1 Habitat Survey on Bradley Park Golf Course, Huddersfield (national grid reference SE 16032 21025) in West Yorkshire.

2.2 An ecological assessment is a requirement of the Local Authority Planning Department, as part of the planning application process. This is specified in the following legislation:

- Department for Communities & Local Government Circular 06/2005 Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.
- National Planning Policy Framework (NPPF): Biodiversity and Geological Conservation – national planning policy relation to biodiversity. NPPF Biodiversity and Geological Conservation gives further direction with respect to biodiversity conservation and land use change/development. NPPF states that not only should existing biodiversity be conserved but importantly that habitats supporting such species should be enhanced or restored where possible. The policies contained within NPPF may be material to decisions on individual planning applications.

2.3 In addition, an ecological assessment is also required so that the local authority comply with the Habitats and Species Regulations 2010 and to have regard to the purpose of conserving biodiversity in the exercise of their functions (Natural Environment and Rural Communities (NERC) Act 2006).

2.4 Planning authorities must determine whether the proposed development meets the requirements of Article 16 of the EC Habitats Directive before planning permission is granted (where there is a reasonable likelihood of European Protected Species being present). Therefore in the course of its consideration of a planning application, where the presence of a European protected species is a material consideration, the planning authority must satisfy itself that the proposed development meets three tests as set out in the Directive.

2.5 The Local Authority must be satisfied that the proposed development must meet a purpose of:

- a) 'Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'.

In addition the authority must be satisfied that:

- (b) 'That there is no satisfactory alternative'
- (c) 'That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

2.6 Case Law - Woolley v Cheshire East Borough, 5th June 2009.

2.6.1 The ruling states that if it is clear or perhaps very likely that the requirements of the Directive cannot be met because there is a satisfactory alternative or because there are no conceivable "other imperative reasons of over-riding public interest" then the authority should act on that and refuse permission."

- 2.6.2 In addition, the judgement also clarified that it was not sufficient for planning authorities to claim that they had discharged their duties by imposing a condition on a consent that requires the developer to obtain a licence from Natural England. Natural England considers it essential that appropriate survey information supports a planning application prior to the determination. Natural England does not regard the conditioning of surveys to a planning consent as an appropriate use of conditions.
- 2.7 In order to fulfil the brief, the following has been undertaken:
- A desktop study and consultation.
 - Field survey including accessible adjacent land up to 1km.
 - An Extended Phase 1 Habitat Assessment.
- 2.8 This report describes the findings of the field survey and desktop study whilst identifying further surveys to ensure that a comprehensive study is undertaken.

3.0 COMPANY PROFILE

- 3.1 Wold Ecology Ltd was established in 2006 and is a professional company whose staff has over 30 years' experience in providing a bespoke service for environmental management. Wold Ecology employs a number of experienced and qualified associates to undertake specialist survey work. Professional service is of primary importance and Wold Ecology only employs staff who can demonstrate knowledge and expertise to an exceptional standard.
- 3.2 Wold Ecology provides a wide range of specialised advice aimed at integrating business with nature. We specialise in ecological surveys, land management planning and site assessments, these include:
- **European Protected Species Surveys**
Bats, Birds, Great Crested Newts, Water Vole, Badger, Crayfish and Fungi surveys. Phase 1 and Phase 2 NVC Habitat Surveys, Landscape Character Assessment, Environmental Impact Assessments and Arboricultural Surveys.
 - **European Protected Species Licenses**
Bat Licenses - Chris Toohie is a Natural England Bat Low Impact Class License Registered Consultant. Great crested newt development license holders. Implementation of licenses (amphibian fencing, destructive searches, watching briefs and post development monitoring).
 - **Environmental Grant Applications**
Natural England Higher Level Scheme, Farm Environmental Plans, English Woodland Grant Scheme and Heritage Lottery Funding, Breathing Places.
 - **Land Management**
Management Plans, Landscape Designs, Monitoring and Site Evaluation.

3.3 Ethical Policy.

- 3.3.1 Wold Ecology provides a dedicated countryside management service in compliance with all relevant Local Agenda 21 directives and Biodiversity Action Plans.
- 3.3.2 We aim to raise awareness of current environmental issues amongst our clients, including UK and European legislation, industry guidelines such as BREEAM/CfSH and case studies.
- 3.3.3 We strive to deliver the highest standards of ecological assessment and management.
- 3.3.4 We aim to purchase, wherever possible, environmentally friendly products and services, in order to limit negative effects on the environment.
- 3.3.5 Wold Ecology is committed to working towards the conservation of our natural heritage. Wold Ecology support The Wolds Barn Owl Study Group, Driffeld Millennium Green, Cornfield Project (Ryedale Folk Museum), Butterfly Conservation and RSPB projects with volunteer staff time and financial resources. Wold Ecology has adopted an important site for nature conservation on Flamborough Head. North Marsh is owned by a local farmer and is an integral part of an exciting Higher Level Stewardship Scheme, supported by Natural England, RSPB and Wold Ecology for over 10 years. The recent work on the marsh and the return of scarce breeding birds, such as Corn Bunting, has given a huge sense of achievement for all concerned.

- 3.3.6 Wold Ecology is an Associate Member of the RSPB, a Bat Conservation Trust Benefactor and Corporate Member of the Yorkshire Wildlife Trust.
- 3.4 Surveyor Profile – Chris Toohie M Sc., MCIEEM.
- 3.4.1 Job title : Director.
- 3.4.2.1 Expertise.
- Bat surveys, bats and wind turbine assessments, writing and implementing bat development licenses, bat sound analysis and monitoring- Natural England Bat Low Impact Class License Registered Consultant.
 - Phase 1 habitat field surveys and ecological appraisals including Building Research Establishment Environmental Assessment Method (BREEAM) and Code for Sustainable Homes (CfSH) assessments.
 - Great crested newt and reptile surveys.
 - Management planning, woodland and orchard management and community environmental projects including funding applications.
- 3.4.3 Qualifications.
- M Sc. Arboriculture and Community Forest Management.
 - HND Countryside Management.
 - Great Crested Newt License – 2016-19412-CLS-CLS (held concurrently since 2009).
 - Bat Handling License – RC027 (held concurrently since 2009).
- 3.4.4 Professional Membership.
- Member of the Chartered Institute of Ecology and Environmental Management (held concurrently since 2007).
- 3.5 A detailed surveyor profile is included in Appendix 5.
- 3.6 Chris Toohie M Sc. MCIEEM meets the criteria for a suitably qualified ecologist by:
- Holding a Master’s degree in Community Forestry and Arboriculture;
 - Being employed as a practising ecologist since 1995, with over 15 years relevant experience (within the last five years) and;
 - Being a full member of the Institute of Ecology and Environmental Management (this makes him subject to peer review and bound by a professional code of conduct).
- 3.7 Surveyor Profile – Daniel Lombard B Sc., MCIEEM.
- 3.7.1 Job title : Senior Field Ecologist.
- 3.7.2 Expertise.
- Phase 1 habitat field surveys and biodiversity assessments including Building Research Establishment Environmental Assessment Method (BREEAM) and Code for Sustainable Homes (CODE) assessments.
 - Bat surveys, bats and wind turbine assessments, bat sound analysis and monitoring.
 - Great crested newt and reptile surveys.

- Mammal surveys including water vole, otter and badger.
 - Management planning, pond and wetland management.
- 3.7.3 Qualifications.
- B Sc. Environmental Science.
 - Great Crested Newt License – CLS01634
 - Bat License – CLS01634
- 3.7.4 Professional Membership.
- Member of the Chartered Institute of Ecology and Environmental Management.
- 3.8 A detailed surveyor profile is included in Appendix 5.
- 3.9 Daniel Lombard meets the criteria for a suitably qualified ecologist by:
- Holding a Bachelor of Science degree (hons) in Environmental Science;
 - Being employed as a practising ecologist since 2007, with over 5 years relevant experience (within the last five years) and;
 - Being a full member of the Institute of Ecology and Environmental Management (this makes him subject to peer review and bound by a professional code of conduct).
- 3.10 Chris Toohie M Sc. MCIEEM has read and reviewed the report and confirms that it:
- Represents sound industry practice
 - Reports and recommends correctly, truthfully, and objectively
 - Is appropriate, given the local site conditions and scope of works proposed
 - Avoids invalid, biased, and exaggerated statements

4.0 SURVEY METHODOLOGY.

- 4.1 A Phase 1 Habitat Survey was undertaken on 15th and 21st December 2015. During the site visit, land which is within the ownership of the Council (the golf course) was examined in detail as was accessible neighbouring land. However, access was not available to the agricultural fields to the west of Shepherd Thorn Lane and therefore this was viewed from surrounding vantage points. The desk top analysis also included this land.

Survey	Date	Time		Wind Speed	Wind Direction	Temperature		Rainfall	Cloud Cover
		Start	Finish			Start	Finish		
Field	15/12/15	10.00	15.30	5mph	W	10°C	11°C	Light	100%
Field	21/12/15	9.30	16.00	5mph	W	10°C	11°C	Light	100%

- 4.2 The habitats within the Allocated Area were mapped (see Appendix 2) according to the techniques described in the publication *Handbook for Phase 1 Habitat Survey* (JNCC 2010).
- 4.3 Target notes (if applicable) provide descriptions of the main habitats found on the site, including information about species composition, habitat structure, evidence of management, habitats too small to map and transitional or mosaic habitats.
- 4.4 Sufficient detail on the composition of the vegetation was obtained from the Phase 1 Habitat Survey, which enabled it to be successfully characterised and assessed.
- 4.5 During the site visit, notes were made of features of potential value to other groups such as birds, mammals, amphibians, reptiles or invertebrates, paying particular attention to species protected by law.

5.0 LIMITATION OF FIELD SURVEY.

- 5.1 Whilst the majority of the Allocated Area was examined at the macro scale, many species will have been overlooked at the micro level because it is not the purpose of a phase 1 habitat survey to classify all taxa occurring in the Allocated Area. In addition, whilst the actual timing of the survey was adequate to classify the habitat types, there is undoubtedly a strong seasonal element to the presence of species within the site and species occurring outside of the survey period will have been missed.
- 5.2 This report will serve to indicate the possible value of the site in nature conservation terms based upon the survey and desk top data gathered. As with any survey of this kind, it cannot be seen as a definitive description of the site and its associated habitats and species.
- 5.3 Within the Allocated Area, access was only available to land within the Council's ownership. The neighbouring agricultural fields were studied from surrounding vantage points, and using maps and aerial photography. Whereas it is possible that habitats important to the ecology of the area could exist within these fields, the likelihood is that the agricultural landscape not accessed is considered to have reduced ecological value for the following reasons:
- Improved grassland and arable habitats are generally species poor and heavily influenced by increased nitrogen levels from fertilising.
 - The agricultural land is subject to ploughing, sowing, rolling, fertilizer application (organic or inorganic) and treatment with fungicide, herbicide and/or insecticide.
 - Agricultural management significantly reduces the overall value of the habitat to flora and fauna, as does the crop monoculture.
 - With the exception of hedges that bound the large fields, no other ecologically valuable habitats i.e. ponds, rivers, woodland etc. were observed. The buildings within the farm will require a bat and barn owl survey prior to development works.
- 5.4 For the time being, a phase 1 habitat survey of this nature, supported by a thorough desk top survey, is sufficient to make a number of general assumptions about the ecology of the site.

6.0 SURVEY RESULTS.

6.1 General Description.

6.1.1 The Allocated Area is located between the towns of Brighouse and Huddersfield, in a semi-rural location; the golf course is immediately surrounded woodland cover, suburban housing and major road networks with urban green spaces. The Allocated Area is 77.89 hectares in size and is located on the northern outskirts of Huddersfield town. The wider topography is undulating with the Allocated Area situated on a hillside.

6.1.2 Woodland cover in the locality is good and occurs as belts of closed canopy tree cover along hillsides. Habitat connectivity is provided by woodland, hedgerows and watercourses. The golf course is located between Seamer Wood (100m south) and Bradley Wood (100m north) with the Allocated Area providing fragmented habitat connectivity between the two. The M62 is also located within 100m of the golf course and its associated screening woodland habitats provide habitat connectivity. In addition, the motorway, River Calder, River Colne and Huddersfield Broad Canal also provide habitat connectivity to the wider countryside; all of the aforementioned watercourses are within 2km of the Allocated Area.

6.1.3 A summary of the surrounding habitat is as follows (radius of < 2km from the Allocated Area):

- Buildings – farm buildings, commercial units and residential properties
- Hedgerow
- Mature trees and woodland
- Seamer Wood
- Bradley Wood
- Dyson Wood
- Bradley Gate Wood
- Lower Fell Greave
- Upper Fell Greave
- Gerhill Wood
- Arable
- Mature private gardens
- Ponds and watercourses
- River Calder
- Huddersfield Broad Canal
- River Colne
- Grazed pasture

6.2 Desktop Study.

6.2.1 Natural England, West Yorkshire Ecology, www.magic.co.uk and the National Biodiversity Network (NBN) were consulted in order to obtain any ecological information that they hold of relevance to the Allocated Area.

6.2.2 The desk top study identifies land parcels of nature conservation value within 2 km locality of the Bradley Park Golf Course Allocated Area. Relevant extracts from associated documentation are highlighted below. The following data resources were searched:

- Sites of Special Scientific Interest (SSSI)
- Special Protection Areas (SPA)
- National Parks
- National Reserves
- Special Areas of Conservation (SAC)
- Ramsar sites
- Areas of Outstanding Natural Beauty (AONB)
- Local Nature Reserves (LNR)
- Local wildlife sites (LWS)
- Natural England Habitat Inventories
- Natural Area documentation
- European protected species records
- UK Biodiversity Action Plan habitats and species records
- Local Biodiversity Action Plan habitats and species records
- Notable species records

6.2.3 Statutory sites

6.2.3.1 There are no statutory sites within 3 km of the Allocated Area.

6.2.4 Local Wildlife Sites (LWS).

6.2.4.1 The following local wildlife sites lie within 2 km of the Allocated Area:

- Calder & Hebble Navigation
- Clifton Lagoon
- Dalton Bank
- Grimescar Wood
- Strangstry Wood

6.2.5 Kirklees - Sites of Wildlife Significance (SWS).

6.2.5.1 Kirklees Sites of Wildlife Significance (SWS) are sites of local or district-wide importance for the enjoyment, study or conservation of wildlife, geological features and landforms, but there is seldom detailed ecological information on record for them. The following Sites of Wildlife Significance lie within 2 km of the Allocated Area:

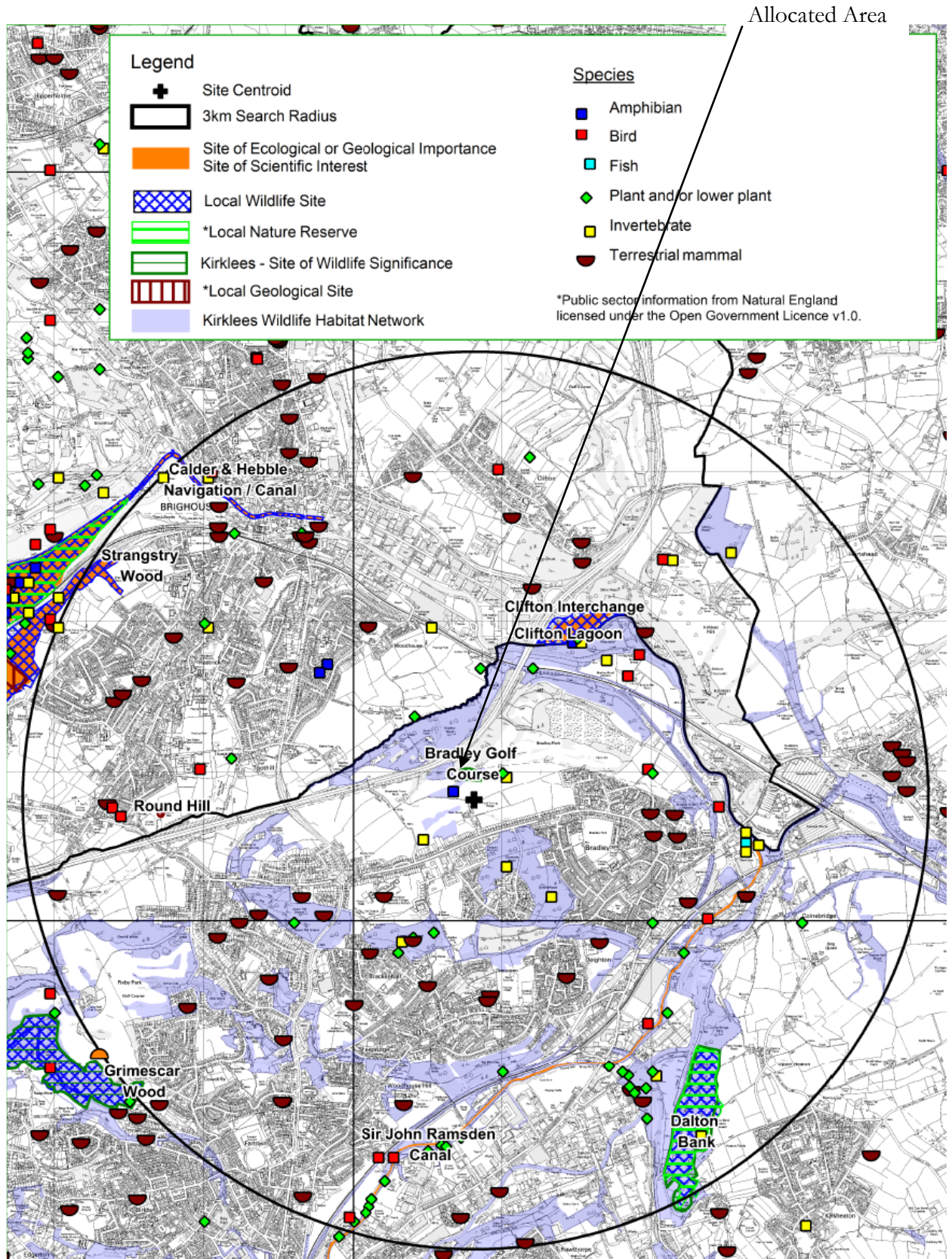
- Bradley Golf Course
- Dalton Bank
- Grimescar Wood

6.2.6 Local Nature Reserves (LNR).

6.2.6.1 The following Local Nature Reserves lie within 2 km of the Allocated Area;

- Dalton Bank

Figure 1 - Map of sites and species in relation to the survey area 1:25,000 ↑ N



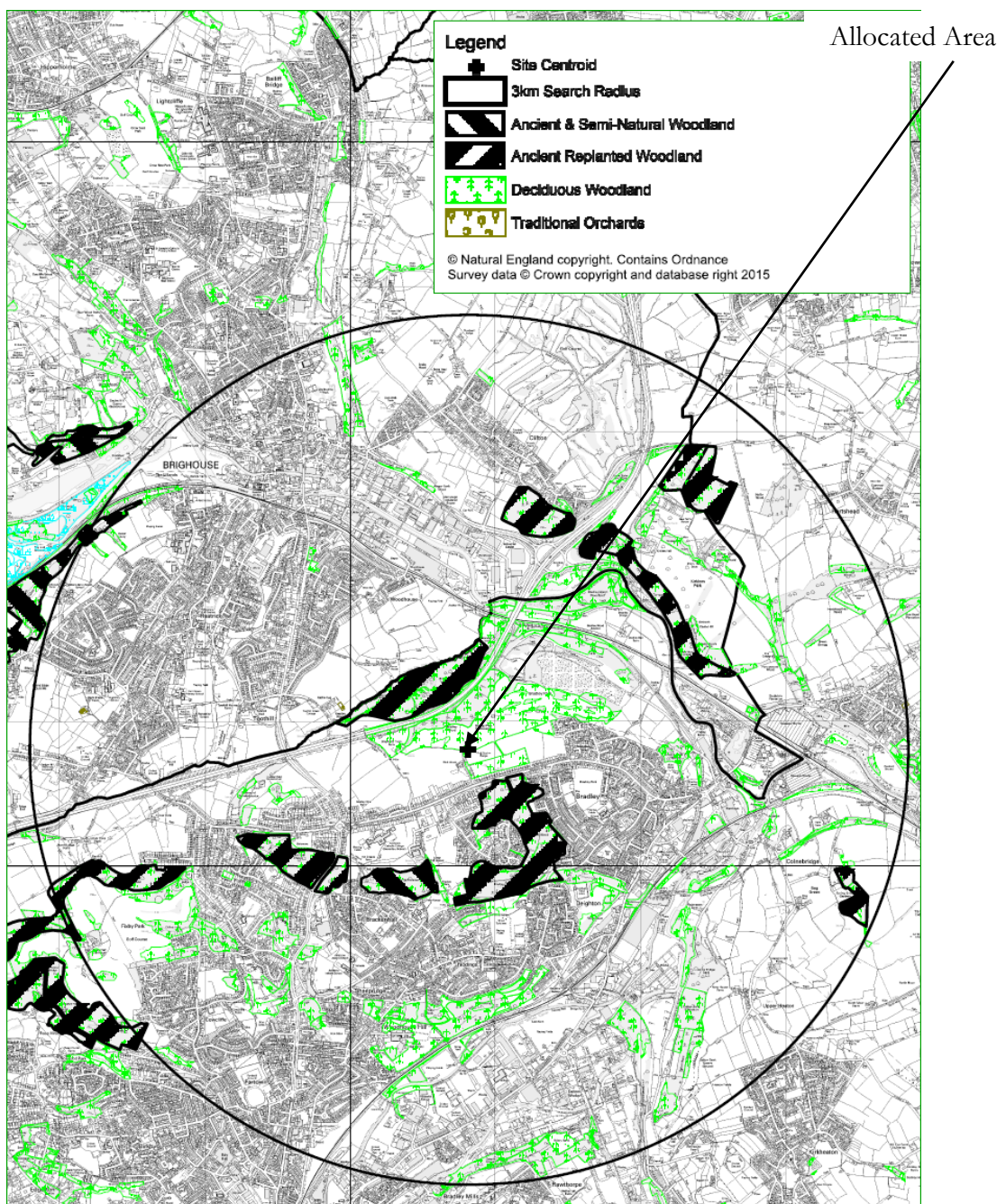
6.2.7 The local wildlife sites will not be impacted on by the proposed development due to the distance between the Allocated Area and the nearest land parcels of nature conservation which is greater than 200 metres.

6.2.8 Natural England Habitat Inventories

6.2.8.1 All the Natural England Habitat Inventories were searched, including the woodland inventory and grassland inventory. The following notable habitats from the Habitat Inventories list were found within 2 km of the Allocated Area.

- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Deciduous Woodland
- Traditional Orchards

Figure 2 - Map of notable habitats listed in the Habitats Inventory. 1:25,000 N↑



6.3 Natural Character Areas

- 6.3.1 National Character Areas (NCAs) divide England into 159 distinct natural areas. Each is defined by a unique combination of landscape, biodiversity, geodiversity and cultural and economic activity. Their boundaries follow natural lines in the landscape rather than administrative boundaries, making them a good decision making framework for the natural environment. As part of its responsibilities in delivering the Natural Environment White Paper, Biodiversity 2020 and the European Landscape Convention, Natural England is revising its National Character Area profiles to make environmental evidence and information easily available to a wider audience.
- 6.3.2 NCA profiles are guidance documents which will help to achieve a more sustainable future for individuals and communities. The profiles include a description of the key ecosystem services provided in each character area and how these benefit people, wildlife and the economy. They identify potential opportunities for positive environmental change and provide the best available information and evidence as a context for local decision making and action.
- 6.3.3 The Allocated Area lies within Natural Character Area 37 – The Yorkshire Southern Pennine Fringe.
- 6.3.3.1 The Yorkshire Southern Pennine Fringe National Character Area is a transitional landscape from the upland areas of the Southern Pennines NCA in the west through to the low-lying land of the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA to the east. The most striking aspect of the landscape is the mingling of predominantly ‘gritstone’ industrial towns and villages with the strong valley forms and pastoral agriculture of the Pennine foothills. The gritstone industrial buildings and settlements bring a sense of visual unity to the landscape. The landscape is dominated by industrial buildings and structures such as factories, chimneys, railways and canals. Travellers crossing the NCA from west to east experience a change from pastoral treeless hill tops, where drystone walls are the predominant field boundary, to wooded valleys, where large urban settlements such as Bradford, Huddersfield and Sheffield are focused in the valleys and were built up around the former industries such as coal mining, steel making and the woollen industry. The World Heritage Site of Saltaire stands as an example model town built with the wealth produced by the industries prevalent in this area. In the east, settlements are separated by areas of arable farming with hedgerows and lowland meadows.
- 6.3.3.2 The following Statements of Environmental Opportunity are relevant to the Allocated Area.
- **SEO 2:** Manage flood plains and wetland habitats to regulate water flow and availability, and to enhance water quality and biodiversity. Increase the river and riparian habitat networks, for example along the Calder, the Don and the Colne in the north and along the Sheaf, the Rivelin and the Loxley in the south, and ensure good linkages with the networks of woodland and semi-natural habitats for the species they support and to improve the resilience of these habitats to climate change.
 - **SEO 3:** Protect the distinctive landscape character with its contrasts between open pastures on hill tops, woodland on valley sides and the settlements nestled in the valley bottoms. Manage the arable and pastoral farmland and the areas of woodland to improve their contribution to biodiversity, food

provision and landscape character, to improve soil and water quality, and reduce soil erosion.

- **SEO 4:** Plan to optimise opportunities for access to the natural environment for the large urban populations in the area, making the most of key landscape features to redefine sense of place in the changing landscape and encouraging implementation of well-designed and managed green infrastructure, sustainable urban drainage systems and good use of planting to screen urban edges.

6.4 European Protected Species records

6.4.1 Badger *Meles meles* is recorded in the surrounding 10km grid square SE12 (source – West Yorkshire Ecology and NBN Gateway 2015).

6.4.2 Bats

- Currently, there is no pre-existing information on bats at the site.
- Data for the 10km grid square SE12 shows records of noctule *Nyctalus noctula*, Daubenton's bat *Myotis daubentonii*, Leisler's bat *Nyctalus leisleri* and common pipistrelle *Pipistrellus pipistrellus* (source – West Yorkshire Ecology and NBN Gateway 2015).

6.4.3 Great crested newt *Triturus cristatus*

- Recorded in the surrounding 10km grid square SE12 (source – West Yorkshire Ecology and NBN Gateway 2015).

6.4.4 Water vole *Arvicola amphibious*

- Not recorded within 3km of the Allocated Area.
- Wider records occur within the surrounding 10km grid square SE12 at Brighouse (source – West Yorkshire Ecology and NBN Gateway 2015).

6.4.5 Otter *Lutra lutra*

- Not recorded within 500 metres of the Allocated Area.
- Wider records occur within the surrounding 10km grid square SE12 within 3km of the Allocated Area (source – West Yorkshire Ecology and NBN Gateway 2015).

6.4.6 Slow worm *Anguis fragilis* is recorded in the surrounding 10km grid square SE12 (source – NBN Gateway 2015).

6.4.7 White-clawed crayfish *Austropotamobius pallipes*

- Recorded abundantly in the surrounding 10km grid square SE12 (source – NBN Gateway 2015).
- Records occur within 500metres of the Allocated Area (source – West Yorkshire Ecology 2015).
- Additionally records occur within the Application in Pond 1, white clawed crayfish were moved to this "Ark" site in 2011 (source – Kirklees Council 2015).

6.4.8 UK Biodiversity Action Plan Species records

6.4.8.1 The following UK Biodiversity Action Plan species have been recorded within 2km of the Allocated Area:

- Mallard *Anas platyrhynchos*
- Kestrel *Falco tinnunculus*
- Woodcock *Scolopax rusticola*
- Common gull *Larus canus*
- Black-headed gull *Chroicocephalus ridibundus*
- Herring gull *Larus argentatus* (BAP Species)
- Stock dove *Columba oenas*
- Swift *Apus apus*
- Swallow *Hirundo rustica*
- House martin *Delichon urbicum*
- Dunnock *Prunella modularis* (BAP Species)
- Mistle thrush *Turdus viscivorus*
- Fieldfare *Turdus pilaris*
- Song thrush *Turdus philomelos* (BAP Species)
- Redwing *Turdus iliacus*
- Common whitethroat *Sylvia communis*
- Willow warbler *Phylloscopus trochilus*
- Spotted flycatcher *Muscicapa striata* (BAP Species)
- Marsh tit *Poecile palustris* (BAP Species)
- Willow tit *Poecile montanus* (BAP Species)
- Starling *Sturnus vulgaris* (BAP Species)
- House sparrow *Passer domesticus* (BAP Species)
- Linnet *Carduelis cannabina* (BAP Species)
- Lesser redpoll *Acanthis cabaret* (BAP Species)
- Bullfinch *Pyrrhula pyrrhula* (BAP Species)
- Yellowhammer *Emberiza citrinella* (BAP Species)
- Hedgehog *Erinaceus europaeus* (BAP Species)
- Brown hare *Lepus europaeus* (BAP Species)
- Harvest mouse *Micronomys minutus* (BAP Species)
- Common toad *Bufo bufo* (BAP Species)
- White-letter Hairstreak butterfly *Satyrrium walbum*(BAP Species)
- Small heath butterfly *Coenonympha pamphillus*(BAP Species)
- Wall brown *Lasiommata megera*(BAP Species)

6.4.9 Phase 1 Field Survey Results

6.4.9.1 The following habitat types were recorded within the Allocated Area:

- Broad-leaved Semi-natural woodland - A1.1.1
- Mixed plantation woodland –A1.3.2
- Coniferous plantation - A1.2.2
- Scattered trees - A1.3.3
- Improved grassland - B4
- Open standing water - G1
- Running water - G2

- Amenity grassland - J1.2
- Introduced shrub - J1.4
- Intact species poor hedge - J2.1.2
- Fence - J2.4
- Buildings - J3.6
- Bare ground - J4

6.4.9.2 Broad-leaved Semi-natural woodland

6.4.9.2.1 The land to the north of the Allocated Area is characterised by an embankment covered in semi-natural woodland. This habitat predominantly lies adjacent to the site, with only a small amount falling within the Allocated Area s boundaries. The trees within this habitat range up to approximately 150 years of age and show a mixed aged stand. Remnants of dry stone walls occur in corners of this habitat suggestive that it was once more open farmland. The wood has a mixture of dry and damp soils with damp areas primarily associated with depressions and ditches which drain off the golf course.

6.4.9.2.2 Canopy species composition is dominated by deciduous trees including sessile oak *Quercus petraea*, sycamore *Acer pseudoplatanus*, silver birch *Betula pendula*, crack willow *Salix fragilis*, white willow *Salix alba* and ash *Fraxinus excelsior*. An understory is present in localised areas of the wood and is dominated by holly *Ilex aquifolium*, hazel *Corylus avellana*, *Rhododendron sp.*, blackthorn *Prunus spinosa* and wych elm *Ulmus glabra*. The basal flora community is relatively sparse and restricted to a community dominated by dogs mercury *Mercurialis perennis*, bracken *Pteridium aquilinum*, broad-buckler fern *Dryopteris dilatata*, bramble *Rubus fruticosus*, cow parsley *Anthriscus sylvestris*, wood avens *Geum urbanum*, herb Robert *Geranium robertianum*, creeping soft grass *Holcus mollis*, wood sorrel *Oxalis acetosella*, red campion *Silene dioica*, stinging nettle *Urtica dioica*, tufted hairgrass *Deschampsia cespitosa* and wood sedge *Carex sylvatica*. Localised stands of Himalayan balsam *Impatiens glandulifera* occur within this wood and threaten the native flora community (see Target Note 1).

6.4.9.2.3 This habitat has considerable wildlife value and has an abundance of deadwood (both fallen and standing) as well as gaps and cracks within trees offering nesting opportunities for a range of bird species and roosting bats. It is likely due to the oak and willow component that this woodland is of importance to a wide variety of invertebrates.

6.4.9.3 Mixed plantation woodland

6.4.9.3.1 An abundance of broad-leaved plantation woodland occurs within the Allocated Area and primarily occur as east to west strips of trees adjacent to fairways. These strips of trees have been planted for both aesthetic and recreational reasons as well as to offer improved shelter for the golf course. Trees within these stands are all of a similar age and structure; all of them are younger than 60 years old with spacing relatively even.

6.4.9.3.2 Species composition within these plantations is dominated by broad-leaved trees with a small amount of conifers mixed in. Species diversity comprises Scots pine *Pinus sylvestris*, black pine *Pinus nigra*, hazel, dogwood *Cornus sanguinea*, balsam poplar *Populus balsamifera*, silver birch, hornbeam *Carpinus betulus*, hybrid black poplar *Populus x canadensis*, cherry laurel *Prunus laurocerasus*, white willow, rowan *Sorbus aucuparia*, Norway maple *Acer platanoides*, sycamore, alder *Alnus glutinosa*, goat willow

Salix caprea, horse chestnut *Aesculus hippocastanum*, small-leaved lime *Tilia cordata*, sessile oak, wild cherry *Prunus avium*, larch *Larix decidua*, sweet chestnut *Castanea sativa*, white poplar *Populus alba*, whitebeam *Sorbus aria*, beech *Fagus sylvatica*, bird cherry *Prunus padus*, field maple *Acer campestre*, guelder rose *Viburnum opulus* and blackthorn.

- 6.4.9.3.3 The understory is relatively open without a definitive shrub layer. Basal flora is largely restricted to plantation edges and comprises wood avens, cow parsley, stinging nettle, broad-leaved dock *Rumex obtusifolius*, small nettle *Urtica urens*, common chickweed *Stellaria media*, mugwort *Artemisia vulgaris*, rosebay willowherb *Chamerion angustifolium*, hairy bittercress *Cardamine hirsuta*, wavy bittercress *Cardamine flexuosa*, common mouse-ear *Cerastium fontanum*, American willowherb *Epilobium ciliatum*, prickly sow-thistle *Sonchus asper*, common hogweed *Heracleum sphondylium*, honeysuckle *Lonicera perichymentum*, wood horsetail *Equisetum sylvaticum*, broad-buckler fern, great plantain *Plantago major*, red fescue *Festuca rubra*, meadow buttercup *Ranunculus acris*, smooth sow thistle *Sonchus oleraceus*, red clover *Trifolium pratense*, short-fruited willowherb *Epilobium obscurum*, Japanese knotweed *Fallopia japonica* (see target note 3) ivy *Hedera helix*, herb Robert *Geranium robertianum* and ribwort plantain *Plantago lanceolata*.
- 6.4.9.3.4 These habitats have limited amounts of fallen or standing deadwood due to their young age, trees are generally in good health. There is nesting potential for a diversity of birds and they offer potential habitat corridors for small passerines, small mammals including bats, amphibians and invertebrates. It is likely that these trees have a moderately diverse invertebrate assemblage associated with them due to the tree diversity.
- 6.4.9.4 Coniferous plantation
- 6.4.9.4.1 This habitat is relatively limited within the Allocated Area and occurs as a block of Scots pine adjacent to the north-west corner of the site and as a number of Leyland cypress *Cupressus × leylandii* windbreaks scattered around the site. This habitat is of a similar age to the golf course with trees not exceeding 50 years of age. This habitat did not have any notable understory or basal flora associated with it and the majority of trees are in good health and do not exhibit areas of standing or fallen deadwood.
- 6.4.9.4.2 It is likely that these plantations provide nesting and roost opportunities to a variety of bird species but they do not provide opportunities for roosting bats.
- 6.4.9.5 Scattered trees
- 6.4.9.5.1 Scattered trees primarily occur around the clubhouse and site entrance; most other trees on site form part of a closed canopy and consequently do not fall into this habitat type. These trees have predominantly been planted for aesthetic and amenity reasons and occur within beds of introduced shrub. Occasionally isolated trees occur within the golf course, most notably of these trees is a mature ash (see Target Note 2) which is greater than 80 years old and occurs within the western half of the site; this tree has potential for roosting bats. All other trees on site which fall into this habitat category are around 40-50 years of age and of less ecological value. Species diversity consists of fir *Abies sp.*, spruce, Leyland cypress, yew *Taxus baccata*, ash, black pine, Scots pine, paper birch *Betula papyrifera* and apple *Malus sp.* These trees are maintained and managed for their Amenity value within the golf course.

6.4.9.6 Improved neutral grassland

6.4.9.6.1 The south east corner of the Allocated Area beyond the golf course boundaries is dominated by a nutrient rich parcel of horse grazed pasture. This area is fenced and appears to be relatively well drained; it has historically been heavily influenced by agricultural practices, particularly grazing of livestock. It is also likely to have been subjected to applications of fertilizers and consequently, species diversity and the presence of notable vegetation communities is decreased. The sward is short, even, lush and is nitrogen rich over a mesotrophic soil.

6.4.9.6.2 Species composition is relatively low and quite poor, typically being dominated by perennial ryegrass *Lolium perenne*, false oat grass *Arrhenatherum elatius*, cocks-foot *Dactylus glomerata*, meadow foxtail *Alopecurus pratensis* and creeping thistle *Cirsium arvense*. Marginally, species diversity is slightly greater around hedge bases with an increase in species including stinging nettle, common ragwort *Jacobaea vulgaris*, small nettle, white-dead nettle *Lamium album*, red campion, dandelion *Taraxacum officinale*, ground ivy *Glechoma hederacea*, cleavers *Galium aparine*, cow parsley, bramble, common sorrel *Rumex acetosa*, ivy, lesser celandine *Ranunculus ficaria*, spear thistle *Cirsium vulgare* and broad-leaved dock. Damper areas become characterised by a community dominated by creeping bent *Agrostis stolonifera* and creeping buttercup *Ranunculus repens*.

6.4.9.7 Open standing water

6.4.9.7.1 Three ponds occur within the Allocated Area s boundaries, all of which are water features associated with the golf course and have been created for their amenity, recreational and aesthetic value. These ponds all appear to be regularly maintained and have limited terrestrial bank side vegetation communities; where they meet the fairway directly.

6.4.9.7.2 **Pond 1** (see Target Note 7) – is a circular pond Approximately 600 m² in size; it is split roughly in half by a row of stone filled gabions through its centre. The western half of the pond has begun to silt up and has a more complex vegetation community associated with it. This has a maximum depth of 50cm, with clear water and is dominated by great reedmace *Typha latifolia*, soft rush *Juncus effusus*, great willowherb *Epilobium hirsutum*, yellow flag *Iris pseudacorus*, montebretia *Crocasmia masoniorum*, creeping bent, creeping buttercup, common frogbit *Hydrocharis morsus-ranae*, purple loosestrife *Lythrum salicaria*, floating sweetgrass *Glyceria fluitans*, gypseywort *Lycopus europaeus*, branched bur-reed *Sparganium erectum* and white water lily *Nymphaea odorata*. The slightly larger eastern part of the pond is up to 1 metre in depth with slightly turbid water. This pond appears to have received small scale willow clearance from its banks. Species composition within this part of the pond is dominated by white water lily, great reedmace, soft rush, brooklime *Veronica beccabunga* and water plantain *Alisma plantago-aquatica*. This pond is a known ARK Ste for white clawed crayfish *Austropotamobius pallipes*, with crayfish added to it in 2011.

6.4.9.7.3 **Pond 2** – is a rectangle pond at the north eastern end of the golf course; it is situated adjacent to a green and acts as a recreational golf course feature. This pond is approximately 30m² in size with a maximum depth of 50cm with clear water. The pond has an abundance of submerged vegetation dominated by broad-leaved pondweed, soft rush and Canadian pondweed.

- 6.4.9.7.4 **Pond 3** - is a teardrop shaped pond at the north eastern end of the golf course. This pond lies in conjunction with a ditch which runs through the golf course and into the pond. It is situated in a depression and acts as an aesthetic golf course feature as well as to aid drainage. This pond is approximately 50m² in size with a maximum depth of 50cm with clear water. The pond has an abundance of submerged vegetation dominated by water plantain, white water lily, watercress *Nasturtium officinale*, brooklime, water dock *Rumex hydrolapathum*, Canadian pondweed *Elodea canadensis* and yellow flag.
- 6.4.9.8 Running Water
- 6.4.9.8.1 A number of drainage ditches occur within the Allocated Area, these all share a similar character. They are all approximately 1-2 metres in width and 50cm to 1m in depth; they range between dry and partially running water. Even despite considerable amounts of recent rain prior to the field surveys, water levels did not appear to be particularly high in most sections and it is likely that these ditches dry up during the summer months. The bases comprise a mixture of silt, rocks and gravel, the water flowing within them was clear and flowing at a slow pace although evidence of deeper and faster flowing water was evident. Vegetation communities associated with these ditches comprises common daisy, great willowherb, hairy bittercress, floating sweetgrass, annual meadow grass *Poa annua*, creeping buttercup, watercress and brooklime. This community is suggestive of sudden water inundation followed by long periods of dry weather.
- 6.4.9.9 Amenity grassland
- 6.4.9.9.1 The Allocated Area is dominated by this habitat type with amenity grassland comprising fairways, greens and to a lesser extent lawns and borders adjacent to paths, buildings and car parking areas. This grass is short and lush and is cut almost daily throughout the growing season. This habitat is subjected to occasional rolling, spiking, weed removal and applications of fertilisers and herbicides. This habitat slopes in a south to north direction and at the time of the survey it was waterlogged however, it is likely that it is well drained most of the year.
- 6.4.9.9.2 Species composition is relatively poor and is dominated by perennial ryegrass, white clover *Trifolium repens*, annual meadow grass, creeping buttercup, dandelion, groundsel *Senecio vulgaris*, daisy, common ragwort, cocks-foot and Yorkshire fog *Holcus lanatus*. Species diversity increases in marginal areas.
- 6.4.9.10 Introduced shrub
- 6.4.9.10.1 A small number of shrubberies of limited ecological interest are situated within the Allocated Area; these are primarily associated with the club house and site entrance. These shrubberies have been planted for their amenity value and are regularly maintained for their amenity value and consist of low maintenance hardy species including heather *Calluna vulgaris*, Leyland cypress, Lawson cypress *Chamaecyparis lawsoniana*, *Rhododendron sp.*, fir, bay *Laurus nobilis*, Oregon grape *Mabonia aquifolium*, ash, *Cotoneaster sp.*, holly and dogwood.
- 6.4.9.11 Intact species poor hedge
- 6.4.9.11.1 This habitat bounds the Allocated Area in localised and isolated areas, predominantly restricted to the western and parts of the southern boundary of the

site. This western boundary is cut annually and the southern boundary hedge is cut occasionally. The height varies between 1.5m and 4m with a maximum width of 3 metres. Species composition is poor and is dominated by hawthorn *Crataegus monogyna*, blackthorn, elder *Sambucus nigra* and dog rose *Rosa canina*. There are no ancient woodland or hedgerow communities associated with these hedges.

6.4.9.12 Fence

6.4.9.12.1 A diversity of fencing types occurs within the Allocated Area. These are predominantly to prevent pedestrian access, protect people from golf balls and as garden fencing adjacent to the golf course. Additionally, a large section of security fencing runs along the north eastern boundary adjacent to an old asbestos tip. A mixture of timber and steel is used in various designs, none of which have any ecological significance and do appear to prevent large vertebrates dispersing into the site.

6.4.9.13 Buildings

- 6.4.9.13.1 The following buildings are present on site:
- a. **Building 1 Clubhouse (see Target Note 8)** – the single storey clubhouse comprises stone walls and a pitch roof covered in concrete tiles. The building is currently in use and also includes timber windows and doors. There was no access into the internal roof void.
 - b. **Building 2 Pro Shop** - the single storey pro-shop comprises stone walls, with timber fascia's, eaves and timber boarding with a pitched roof covered in concrete tiles. The building is currently in use and also includes timber windows and doors. There was no access into the internal roof void.
 - c. **Building 3 Driving range** - the single storey driving range comprises timber boarded walls with a mono pitched roof covered in pressed steel. The building is currently in use and is supported by a steel frame and smooth sawn timbers.
 - d. **Building 4 Storage building (see Target Note 9)** – the single storey building comprises local stone walls and a pitch roof covered in stone slates. The building is currently used for storage and also includes timber windows and doors. Internally, the roof is supported by smooth sawn timbers and underdrawn with a bitumen based felt product.
 - e. **Building 5 Storage building (see Target Note 10)** – the single storey building comprises local stone walls and a pitch roof covered in stone slates. The building is currently used for storage and also includes timber windows and doors. There was no access into the internal roof void.
 - f. **Building 6 Storage building (see Target Note 11)** – the single storey building comprises local stone walls and a pitch roof covered in stone slates. The building is currently used for storage and also includes timber windows and doors. There was no access into the internal roof void.

6.4.9.14 Bare ground

6.4.9.14.1 Bare ground habitats are frequent and diverse within the Allocated Area. These consist of pathways, roads, kerbs, seating areas and bunkers and comprise concrete, tarmac, paving stones, sand and bare soil substrate. These habitats are of little ecological value and are heavily disturbed.

6.4.9.15 Invasive species

6.4.9.15.1 Japanese knotweed (Target Note 3), Himalayan balsam (Target Note 1), *Cotoneaster* sp., (Target Note 4), *Rhododendron* sp. (Target Note 5), and Canadian pondweed (Target Note 6), have been identified within the Allocated Area. These species is included on Schedule 9 of the Wildlife and Countryside Act 1981 (Section 2). See section 7.5.6 for more details.

6.4.10 The following species were recorded during the field survey:

- Blackbird *Turdus merula*
- Redwing *Turdus iliacus*
- Robin *Erithacus rubecula*
- Wren *Troglodytes troglodytes*
- Great tit *Parus major*
- Coal tit *Parus ater*
- Blue tit *Cyanistes caeruleus*
- Long-tailed Tit *Aegithalos caudatus*
- Starling *Sturnus vulgaris*
- House sparrow *Passer domesticus*
- Chaffinch *Fringilla coelebs*
- Goldfinch *Carduelis carduelis*
- Greenfinch *Chloris chloris*
- Bullfinch *Pyrrhula pyrrhula*
- Nuthatch *Sitta europaea*
- Woodpigeon *Columba palumbus*
- Feral pigeon *Columba livia*
- Collared dove *Streptopelia decaocto*
- Skylark *Alauda arvensis*
- Pied wagtail *Motacilla alba*
- Dunnock *Prunella modularis*
- Carrion crow *Corvus corone*
- Magpie *Pica pica*
- Jackdaw *Corvus monedula*
- Rook *Corvus frugilegus*
- Great spotted woodpecker *Dendrocopos major*
- Black headed gull *Chroicocephalus ridibundus*
- Herring gull *Larus argentatus*
- Rabbit *Oryctolagus cuniculus*
- Field vole *Microtus agrestis*
- Brown rat *Rattus norvegicus*
- Grey squirrel *Sciurus carolinensis*
- Roe deer *Capreolus capreolus*
- Red fox *Vulpes vulpes*
- Badger *Meles meles*

6.4.11 The surrounding habitat is potentially important and the development area may impact upon mobile species. Consequently, the extended phase 1 assessment targeted the following species relevant to the Allocated Area and proposed development:

- Bats
- Great crested newt
- Badger
- Water vole
- Otter
- Reptiles
- Birds
- Hedgehog
- White clawed crayfish
- Terrestrial Invertebrates

6.5 Bats

6.5.1 The bat survey involved an initial walkover of the Allocated Area to assess the overall habitat quality for bats. This included the identification of key potential foraging habitat and potential flight corridors. This survey also targeted any potential or actual roost sites and evidence of actual bat use i.e. droppings, feeding signs.

6.5.2 Trees were assessed for features associated with arboreal bat species, in this region predominantly Daubenton's bat, Natterer's bat, noctule, common pipistrelle, soprano pipistrelle and brown long-eared. Such features typically consist of:

- Woodpecker holes
- Trunk and bough splits
- Tear outs
- Flush cuts
- Frost damage
- Wounds
- Cankers
- Dense ivy growth
- Areas of but rot
- Dry knot holes
- Impact shatters
- Dense epicormic growth.

6.5.3 Buildings were also assessed for their potential to support bats, species typically associated with buildings in this region include common pipistrelle, soprano pipistrelle, brown long eared, Natterer's bat, whiskered bat and Brandt's bat. Buildings are more likely to support bats with the following features:

- Pre (or early 20th century)
- Agricultural buildings, built with traditional brick, stone and timber
- Buildings which have large and complicated roof voids with unobstructed flying spaces
- Large roof timbers with mortise joints, ridge beams, cracks and holes
- Entrances to fly through, like open doors and windows
- Poorly maintained internal fabric

- South facing roofs
- Weatherboarding and/or hanging tiles
- Undisturbed buildings or roofs
- A complex of similar buildings, in good habitat.

6.5.4 Conclusions

6.5.4.1 Following the visual inspection of buildings and trees within the Allocated Area, an assessment was made of the buildings and trees potential to support roosting bats.

6.5.4.1.1 **Building 1 Clubhouse (see target note 8)** - bat roosting opportunities were present within the fabric of the building due to the following:

- Gaps above the eaves
- There was no open doors/window access into the building.
- No evidence of bats were observed.
- The building has a MEDIUM POTENTIAL to support bats.

6.5.4.1.2 **Building 2 Pro Shop** - no bat roosting opportunities were present within the fabric of the building due to the following:

- The stonework, ridge tiles and concrete tile roof coverings were tightfitting.
- The timber fascia's and doors/windows were also tightfitting.
- There was no open doors/window access into the building.
- No evidence of bats were observed.
- The building has a LOW POTENTIAL to support bats.

6.5.4.1.3 **Building 3 Driving range** - no bat roosting opportunities were present within the fabric of the building due to the following:

- The pressed steel roof and timber board wall coverings were tight fitting.
- Well-lit with numerous security lighting and flood lights
- No evidence of bats were observed.
- The building has a LOW POTENTIAL to support bats.

6.5.4.1.4 **Building 4 Storage building (see target note 9)** - bat roosting opportunities were present within the fabric of the building due to the following:

- Gaps frequent beneath roof tiles
- Roof tiles missing/slipped
- Gaps in the stonework
- There was no open doors/window access into the building.
- No evidence of bats were observed.
- The building has a MEDIUM POTENTIAL to support bats.

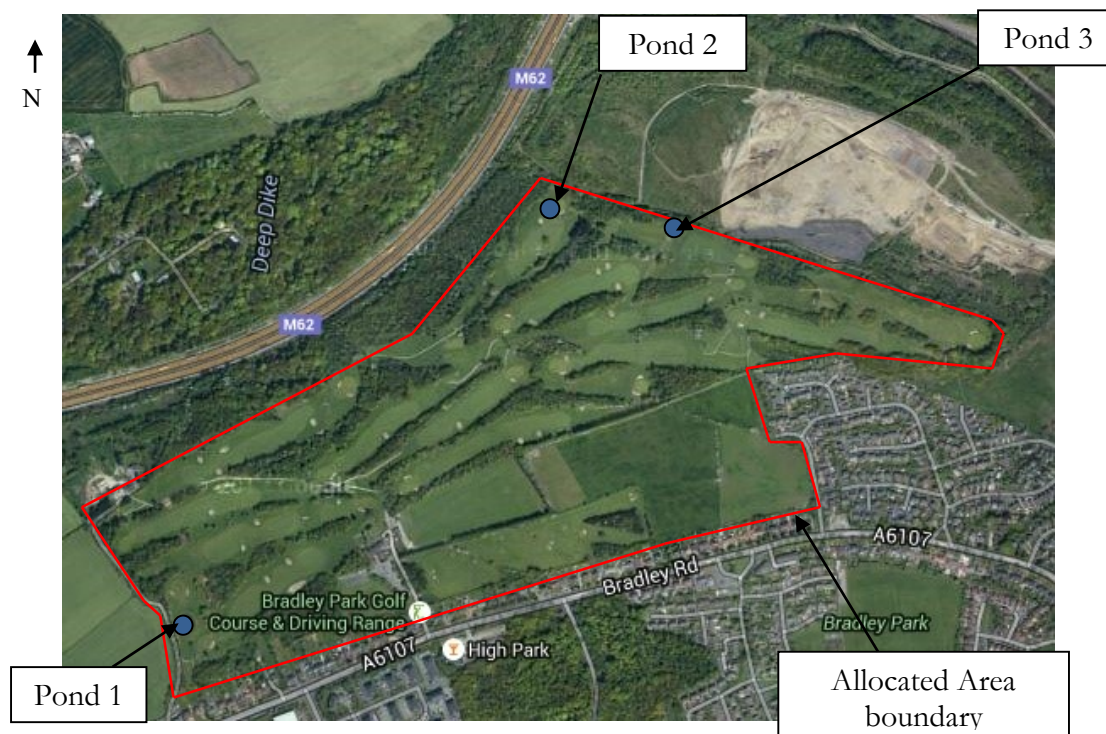
6.5.4.1.5 **Building 5 Storage building (see target note 10)** - bat roosting opportunities were present within the fabric of the building due to the following:

- Gaps in the stonework
- Gaps frequent beneath roof tiles
- Gaps above the eaves
- There was no open doors/window access into the building.
- No evidence of bats were observed.
- The building has a MEDIUM POTENTIAL to support bats.

- 6.5.4.1.6 **Building 6 Storage building (see target note 9)** - bat roosting opportunities were present within the fabric of the building due to the following:
- Gaps in the stonework
 - Gaps frequent beneath roof tiles
 - Gaps above the eaves
 - There was no open doors/window access into the building.
 - No evidence of bats were observed.
 - The building has a MEDIUM POTENTIAL to support bats.
- 6.5.4.2 A single ash tree (see Target Note 2) contains numerous cavities and knot holes suitable for roosting bats.
- 6.5.4.3 It is not possible to predict the full pre-, mid-development and long term impacts on bat populations based on two daytime surveys conducted in December. In order to prevent any potential impacts occurring to bats present, it is recommended that an activity survey (emergence or dawn) is completed in spring/summer (May to August) period. This will provide further information on bats at the site and must target and buildings or trees which are to be demolished or felled.
- 6.5.4.4 It is possible that certain buildings and trees within the Allocated Area could support individual or significant numbers of bat species. These roosts could be:
- Maternity.
 - Summer.
 - Night.
 - Transition.
 - Lekking (mating).
- 6.5.4.5 Boundary and interior features are optimum for foraging and commuting bats and include woodland, plantation and hedgerow habitats which will be disturbed removed. In addition, the mosaic of habitats present on site may be of local importance to local bat populations and further transect surveys should be undertaken in order to assess the site for activity and species present.
- 6.6 Great crested newt.**
- 6.6.1 No records of great crested newt occur within 2km of the Allocated Area.
- 6.6.2 The entire Allocated Area was assessed for its potential to support great crested newts, whilst conducting a walkover survey. In addition aerial photographs, maps and physical searches of the surrounding landscape gave an impression of how the Allocated Area is connected to wider sites and potentially great crested newt populations.
- 6.6.3 Refuge search.
- 6.6.3.1 Amphibians can take refuge under logs, bark and stones whilst in terrestrial habitat. All available features within the Allocated Area were turned over to search for the presence of amphibians. This method is not an effective method of presence/absence; however, it can be used as a general indication of amphibians within an area. Despite the time of year amphibians are occasionally found outside of hibernacula in such situations, especially during mild damp weather such as that prior and during the field survey.

6.6.4 Results.

Figure 3 – location of ponds within the Allocated Area.



6.6.4.1 Three ponds were recorded within the Allocated Area boundaries. No ponds were noted adjacent to the Allocated Area.

6.6.4.2 The likely presence of great crested newts in ponds can be predicted by examining aquatic habitat features such as the presence of fish, waterfowl and water quality. This data is used to calculate a habitat suitability index (Oldham *et. al.* 2000). The Habitat Suitability Index (HSI) is represented by a number from 0 to 1, the higher the number the more likely the pond is to be occupied by great crested newt.

6.6.4.3 The HSI for great crested newts is a measure of habitat suitability but is not a substitute for newt surveys. In general, ponds with high HSI scores are more likely to support great crested newts than those with low scores (The Herpetological Conservation Trust, 2008). However, the system is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so.

6.6.4.4 The HSI is a geometric mean of ten suitability indices:
$$HSI = (SI1 \times SI2 \times SI3 \times SI4 \times SI5 \times SI6 \times SI7 \times SI8 \times SI9 \times SI10)^{1/10}$$

- The ten Suitability Indices are scored for a pond, in the field and from map work.
- The ten field scores are then converted to SI scores, on a scale from 0.01 to 1 (0.01 instead of 0, because multiplying by 0 reduces all other SI scores to 0).
- The ten SI scores are then multiplied together.
- The tenth root of this number is then calculated $(X)^{1/10}$

The field scores were collected by Daniel Lombard. Some of the field scores are categorical, some are numerical. The numerical field scores are converted to SI scores by reading off the values from graphs produced by Oldham *et. al.* (2000). Full

details of the HSI rationale and guidance can be obtained from the Herpetological Conservation Trust. The results of the HSI are:

Geographical location – SI 1

Pond 1 Score (Zone A)	= 1.0
Pond 2 Score (Zone A)	= 1.0
Pond 3 Score (Zone A)	= 1.0

Pond area – SI 2

Pond 1 Score (600m ²)	= 1.0
Pond 2 Score (50m ²)	= 0.2
Pond 3 Score (200m ²)	= 0.4

Pond drying – SI 3

Pond 1 Score (Never Dries)	= 0.9
Pond 2 Score (Never Dries)	= 0.9
Pond 3 Score (Never Dries)	= 0.9

Water quality – SI 4

Pond 1 Score (Good)	= 1.0
Pond 2 Score (Good)	= 1.0
Pond 3 Score (Good)	= 1.0

Shade – SI 5

Pond 1 Score (0%)	= 1.0
Pond 2 Score (0%)	= 1.0
Pond 3 Score (30%)	= 1.0

Fowl – SI 6

Pond 1 Score (Absent)	= 1.0
Pond 1 Score (Absent)	= 1.0
Pond 1 Score (Absent)	= 1.0

Fish – SI 7

Pond 1 Score (Minor)	= 0.33
Pond 2 Score (Absent)	= 1.0
Pond 3 Score (Absent)	= 1.0

Ponds within 1 km – SI 8

Pond 1 Score (2)	= 0.6
Pond 2 Score (2)	= 0.6
Pond 3 Score (2)	= 0.6

Terrestrial habitat – SI 9

Pond 1 Score (Moderate)	= 0.67
Pond 1 Score (Moderate)	= 0.67
Pond 1 Score (Moderate)	= 0.67

Macrophytes – SI 10

Pond 1 Score (50%)	= 0.8
Pond 1 Score (80%)	= 1.0
Pond 1 Score (80%)	= 1.0

6.6.4.5 Scoring.

Summary of HSI scoring.											
SI	1	2	3	4	5	6	7	8	9	10	Total
Pond 1	1.0	1.0	0.9	1.0	1.0	1.0	0.33	0.6	0.67	0.8	0.0955152
Pond 2	1.0	0.2	0.9	1.0	1.0	1.0	1.0	0.6	0.67	1.0	0.07236
Pond 3	1.0	0.4	0.9	1.0	1.0	1.0	1.0	0.6	0.67	1.0	0.14472

6.6.4.6 Each SI score is multiplied together to give a total. The tenth root of this number is then calculated, consequently, the calculated HSI for a pond should score between 0 and 1. **Pond 1 has a HSI Score of 0.79 (Good Suitability), Pond 2 has a HSI Score of 0.77(Good Suitability) and Pond 3 has a HSI Score of 82 (Excellent Suitability).** This is in accordance with the scale issued by The Herpetological Conservation Trust (2008).

6.6.4.7 The terrestrial habitat within the Allocated Area is excellent for great crested newt as it provides daytime refugia, foraging areas, hibernation areas and dispersal route ways. These features are typically associated with the ditch edges, rough grassland, woodland and scrub. Damp grassland offers excellent foraging potential for great crested newt particularly on molluscs, beetles and worms.

6.6.4.8 Whilst it is not always possible to demonstrate site absence from a single scoping survey, with the evidence collected from a habitat survey, the likelihood of the presence of great crested newts in the Allocated Area is increased. Key attributes to the increased probability of great crested newts being present are:

- Three ponds which provide suitable breeding habitat exist within the Allocated Area.
- The Allocated Area primarily optimum habitat with a mixture of woodland and grassland habitats. This offers area's in which to shelter, hibernate, forage and disperse.
- The Allocated Area with its diversity of habitats offers good invertebrate habitat for foraging newts.
- The Allocated Area occupies a large area, increasing the possibility of this species being present.
- Great crested newts favour overwintering sites adjacent too or within tree cover. The abundance of tree cover offers excellent hibernating conditions.

6.7 Reptiles

6.7.1 The desktop study identified slow worm as the only reptile species which is found within the wider area. Slow worms are moderately localised in West Yorkshire.

6.7.2 Results

6.7.2.1 As would be expected from a survey in December, no direct observations or field signs of reptiles was recorded on site. It is unlikely to observe reptiles on phase 1 surveys without appropriate survey methodology, especially where populations are small or sparse. A full walkover was undertaken to assess the sites potential to support reptiles.

6.7.2.2 The Allocated Area is considered to be unsuitable for reptiles for the following reasons:

- Reptiles thermoregulate in sheltered locations, predominantly in close proximity to cover such as rank or shrubby vegetation, large rocks, walls and tree stumps in which they can quickly escape. The Allocated Area primarily consists of open exposed grassland or shaded woodland, with limited and largely insufficient thicker marginal vegetation, making reptiles prone to predation.
- Compost heaps, rotten logs and decaying vegetation provide important breeding, foraging and thermoregulation habitat for slow worm and grass snake. None of which are present in sufficient quantity within the Allocated Area.
- Reptiles use cracks, crevices and small mammal burrows to access underground refugia and hibernacula. These habitat features are limited within the Allocated Area, reducing the value to reptiles.
- Reptiles are typically not very wide ranging species, instead staying in optimum habitat. Such optimum habitat does not occur within or around the Allocated Area reducing the likelihood of animals passing through the site.
- This past management is likely to have resulted in the site being sub-optimum for a long time period, reducing the likelihood of viable populations persisting.
- The open nature of the Allocated Area leaves reptiles open to predation from key predators including crows, kestrels, hedgehogs, domestic cats and foxes.
- The site is well disturbed during spring, summer and autumn months.

6.7.3 **Wold Ecology does not recommend any further reptile surveys.**

6.8 **Birds**

6.8.1 All bird species recorded by either sight, song or call were noted, in addition particular attention was given to key species of conservation concern and which habitat within the Allocated Area they were recorded using. All active (and disused) nests, territorial, breeding and foraging birds were recorded in further detail to analyse how breeding birds use the Allocated Area. In winter foraging birds, roosting birds and large aggregations of birds using a specific habitat are noted. In addition the habitat is assessed for its value to specific species, so that the likelihood of breeding can be analysed.

6.8.2 The following survey followed guidance and methods recommended within *Bird Monitoring Methods, a manual of techniques for key UK species* Gilbert et.al RSPB 1998, *Common Standards Monitoring Guidance for Birds* JNCC 2004 and *Survey Techniques Leaflet* 8.

6.8.3 During the phase 1 survey a wide diversity of bird species and communities were recorded, particularly communities associated with woodland. Due to the time of the year in which the survey was undertaken it is not possible to determine the breeding bird assemblages which are present on site. Most birds breed between February and September, in addition numerous birds with potential to breed in association are long distance migrants which winter outside of Britain and Europe.

6.8.4 The Allocated Area is not considered to be of significant value to wintering birds such as wildfowl, waders or passerines. Little evidence of significant site use was

made at the time of the phase 1 surveys. In addition, the site lacks suitable wetland habitat matrixes important for large numbers of these species to winter.

6.8.5 Due to the large size of the Allocated Area and the nature of the proposed development, it is not known what impact this may have on breeding birds using the site. This is of particular relevance to small passerines which may use the plantations and rough grasslands to nest in.

6.9 Badgers

6.9.1 All features of potential value to badgers are surveyed; including areas of woodland (including plantation), small copses, hedgerows, embankments and rock outcrops. Well-worn animal paths and footpaths were inspected for badger footprints and links to setts.

6.9.2 The surveyor observations included any areas where there were noticeable changes in the topography providing sloping ground into which the badgers could excavate setts. The following field signs will indicate the presence of badgers:

- Badger setts and associated soil excavation
- Badger latrines and dung pits
- Badger prints
- Badger hairs
- Badger paths
- Evidence of badger foraging activity

6.9.3 Results.

6.9.3.1 No main setts, annexe setts, subsidiary setts or outlier setts were located within 50 metres of the development area boundaries or within the Allocated Area. Badgers have a preference for excavating setts on well drained calcareous grits and upper chalks rather than middle chalks and clays, although exceptions to this rule occur where no similar geology is present. Badgers often show a preference to sett excavation in woodland and scrub.

6.9.3.2 A key consideration in relation to badgers is with respect to the temporary severance of regularly used paths and associated habitat and the possible disturbance or, in a worst-case scenario, damage to a badger sett. In relation to setts, the level of significance would be greatest in relation to impacts to large and permanently occupied setts. Since the Allocated Area currently has no evidence of any badger setts, it is only the risk of severance of well used dispersal routes which is likely to have an impact. None of which were observed within the Allocated Area.

6.9.3.3 Badger footprints were noted within 100 metres of the Allocated Area boundaries, but no setts were recorded.

6.9.3.4 **No further surveys or mitigation are required for badgers.**

6.10 Hedgehog

6.10.1 Legislation

6.10.1.1 Although the Hedgehog *Erinaceus europaeus* only receives partial protection under the Wildlife and Countryside Act 1981 (as amended), its numbers have declined dramatically over the past two decades, resulting in the suggested proposal of upgrade to a higher level of protected status. The British population has declined by 25% over the past 10 years. The reasons for the decline are thought to be complex but include the loss of hedgerows and permanent grasslands as well as agricultural intensification.

6.10.2 Survey Methodology

6.10.2.1 All features of potential value to hedgehogs are surveyed; including areas of thick vegetation, outbuildings, lawns, grassland, scrub, woodland and hedge bases. Evidence of breeding nests, hibernation nests and loafing nests were searched for in areas of suitable cover.

6.10.2.2 Well-worn animal paths, pool edges and footpaths were inspected for hedgehog footprints. Open areas were inspected for hedgehog droppings, particularly amenity grassland. Additionally, the surrounding road system was surveyed for road casualties.

6.10.2.3 The following field signs will indicate the presence of hedgehogs:

- Nests within dense vegetation
- Hedgehog droppings
- Hedgehog prints
- Road casualties.

6.10.3 Results.

6.10.3.1 No active or unused hedgehog nests were found within the hedge base within the Allocated Area. Most of the Allocated Area is too open to support nesting behaviour, although the woodland bases offers suitable habitat.

6.10.3.2 **No evidence of hedgehogs was recorded (likely due to the time of year), consideration to hedgehogs should be given during site clearance and during construction.**

6.11 Water vole

6.11.1 All aquatic habitats within the Allocated Area were assessed; this included streams and ponds in respect to the Allocated Area and particularly when attached to other habitat corridors.

6.11.2 A visual search for the presence of water voles and their signs was undertaken within any suitable habitat within or adjacent to the Allocated Area. Specifically, the visual survey involved:

- Actual sightings.
- Evidence of burrow entrance holes.
- Cropped "gardens" around tunnel entrances.

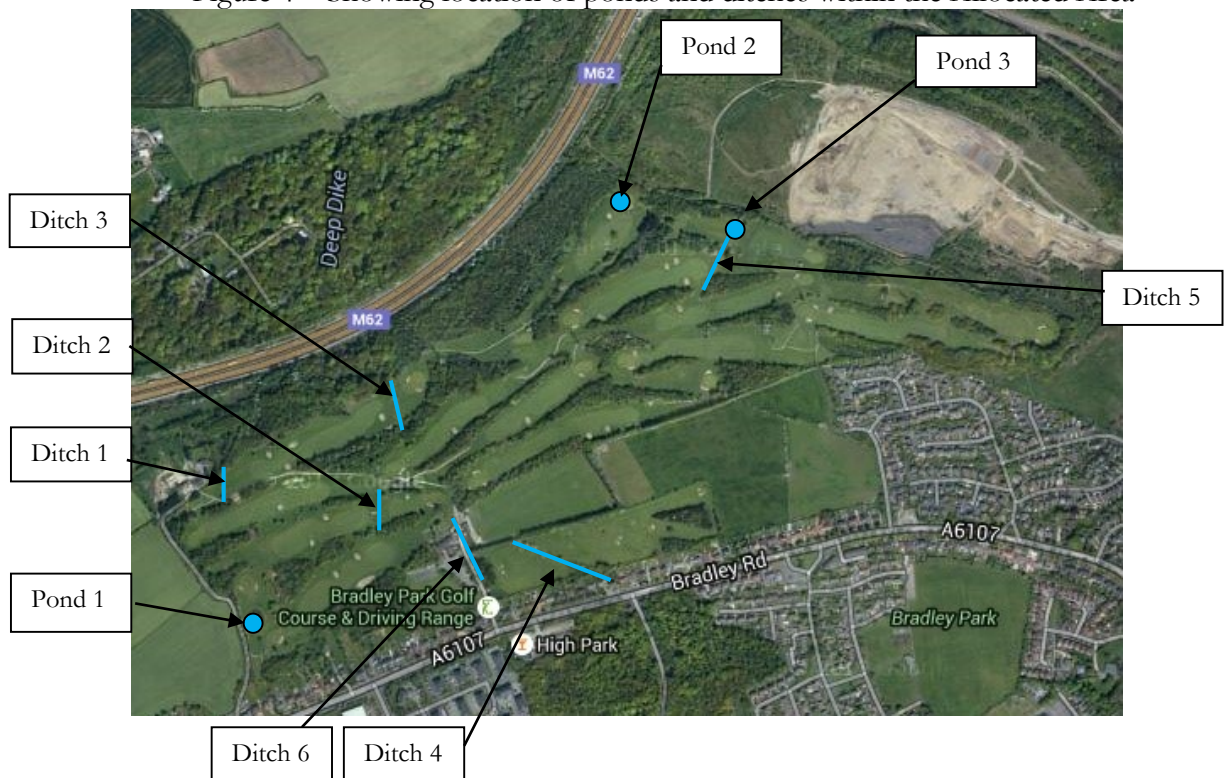
- Survey for latrines and droppings.
- Remains of feeding stations.
- Runways through vegetation.
- Paths along the water's edge.
- Footprints.
- Dead animals or parts of dead animals.

6.11.3 An assessment of habitat suitability for each watercourse was carried out for water voles following the methodology in the IEEM 'In Practice' (September 2009), rating each watercourse on a scale of 1 to 8 with 1 & 2 unsuitable, 3, 4 & 5 sub-optimal and 6,7and 8 optimal habitats for water vole.

6.11.4 As well as water voles, American mink *Neovison vison* were also looked for; this species has had detrimental impacts on water voles throughout Britain and Europe where it has become established in the wild. Suitable site mitigation measures for water voles require the knowledge of mink population densities within the local area.

6.11.5 Results.

Figure 4 – Showing location of ponds and ditches within the Allocated Area



6.11.5.1 Water Vole Habitat suitability table

Habitat suitability feature	Score 1 if present								
	Ditch 1	Ditch 2	Ditch 3	Ditch 4	Ditch 5	Ditch 6	Pond 1	Pond 2	Pond 3
Waterbody									
Well-developed (>60%) bankside and emergent vegetation to provide cover	-	-	-	-	-	-	-	-	-
Year round availability of food sources	-	-	-	-	-	-	1	1	1
Suitable refuge areas above extremes in water levels	-	-	-	-	-	-	-	-	-
Steep banks suitable for burrowing	1	1	1	1	1	1	-	-	-
Permanent open water	-	-	1	-	-	-	1	1	1
Presence of berm (ledge at water level)	-	-	-	-	-	-	-	-	-
Lack of disturbance through poaching, grazing and/or recent management	-	-	-	-	-	-	-	-	-
Nest building opportunities in vegetation above water level	-	-	-	-	-	-	-	-	-
Habitat suitability assessment score	1	1	2	1	1	1	2	2	2

6.11.5.2 All water bodies within the Allocated Area, scored either a 1 or 2 in the water vole habitat suitability index, this equates to unsuitable habitat (in accordance with IEEM).

6.11.5.3 There were no sightings or evidence to suggest that water vole is present on the watercourses or water bodies within the Allocated Area. However, some sections of these ditches were inaccessible at the time of survey.

6.11.5.4 The proposed development area is unlikely to support water voles because:

- There are no records within 3km of the Allocated Area (see 6.4.4); water voles exist in meta-populations. The likelihood of presence is significantly decreased in isolated areas, away from known populations.
- The Allocated Area contains poor vegetation diversity along its banks.
- The ditches are culverted and isolated; the surrounding drained landscape (owing to buildings) has few ditches, streams and drains, and lacks and suitable aquatic habitat connectivity for this species.
- Water voles are closely associated with diverse native vegetation. Rich diversity of aquatic and terrestrial macrophytes for feeding, nest building and

cover occur within the Allocated Area.

- The shallow, narrow, ephemeral nature of the ditches does not allow sufficient means of escape from predators. Water voles require some areas of open water with sufficient depth to evade capture and feed on aquatic plants. It is likely that this ditch occasionally dries up, resulting in no aquatic habitat for periods of time.
- The Allocated Area is relatively disturbed by pedestrians.
- No dense terrestrial vegetation occurs on either bank before changing to either amenity grassland. This further reduces the ability for nest building, escaping from predators and areas of refuge in the event of flooding.
- The short length of exposed ditch between culverts would only allow 1-2 territories of breeding animals. This small isolated area would be unviable and unlikely to persist without inbreeding, given the isolated nature of the site.
- No signs of water voles were observed during the field survey although this is likely to be because of the time of year.

6.11.6 The Allocated Area is considered to be unsuitable for water voles. No further surveys or mitigation are recommended.

6.12 Otter Survey

6.12.1 This involved walking the banks of all waterbodies in and adjacent to the Allocated Area, to identify field signs (see below). With regard to resting sites, these were considered on the basis of being sites that are typical of the places known to be used by otters for lying-up and show evidence of use. Three categories were used to describe resting sites:

- **Actual resting sites** were where there were signs that the site was well used by otters including a well trampled entrance, otter spraints and footprints.
- **Possible resting sites** were where the site was typical of an otter resting site with obvious evidence that it was being used by a mammal but no signs that otters were using the site.
- **Potential resting sites** were areas that are typical of an otter resting site but with no signs of use.

6.12.2 Otter signs were looked for in a systematic manner, checking prominent habitat features such as islands, headlands and inlets. Within these areas suitable features including rocks, logs, tussocks, swan nests etc. were looked at for signs of spraints and bare wet ground for footprints. Specifically, the visual survey involved:

- Actual sightings.
- Evidence of holts.
- Evidence of "Couches" resting places
- Survey for spraints.
- Evidence of feeding remains.
- Trails.
- Footprints.

6.12.3 Results.

6.12.3.1 There was no evidence to suggest that otter is present within this locality; no holts were located within the Allocated Area or on accessible adjoining land. It is unlikely that otters would breed within this area due to the high levels of disturbance from

pedestrians and dog walks and limited areas to develop holts. The ponds and waterbodies are of limited value to foraging otters.

6.12.4 **No further surveys or mitigation is recommended.**

6.13 White-clawed Crayfish

6.13.1 Survey Methodology.

6.13.2 The ponds and watercourses were assessed for their potential to hold white-clawed crayfish during the field survey.

6.13.3 Due to crayfish being largely inactive during the winter and lying dormant in deeper areas or under compact refugia, a hand search was not conducted.

6.13.4 Results.

6.13.4.1 Pond 1 is a known ARK Site for white clawed crayfish *Austropotamobius pallipes*, with crayfish added to it in 2011. Consequently, it is not known whether a population still persists within this pond. It is not known whether they occur in other ponds or watercourses on site.

6.13.4.2 Consequently, Wold Ecology concludes that the Allocated Area has an increased likelihood for containing white clawed crayfish.

7.0 EVALUATION OF SURVEY RESULTS.

7.1 Overall Approach to Assessment.

7.1.1 The overall approach to assessment followed in this report can be summarised as: A baseline identification of the nature conservation interest within the ecological Allocated Area by establishing levels of interest for ecological features measured against definable criteria. The term Valued Ecological Receptor (VER) is used to describe the species, communities, habitats or sites selected for detailed study during the process of the ecological assessment.

7.2 Evaluation Criteria.

7.2.1 The thorough evaluation of the ecological importance of a site is essential in order to assess the significance of the ecological assessment

7.2.2 The evaluation criteria are given in detail in Appendix 6. Their aim is to consider the habitats, communities and species present on site in relation to the following:

- The legislative framework (e.g. the Wildlife and Countryside Act 1981, Habitats and Species Regulations 2010 and the EC Directive on the Conservation of Habitats and Wild Fauna and Flora (92/43/EEC) for the presence of protected species and habitats).
- Nature conservation designations, including national site designations (Sites of Special Scientific Interest, National Nature Reserves etc.), local designations (Sites of Importance for Nature Conservation, Local Nature Reserves, County Wildlife Sites etc.).
- Accepted criteria for species rarity and declining populations, and rarity of habitat types or communities, including species and habitats identified in the British Red Data Books, national biodiversity action plan, and species and habitats identified in regional or local biodiversity action plans where available.
- Accepted criteria for overall site evaluation (including rarity, diversity, naturalness, historical factors and issues relating to landscape ecology).

7.3 Evaluation of Survey Results.

7.3.1 The field survey work did not identify the presence of any habitats or plant species considered rare in the United Kingdom.

Rarity is defined in this report as:

Rare—species not recorded in more than 100, 10 x 10 km grid-squares in the British Isles.

Very Rare—species not found in more than 15 different 10 x 10 km grid-squares in the British Isles.

7.4 Habitats

7.4.1 Biodiversity Action Plans (BAP) and Species and Habitats of Principal Importance for the Conservation of Biological Diversity

7.4.1.1 In 1995, 'Biodiversity: The UK Steering Group Report' was published, which aimed to conserve and enhance biological diversity within the UK, including action plans for 38 key habitats and for 402 of our most threatened species. These plans describe the status of each habitat and species, outline the threats they face, set targets and objectives for their management, and propose actions necessary to achieve recovery. The Biodiversity Action Plans (BAP) have recently been updated, new ones added and others removed, so there are now 1,149 species and 65 habitats that have been listed as priorities for conservation action. A list of these UK BAP species and habitats can be found at <http://www.ukbap.org.uk/NewPriorityList.aspx>.

7.4.1.2 In addition there are approximately 150 Local Biodiversity Action Plans (LBAP), normally at county level. These plans usually include actions to address the needs of the UK priority habitats and species in the local area, together with a range of other plans for habitats and species that are of local importance or interest.

7.4.1.3 The following BAP Habitats are recorded on site.

UK BAP broad habitat.	UK BAP priority habitat.	Habitat present within the Allocated Area .
Rivers and Streams	Rivers	N
Standing Open Waters and Canals	Oligotrophic and Dystrophic Lakes	N
	Ponds	Y
	Mesotrophic Lakes	N
	Eutrophic Standing Waters	N
	Aquifer Fed Naturally Fluctuating Water Bodies	N
Arable and Horticultural	Arable Field Margins	N
Boundary and Linear Features	Hedgerows	Y
Broadleaved, Mixed and Yew Woodland	Traditional Orchards	N
	Wood-Pasture and Parkland	N
	Upland Oakwood	N
	Lowland Beech and Yew Woodland	N
	Upland Mixed Ashwoods	N
	Wet Woodland	N
	Lowland Mixed Deciduous Woodland	Y
	Upland Birchwoods	N
Coniferous Woodland	Native Pine Woodlands	N
Acid Grassland	Lowland Dry Acid Grassland	N
Calcareous Grassland	Lowland Calcareous Grassland	N
	Upland Calcareous Grassland	N
Neutral Grassland	Lowland Meadows	N
	Upland Hay Meadows	N
Improved Grassland	Coastal and Floodplain Grazing Marsh	N
Dwarf Shrub Heath	Lowland Heathland	N
	Upland Heathland	N
Fen, Marsh and Swamp	Upland Flushes, Fens and Swamps	N

	Purple Moor Grass and Rush Pastures	N
	Lowland Fens	N
	Reedbeds	N
Bogs	Lowland Raised Bog	N
	Blanket Bog	N
Montane Habitats	Mountain Heaths and Willow Scrub	N
Inland Rock	Inland Rock Outcrop and Scree Habitats	N
	Calaminarian Grasslands	N
	Open Mosaic Habitats on Previously Developed Land	N
	Limestone Pavements	N
Supralittoral Rock	Maritime Cliff and Slopes	N
Supralittoral Sediment	Coastal Vegetated Shingle	N
	Machair	N
	Coastal Sand Dunes	N
Marine Habitats		N

7.4.2 Ponds

7.4.2.1 Description

7.4.2.2 Ponds, for the purpose of UK BAP priority habitat classification, are defined as permanent and seasonal standing water bodies up to 2 ha in extent which meet one or more of the following criteria:

- Habitats of international importance: Ponds that meet criteria under Annex I of the Habitats Directive.
- Species of high conservation importance: Ponds supporting Red Data Book species, UK BAP species, species fully protected under the Wildlife and Countryside Act Schedule 5 and 8, Habitats Directive Annex II species, a Nationally Scarce wetland plant species, or three Nationally Scarce aquatic invertebrate species.
- Exceptional assemblages of key biotic groups: Ponds supporting exceptional populations or numbers of key species. Based on (i) criteria specified in guidelines for the selection of biological SSSIs (currently amphibians and dragonflies only), and (ii) exceptionally rich sites for plants or invertebrates (i.e. supporting ≥ 30 wetland plant species or ≥ 50 aquatic macroinvertebrate species).
- Ponds of high ecological quality: Ponds classified in the top PSYM category (“high”) for ecological quality (i.e. having a PSYM score $\geq 75\%$). [PSYM (the Predictive SYstem for Multimetrics) is a method for assessing the biological quality of still waters in England and Wales; plant species and / or invertebrate families are surveyed using a standard method; the PSYM model makes predictions for the site based on environmental data and using a minimally impaired pond dataset; comparison of the prediction and observed data gives a % score for ponds quality].
- Other important ponds: Individual ponds or groups of ponds with a limited geographic distribution recognised as important because of their age, rarity of type or landscape context e.g. pingos, duneslack ponds, machair ponds.

7.4.2.3 Priority habitat ponds can be readily identified by standard survey techniques such as those developed for NVC, Common Standards Monitoring, the National Pond Survey or for specific species groups. Ponds will need to be distinguished from

other existing priority habitat types. The general principle to be applied is that where the standing water element is functionally a component of another priority habitat and that priority habitat definition takes account of the standing water element then it should be treated as part of that habitat. For example small waterbodies within blanket bog should be considered as part of the blanket bog priority habitat, but ponds in heathland (which are not dealt with through the heathland HAP) should be considered under the pond priority habitat. Agreement has been reached with the lake HAP group that the pond priority habitat will cover most water bodies up to 2 ha while the lake priority habitat will cover most water bodies greater than 2ha. As with other potentially overlapping priority habitat types a small proportion of cases will need to be individually assessed to decide how they are best dealt with.

7.4.2.4 Ponds are widespread throughout the UK, but high-quality examples are now highly localised, especially in the lowlands. In certain areas high quality ponds form particularly significant elements of the landscape, e.g. Cheshire Plan marl pits, the New Forest ponds, pingos of East Anglia, mid-Wales mawn pools, the North East Wales pond landscape, the forest and moorland pools of Speyside, dune slack pools, the machair pools in the Western Isles of Scotland, and examples of Habitats Directive Annex I pond habitats across Northern Ireland.

7.4.2.5 Pond creation/enhancement

7.4.2.5.1 The terrestrial habitat surrounding ponds 1, 2 and 3, which appears to be prone to flooding, can be used as an area of wetland in which a number of additional ponds can be created. It is important that an area of wetland intermixed with reedbeds, open water and wet grassland is created as opposed to a single large lake. A lake is likely to offer a much limited biodiversity value to this site, and the associated risk of fish and wildfowl colonisation could seriously jeopardise the ecological value of the ponds.

7.4.2.5.2 There is great potential to vastly improve the flora and fauna value of the Allocated Area and surrounding habitats through the creation of new ponds. The potential value of the pond to breeding amphibians, breeding birds, invertebrates, plants and small mammals will be significant. Additionally, ponds add a huge aesthetic value to an environment in which the owners of the pond can enjoy.

7.4.2.5.3 Wildlife ponds should be an irregular shape with bays, peninsulas, shallows and deeper areas. The margins should be shallow gently sloping off to a central channel which should have a maximum winter depth of approximately 1 metre in the centre. Approximately 70% of the ponds total area should be made up of the shallow sloping margins. The ponds diversity also increases when creating micro-habitats such as small seasonal pools within the ponds margin. New ponds should be between 500-750m², in full sunlight away from tree cover and be planted with a range of native aquatic vegetation.

7.4.2.5.4 It is important to develop a shallow pond as this offers more optimum habitat for a large diversity of species. Amphibians for example prefer shallow ponds as they heat up at a faster rate helping speed up the metamorphosis of their larvae as well as providing more larval food in the form of algae and invertebrates and increase plant growth for cover and egg laying. Birds also benefit from shallower pools as it allows them to bathe and forage on invertebrates in the shallow or exposed mud

around the ponds edge. In addition, creating as much shoreline length as possible further increases the value to foraging birds and invertebrates.

- 7.4.2.5.5 Wildlife ponds should be linked to surrounding habitat features such as hedgerows, woodland and rough grassland. Linking ponds to habitat features helps increase the dispersal opportunities and speed for a wide variety of species. It also provides them with a safer way to and from the site. This can be achieved by encouraging rough uncut strips of grassland linking the pond to these areas, these act as highways for wildlife to travel between different habitat types.
- 7.4.2.5.6 The water table appears to be high at the site, so filling the new ponds is unlikely to be problematic. Initially filling an empty pond up, which has limited plant growth and no micro-organisms often results in the pond water turning green; especially if pond creation occurs during the warmer summer months. This is due to an early bloom of phytoplankton which quickly turns the pond water green. This may not occur instantly and may happen after several weeks depending on a variety of factors. This problem soon corrects itself as zooplankton communities which feed on phytoplankton increase due to the abundance of their food. These graze the phytoplankton and eventually equilibrium (clear water in this case) is met. A pond of this design should stay clear all year. If excessive nutrients are entering the water which are too much for the zooplankton to process the pond will turn green again. This could be due to agro-chemical drift/runoff, garden chemical drift/runoff, fish, wildfowl, livestock nutrients leeching into the pond and excessive leaf litter entering the water. The source of the problem needs to be identified before the good water quality returns. Measures such as floating barley or chemicals are best avoided; dealing the root cause is more effective. A suitable buffer of rough grassland around the ponds should help protect them from nitrate input, retaining their aesthetic value.
- 7.4.2.5.7 Wildfowl should not be encouraged to a pond as they create a large range of problems. Mallards *Anas platyrhynchos* in particular graze aquatic vegetation, trample banks, eat amphibian larvae and defecate in the water. These factors increase nutrient input into the water which eventually turns the water green (as a result of algal blooms). This blocks out light and reduces plant growth, the green water then result in the pond having a much reduced ecological value. Most ponds however are capable of supporting nesting moorhens or little grebes *Tachybaptus ruficollis* these species do not exhibit the same problems as ducks and should be encouraged to stay, through minimal disturbance to them. Fish should not be introduced to the pond or allowed to become established. Most pond wildlife struggles to co-exist with fish and as a result large numbers of invertebrate species and amphibians such as common frog, great crested newt and smooth newt will disappear from the pond, as fish populations become more established. Additionally fish soon multiply creating heavily turbid water whilst foraging or through nutrient input. Even several goldfish *Carassius auratus auratus* within a pond can cause a large reduction in tadpole survivorship. If fish such as sticklebacks *Gasterosteus aculeatus* and *Pungitius pungitius* or perch *Perca fluviatilis* arrive naturally to the pond they should be removed. These species are successful colonizers of isolated ponds and are highly predatory, significantly reducing amphibian and invertebrate diversity.
- 7.4.2.5.8 Wildlife ponds should be specifically designed to include a series of buffers around the banks to intercept pollutants and phosphates which may have a negative impact of the water quality and species using the pond. This can be done through

the creation of rough grassland, marginal vegetation and hedgerows, all of which offer a sufficient level of protection to the pond and should be maintained.

- 7.4.2.5.9 The habitat surrounding the ponds are often just as important as the pond itself and needs to be incorporated into any pond creation plan or management plan. An area of grassland surrounding the pond will be managed on a 2-3 year rotation and will be allowed to revert to tussock bearing rough wet grassland. However, this must not be allowed to grow into woodland; it is important to keep all shrubs particularly willows away from the ponds margins as it can become over dominant. This habitat offers value to amphibians, small mammals and nesting birds. It will provide a variety of micro-habitats within it dominated by grass tussocks, reedbeds and ruderal vegetation stands comprising nettle, campion and willowherbs.
- 7.4.2.5.10 Log piles, brash piles, habitat stacks and custom build hibernacula (see figures 5 and 6) should be created within the area surrounding a pond, they are all cheap to build and very successful. These should preferably be sourced from local plantations using the wood from native tree species (i.e. beech, oak, ash, hawthorn and elder). They should be built up with a variety of different trunk/branch sizes with some small thin sections and some larger thicker sections. They should be tightly packed together leaving small gaps as entrances. Additionally a purpose built hibernaculum should be made this is made in a similar way but the log pile is then covered in rubble and soil to create a mound with gaps in its sides. These hibernacula will offer important hibernation sites for amphibians, invertebrates and hedgehogs. They will also provide nesting and foraging areas for small mammals and birds in the summer.

Figure 5 - Terrestrial Hibernaculum/refugia (modified from *Langton et al 2001*)

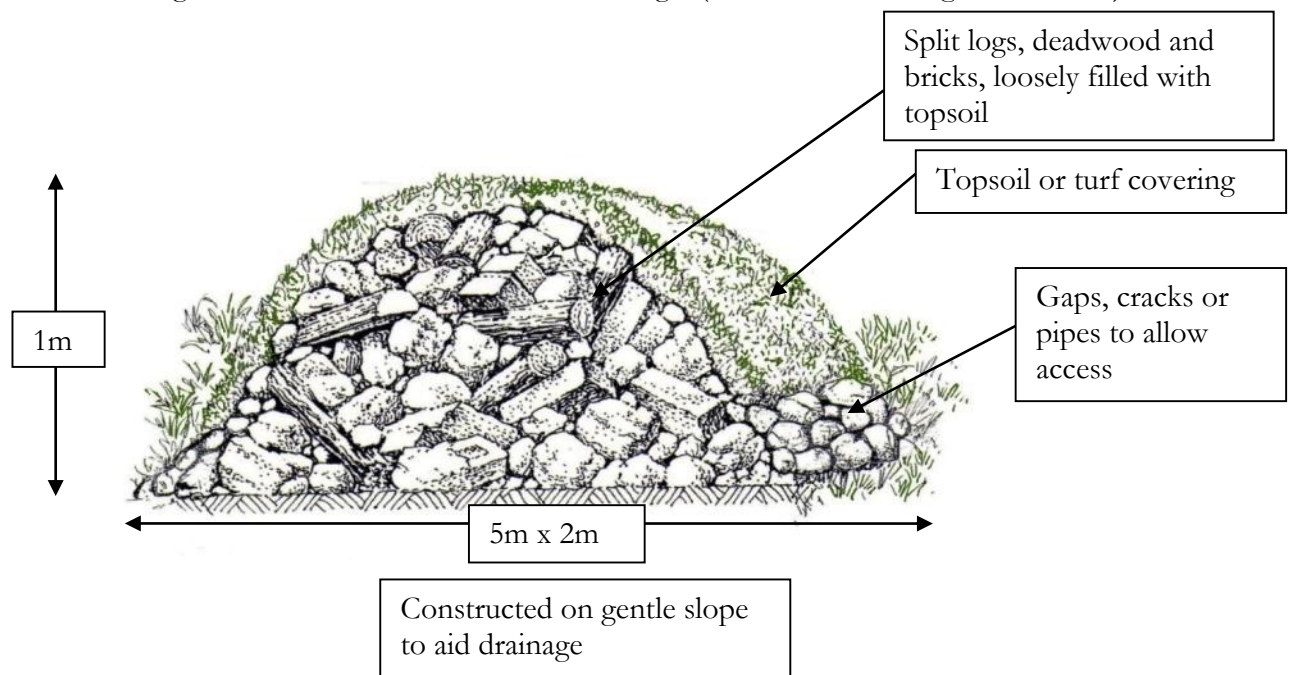
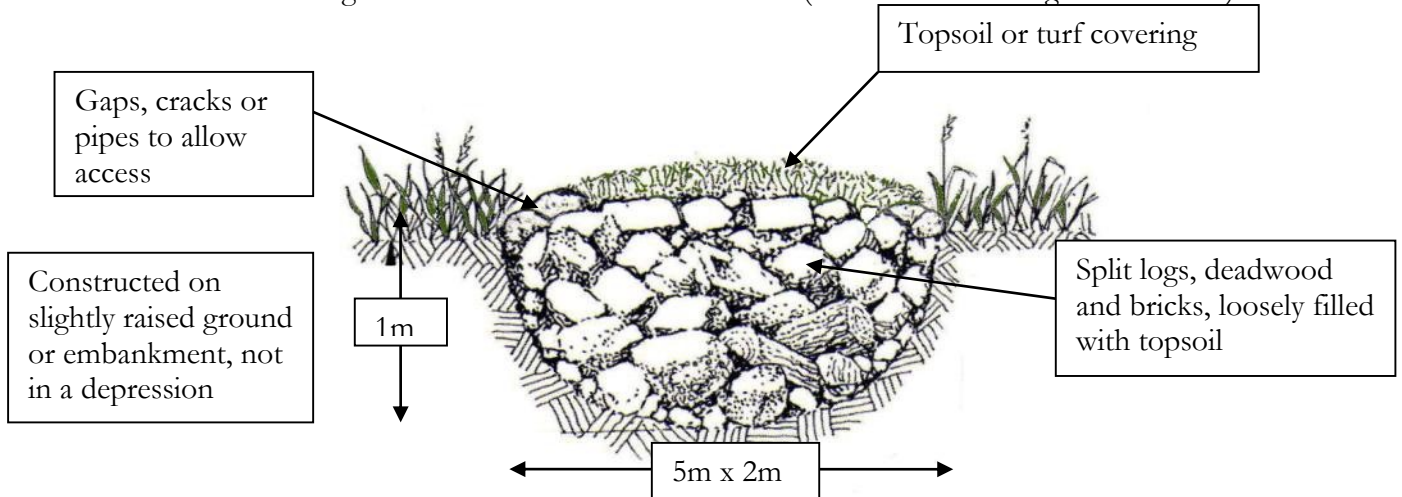


Figure 6 - Subterranean Hibernaculum (modified from *Langton et al 2001*)



7.4.2.5.11 The new ponds and pond 3 should be planted with a variety of native pond plants. A List of species to use is highlighted blow:

- Ragged Robin *Lychnis flos-cuculi*;
- Soft Rush *Juncus effusus*;
- Cuckoo Flower *Cardamine pratensis*;
- Marsh Marigold *Caltha palustris*;
- Meadow Sweet *Filipendula ulmaria*;
- Marsh Cinquefoil *Potentilla palustris*;
- Yellow Flag Iris *Iris pseudacorus*;
- Purple Loosestrife *Lythrum salicaria*;
- Brooklime *Veronica beccabunga*;
- Water Plantain *Alisma plantago-aquatica*;
- Water forget-me-not *Myosotis scorpioides*;
- Water Mint *Mentha aquatica*;
- Duckweed *Lemna minor*;
- Mare's-tail *Hippuris vulgaris*;
- Fennel-like Pondweed *Potamogeton pectinatus*;
- Greater Spearwort *Ranunculus lingua*;
- Arrowhead *Sagittaria sagittifolia*;
- Frogbit *Hydrocharis morsus-ranae*;
- Amphibious bistort *Polygonum amphibium*;
- Water Crowfoot *Ranunculus aquatilis*;
- Spiked Water-milfoil *Myriophyllum spicatum*;
- Common Water Starwort *Callitriche stagnalis*;
- White Water Lily *Nymphaea alba*;
- Water Soldier *Stratiotes aloides*;
- Willow Moss *Fontinalis antipyretica*;
- Curled Pondweed *Potamogeton crispus* and;
- Common Hornwort *Ceratophyllum demersum*.

7.4.2.5.12 An area of wet grassland interspersed with reedbeds should be positioned in the land surrounding the ponds. Access through this habitat can be created with a board walk system. This will reduce disturbance to the site and is a means of

controlling access to certain areas. Reedbeds should be created around the wide shallow margins of the new ponds.

7.4.2.6 Working adjacent to watercourses

7.4.2.6.1 Potential discharge of foul water into the adjacent watercourses should be addressed by a Land Drainage Consultant.

7.4.2.6.2 Legislation dictates that foul water discharge into the water course or and a manure management and pollution prevention strategy in compliance with Nitrate Pollution Prevention Regulations (2008), Environment Agency guidelines and farming best practice should be produced separately by a specialist consultant.

7.4.2.6.3 Under the Water Resources Act 1991 and associated byelaws, works in, over, under or adjacent to ‘main rivers’ require the consent of the Environment Agency. This is to ensure that they neither interfere with the Agency’s work nor adversely affect the environment, fisheries, wildlife and flood defence in the locality. The Environment Agency functions under the responsibilities of the Environment Act 1995. The EC Habitats Directive protects Special Areas of Conservation (SAC) and Special Protection Areas (SPA) and special consents are required from Natural England or the Countryside Council for Wales (in Wales only).

7.4.2.6.4 Construction and maintenance activities in or near water have the potential to cause serious pollution or impact on the bed and banks of a watercourse and on the quality and quantity of the water. Some activities with the potential for affecting watercourses or groundwater may require either consent in England and Wales under the Water Resources Act 1991 or an authorisation in Scotland under the Water Environment (Controlled Activities) (Scotland) Regulations 2005.

7.4.2.6.5 Types of activity that may impact upon the bed and banks of a watercourse or of a wetland include:

- repairs, maintenance or improvements to any structure in, over or above main river (as defined in the Water Resources Act 1991)
- erection or construction of any structure, either permanent or temporary, in, over or above main river
- diversion of flows
- works within the river channel or a lake/loch
- works within 10 metres of a main river watercourse or flood defence (in England, Northern Ireland and Wales).

7.4.2.6.6 Run off from site roads and river crossings can contain high levels of silt. Reducing the pollution risk can be achieved by:

- brushing or scraping roads to reduce dust and mud deposits
- putting small dams in artificial roadside ditches to retain silt
- using existing permanent bridges or pipe crossings for river crossing
- if necessary building temporary bridges - but not fording rivers and
- working from the bank where possible – not in the river

7.4.2.6.7 Fresh concrete and cement are very alkaline and corrosive and can cause serious pollution. Concrete and cement mixing and washing areas should:

- be sited 10 metres from any watercourse or surface water drain to minimise the risk of run off entering a watercourse

- have settlement and re-circulation systems for water reuse, to minimise the risk of pollution and reduce water usage
- have a contained area for washing out and cleaning of concrete batching plant or ready mix lorries
- Wash waters from concrete and cement works should never be discharged in to the water environment.

- 7.4.2.6.8 Ensure machinery is properly maintained, check for oil leaks before use. There are risks of pollution from fuel, oils and silt associated with use of machinery which could result in prosecution. Particular attention should be paid to using chainsaws in or near the water's edge as chain oil sprayed during operation easily contaminates the water. Follow the correct procedures and if possible use biodegradable oil to reduce this risk
- 7.4.2.6.9 Ensure fuel, oil and chemical storage on site is secure. Site the storage on an impervious base within a secondary containment system such as a bund. The base and bund walls should be impermeable to the material stored and able to contain at least 110% of the volume stored. Site the storage area above any flood water level and where possible away from high-risk locations (such as within 10 metres of a watercourse or 50 metres of a well, borehole or spring), to minimise the risk of a spill entering the water environment. Biodegradable chainsaw chain bar lubricant and biodegradable hydraulic oil in plant should be used when working in or near watercourses. The Environment Agency and its contractors use biodegradable oils for their own operations. Biodegradable oils are less toxic than most of the synthetic oil but should still be stored and used to the same standards as other oils.
- 7.4.2.6.10 Keep a spill kit with sand, earth or commercial products that are approved for your stored materials, close to your storage area. Train staff on how to use these correctly.
- 7.4.2.6.11 In no circumstance should burning take place in the river channel or close to the bank edge and ash must not blow or wash into the watercourse as it is harmful to water life
- 7.4.2.6.12 Be sure to stack or remove any material well away from the river to avoid it being washed into the water again during the next flood.

7.4.3 Hedgerows

- 7.4.3.1 A hedgerow is defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less than 20m wide (Bickmore, 2002). Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow. All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are covered by this priority habitat, where each UK country can define the list of woody species native to their respective country. Climbers such as honeysuckle and bramble are recognised as integral to many hedgerows, however they require other woody plants to be present to form a distinct woody boundary feature, as such they are not included in the definition of woody species. The definition is limited to boundary lines of trees or shrubs, and excludes banks or walls without woody shrubs on top of them.
- 7.4.3.2 Based on an analysis of Countryside Survey data, using the threshold of at least 80% cover of any UK native woody species, it is estimated that 84% of countryside hedgerows in GB would be included. Hedgerows are a primary habitat for at least 47 species of conservation concern in the UK, including 13 that are globally threatened or rapidly declining, more than for most other key habitats. They are especially important for butterflies and moths, farmland birds, bats and dormice (where locally present).
- 7.4.3.3 Since 1945 there has been a continual decline in both the quantity and quality of the UK's native hedgerows either through removal or poor management practices. The Environment Act 1995 introduced an enabling power to protect important hedgerows in Britain. Land managers are required to consult local authorities before hedgerows can be removed. Article 10 of the EC Habitats Directive requires member states to encourage the management of linear features such as hedgerows in their planning and development policies and, in particular, with a view to improving the ecological coherence of the Natura 2000 network. This is supported by the Habitats and Species Regulations 2010, which recognises the importance of these features for the migration, dispersal and genetic exchange of wild species. NPPF further encourages the development of policies for the management of hedgerows.
- 7.4.3.4 UKBAP targets for hedgerows are:
- Maintain the net extent of hedgerows across the UK
 - Maintain the overall number of individual, isolated hedgerow trees and the net number of isolated veteran trees;
 - Ensure that hedgerows remain, on average, at least as rich in native woody species
 - Achieve favourable condition of 348,000 km (50%) by 2015
 - Reverse the unfavourable condition of over-managed hedgerows across the UK by reducing the proportion of land managers who trim most of their hedges annually
 - Halt further decline in the condition of herbaceous hedgerow flora in Great Britain by 2010 (and improve their condition by 2015)
 - Improve the condition of the hedgerow tree population by increasing numbers of young trees (1-4 years) in Great Britain to 80,000 by 2015 and
 - Achieve a net increase in the length of hedgerows of an average of 800 km

per year in Great Britain to 2015.

- 7.4.3.5 If applicable, hedges should be cleared outside of the bird nesting season (i.e. clearance should be undertaken between mid-September and early February inclusive) or be carefully checked by an ecologist to confirm no active nests are present - prior to removal during the summer period. If nesting birds are found during the watching brief, works will need to stop until the young have fledged. **Permission should be granted from the planning authority prior to removing a hedge.**
- 7.4.3.6 During the construction period, it is important that a root protection exclusion zone is in place adjacent to any hedgerow. This must be at least 5m from the centre of the hedge and must be kept free of plant and storage of building supplies.
- 7.4.3.7 The hedgerows bounding the site should ideally be maintained to a minimum height of at least 2m and kept free of fertilisers, pesticides and development on land within 3m of the hedge centre. The long term management of these hedges will add to their biodiversity value; the hedge should be cut only once every three calendar years and should not be cut between the beginning of February and mid-September to ensure breeding birds are not disturbed. Hedge cutting should be occur outside of the bird nesting season (i.e. clearance should be undertaken between mid-September and early February inclusive) or be carefully checked by an ecologist to confirm no active nests are present - prior to removal during the summer period. Cutting the hedge in January will provide maximum quantities of food for birds over winter.
- 7.4.3.8 The hedgerows should be trimmed every three years at the end of winter, avoiding periods of hard frost. This is to maintain the current shape and condition of the hedgerows. Hedgerows less than 2m in height should be lightly trimmed along the sides annually until a desired height of at least 2.5m is reached.
- 7.4.3.9 Currently, the hedgerow bases are quite sparse with a limited forbe layer. A minimum 3m grass margin adjacent to the hedges adjacent within the Allocated Area should be encouraged and allowed to provide rough grassland dispersal routes and habitat for small mammals. The hedgerow should be cut during late summer (August/September) with all cuttings should be removed from the site to stop soil enrichment and the smothering of less competitive species of herb. The grassland should be cut every 2-3 years, as part of the management program on a 2-3 year rotation, to avoid scrub encroachment. The grassland margins should be topped at 12cm to encourage tussocks.
- 7.4.3.10 Some of the larger leggy hedgerows are beyond the laying stage and would benefit from infilling gaps with new shrubs rather than coppicing. The standing dead, dying and old wood is a feature which should be retained.
- 7.4.3.11 The new hedgerows should consist of:
- Hawthorn
 - Blackthorn
 - Holly
 - Hazel
 - Holly
 - Dogwood

- Field Maple
 - Crab Apple
 - Guelder Rose
- 7.4.3.12 Planting should be carried out between October and March. Eight plants should be planted per metre with a gap of approximately 25cm between each plant, in two staggered rows. Thorn species should comprise 45-70% of the hedge. Blackthorn is particularly good at filling gaps due to its suckering nature.
- 7.4.3.13 Areas of new hedgerow should be sprayed with an approved herbicide each year to reduce the competition with broadleaved perennial species. Additionally, all hedgerow plants need to be protected with tree tubes, this is pivotal at this site due to the abundance of rabbits. Tree tubes help speed up the growth of the plant by maintaining a warm climate and reducing the effects of wind. These new sections of hedgerows should be laid, between mid-November and early March every 10-30 years to achieve a dense structure.
- 7.4.3.14 All standing trees should be maintained within the hedgerow and existing gaps may be filled with trees to create new hedgerow trees. These trees are important for nesting birds in particular yellowhammer.
- 7.4.3.15 In order for the Allocated Area to be enhanced for biodiversity, hedgerows to be planted should contain a diversity of species. However, a beech hedge has been chosen to meet the requirements of the site.
- 7.4.3.16 Hedges should be planted between November and mid March.
- 7.4.3.17 All trees and hedge plants must be protected with 1.2m tubes and stakes. They should also be kept weed free for approximately 5 years after planting or until well established.
- 7.4.3.18 The ground will be treated with an application of an approved herbicide at least 4 weeks prior to planting to produce an overall kill of ground vegetation. The ground will then be cultivated to a depth of 150mm before planting work commences. This work will ensure that any ground compaction will be broken up and weed competition removed. Topsoil will be provided to ensure a minimum of 500mm of topsoil for all planting areas.
- 7.4.3.19 The native hedge planting will be undertaken at a density of 6 plants per metre and with native species described in the planting schedule. Small groups of between 2 and 5 plants will be planted in groups to provide a non-uniform hedge. The hedge will be planted in a double row and staggered to form a continual barrier and thick hedge structure.
- 7.4.3.20 Bare root fibres will be kept moist at all times. All plants are to be planted so that the top of the nursery mark is level with the final soil level. All hedge plants will be planted vertically using small pits or notch planting.
- 7.4.3.21 The hedgerows should be trimmed every three years at the end of winter, avoiding periods of hard frost. This is to maintain the current shape and condition of the hedgerows. Hedgerows less than 2m in height should be lightly trimmed along the sides annually until a desired height of at least 2.5m is reached.

- 7.4.3.22 All standing trees should be maintained within the hedgerow and existing gaps may be filled with trees to create new hedgerow trees. These trees are important for nesting birds.
- 7.4.3.23 The contractor will be responsible for programme of maintenance for both the communal / amenity planting areas. The maintenance work is to ensure that all trees and planting that fail to make active growth are replaced during the first available planting season for the first 12 months.
- 7.4.3.24 The contractor shall ensure that a weed free area of 1m is maintained around all newly planted trees and shrubs for the first 12 months following planting.
- 7.4.3.25 During the first 12 months from the date of planting the contractor will be responsible for adequate watering during periods of dry weather all newly planted, trees, shrubs, turf and grass seeded areas so as to ensure their survival. All deaths of trees, shrubs and areas of turf or grass seeded will be replaced at the contractor's expense.
- 7.4.3.26 During the first 12 months from the date of planting the contractor will be responsible for all deaths of trees and shrubs. Replacement will be at the contractor's expense.

7.4.4 Lowland deciduous woodland

7.4.4.1 Description

7.4.4.1.1 Lowland mixed deciduous woodland includes woodland growing on the full range of soil conditions, from very acidic to base-rich, and takes in most semi-natural woodland in southern and eastern England, and in parts of lowland Wales and Scotland. It thus complements the ranges of upland oak and upland ash types. It occurs largely within enclosed landscapes, usually on sites with well-defined boundaries, at relatively low altitudes, although altitude is not a defining feature. Many are ancient woods and they include the classic examples of ancient woodland studied by Rackham (1980) and Peterken (1981) in East Anglia and the East Midlands. The woods tend to be small, less than 20 ha. Often there is evidence of past coppicing, particularly on moderately acid to base-rich soils; on very acid sands the type may be represented by former wood-pastures of oak and birch.

7.4.4.1.2 There are no precise data on the total extent of lowland mixed deciduous woodland in the UK, but in the late 1980s the Nature Conservancy Council estimated the total extent of this type to be about 250,000ha. There is however no doubt that the area of this priority type on ancient woodland sites has declined in area by clearance, overgrazing and replanting with non-native species, by about 30-40% over the last 50 years.

7.4.4.2 Any trees to be retained should be protected by barriers erected following guidelines given in BS5837 "Trees in Relation to Construction". English Nature (2000) recommends that 'an exclusion zone of 15 times the diameter of the tree at breast height is created'. This will protect the roots from compaction and physical damage whilst protecting the tree from fertilizers and chemical applications. The latter can have a detrimental effect on the trees relationship with lichens and mycorrhizal fungi. Root protection zones should be free of plant, storage of building sundries

and excavation works should be limited where possible; this will help preserve the life of the trees.

- 7.4.4.3 The new planting of fruit bearing trees and shrubs should be considered to increase winter food sources for birds. The landscaping plan should consider habitat connectivity to other sites and enhance dispersion of fauna. Suitable local provenance trees to plant include :

Specie	Height	Comments
Blackthorn <i>Prunus spinosa</i>	3m	Important scrub coloniser.
Dogwood <i>Cornus sanguinea</i>	3m	Thrives on calcareous soils and provides nesting cover.
Hawthorn <i>Crataegus monogyna</i>	9m	Very tolerant and provides bird food.
Hazel <i>Corylus avellana</i>	6m	Thrives on calcareous soils.
Holly <i>Ilex aquifolium</i>	15m	Prefers drier soil, useful sub canopy tree.
Crab apple <i>Malus sylvestris</i>	6m	Bird, insect and small mammal food.
Dog rose <i>Rosa canina</i>	3m	Food for birds and insects.
Rowan <i>Sorbus aucuparia</i>	9m	Tolerates exposed sites. Bird and insect fruit.

7.4.4.4 Tree felling

- 7.4.4.4.1 The felling and planting shall be implemented over the minimum period to complete the whole of the works. Dates are subject to discussing and agreement with suitable environmental conditions prevailing. The Contractor must verify this programme of works before commencing on site.
- 7.4.4.4.2 No existing trees, shrubs or other plants shall be removed or cut without specific instructions from the client. Existing trees to be retained, protected and undisturbed throughout the contract in accordance with tree protection measures described and in accordance with BS 5837:2012.
- 7.4.4.4.3 No branches are to be cut or damaged and no roots larger than 75mm in diameter are to be cut or damaged on trees to be retained. No fires are to be lit under or within 15m of the trees. No debris, fuel, or building material of any sort to be stacked against or piled around the trunks.
- 7.4.4.4.4 Any trees and shrubs to be removed should be cleared outside of the bird nesting season (i.e. clearance should be undertaken between mid-September and early February inclusive) or be carefully checked by an ecologist to confirm no active nests are present - prior to removal during the summer period. If nesting birds are found during the watching brief, works will need to stop until the young have fledged.
- 7.4.4.4.5 It is recommended that stumps should be retained at varying heights from ground level to 1.5 in height, where safe to do so. This will create micro habitats for invertebrates and nesting birds whilst providing standing deadwood habitats that are safe for visitors. Standing deadwood should be left in situ were it is safe to do so.

7.5 Species

7.5.1 Bats

7.5.1.1 Legal obligations towards bats are generally concerned with roost protection. All developments, known to contain bat roosts, require a licence from Natural England. Under Section 9 of the Wildlife and Countryside Act (1981), it is an offence for anyone without a licence to kill, injure, disturb, catch, handle, possess or exchange a bat intentionally. It is also illegal for anyone without a licence to intentionally damage or obstruct access to any place that a bat uses for shelter or protection. Additional bat activity survey work will be required to determine the impact on bat populations. This will result in one of the following ways forward with the proposed development.

7.5.1.2 If a bat roost is identified and the proposed development activity will result in disturbance to the roost, it will be necessary to consult with Natural England and a Natural England development licence will be required.

7.5.1.3 Survey information will be required to inform the detail required for the Natural England licence application. The application process currently requires the input of a qualified bat ecologist/consultant and includes:

- The submission of a licence to capture, disturb and/or destroy the roosts or resting places of bats.
- The production of a detailed Method Statement to support the application. This will include a proposed work programme. One copy will be sent to a Natural England wildlife adviser for assessment. It should be noted that the Method Statement will be appended to any licence granted. The Method Statement will include the necessary mitigation required of the development.
- The production of a Reasoned Statement of Application to support the application. This will provide a rational and reasoned justification as to why the proposed activity meets the requirements of the Conservation of Habitats and Species Regulations 2010, Regulations 53(2)(e-g) and 53(9)(a-b).
- The usual timescale expected for the process of an application is approximately 30 working days from the date of acknowledgement of receipt. Natural England wildlife advisers are given 20 working days to fulfil requests for information. This timescale will also apply to requests for licence amendments.
- For additional information on licences please refer to Natural England Guidance Leaflet WML-G12 (www.naturalengland.org).

7.5.1.4 If no bat roosts are detected during the emergence/return surveys, the work can commence with adherence to a method statement which will identify safe working practices and precautions necessary to avoid injury or death to any bats that may be present in the buildings.

7.5.1.5 **In order to prevent any potential impacts occurring to bats present, Wold Ecology recommend bat activity surveys (emergence and return) are completed in spring/summer (May to August). The activity surveys should target the ash tree, building 1 (Clubhouse), Building 4 (Storage building), Building 5 (Storage building) and Building 6 (Storage building) – target notes 2 and 8-11.**

7.5.1.6 **In addition, boundary features, woodlands, watercourses and rough grassland habitats is suitable for foraging and commuting habitat. In order to determine the value of this habitat to commuting and foraging bats, bat transect surveys should be undertaken between April and October.** This will enable targeted management on site, retention of optimum bat habitats including dark corridors and enhanced foraging and dispersal routes.

7.5.1.6 Further bat activity surveys are required within 1 year of any demolition of the buildings. This will also ensure local planning good practise guidelines are followed.

7.5.2 **Great crested newt.**

7.5.2.1 Under British legislation, the great crested newt is given full protection under section 9 of the Wildlife and Countryside Act 1981 (as amended). This Act transposes into UK law the Convention on the Conservation of European Wildlife and Natural Habitats (commonly referred to as the 'Bern Convention'). This prohibits the intentional killing, injuring or taking, possession or disturbance of great crested newts whilst occupying a place used for shelter or protection and the destruction of these places. Protection is given to all stages of life (e.g. adults, sub-adults, larvae, and ova). Dull details of legal protection can be seen in Appendix 6.

7.5.2.2 Great crested newts, like all British amphibians, rely on water bodies for breeding, but otherwise spend much of their lives on land. They are ectotherms and have permeable skins, so most movement occurs when the air temperature is above approximately 5°C and there is, or has recently been rain.

7.5.2.3 Amphibians spend the winter in places where they will be protected from frost and flooding. Whilst on land outside of the hibernation period, great crested newts will also take refuge to shelter from extremes of weather; hence during the day they will often rest in dense vegetation, under refuges or underground. Adult great crested newts normally begin moving from their over-wintering land sites between February and April, with some adult newts not reaching the desired water body until May, depending on the weather. Not all life-stages enter water over the course of a year; immature newts (or efts) may spend all year on land.

7.5.2.4 **Wold Ecology recommends that a great crested newt presence or absence survey is undertaken on all suitable watercourses within 500m of the Allocated Area , prior to development work commencing.** The recommended great crested newt surveys must follow survey methods based on the guidance contained within 'Great Crested Newt Mitigation Guidelines' *English Nature*, 2001. The survey work will involve the following elements:

- Make an accurate and comprehensive assessment of the potential for great crested newts on the site and the likelihood of their presence within the development boundaries.
- Undertake four surveys of the site for great crested newt, including all ponds within 500m of proposed development. This includes seasonal ponds.
- An additional two surveys will be required if great crested newts are present. This is in order to assess the population size and is required to support any subsequent Natural England license.
- Submit a report detailing the above and offer a non-technical summary of the legal implications behind any great crested newt presence
- Make any initial recommendations for potential mitigations required in the light of survey and report, especially with regard to the need for a Natural

England license.

- The requirement for great crested newt presence or absence surveys should be included on any planning decision letter. A great crested newt ecologist will be present on site during the initial start of works; in order to provide advice to contractors, managers and implement any subsequent mitigation strategies.

7.5.2.5 Field Survey Methods.

7.5.2.5.1 Egg Search - This method involves searching both live and dead submerged vegetation for great crested newt eggs. English Nature (2001) state that ‘this is often a very effective method for detecting great crested newt presence’. English Nature (2001) also state that the optimum time for egg searches is between ‘April and June’.

7.5.2.5.2 Bottle Trapping - This method involves setting bottle traps (normally made from 2-litre plastic bottles) around the pond margin, and leaving the traps set overnight. A density of one trap per two metres of shoreline is recommended for general survey purposes. This is a particularly reliable method for detecting the presence of great crested newts.

7.5.2.5.3 Torch Survey - This method involves searching for great crested newts at night by shining a torch in the pond. In clear ponds this can be a simple and very effective way of detecting newts.

7.5.2.5.4 Netting - Using a long-handled dip-net, great crested newts can be captured by sampling the area around the pond edge. Netting can be conducted by day or night, but better results may be obtained at night when adult newts are more likely to be in open water. There should be at least 15 minutes of netting per 50m of shoreline.

7.5.2.5.5 English Nature (2001) recommends at least 3 of the 4 field survey methods are undertaken during each visit. Four visits are required to determine the presence/absence of great crested newts and these must be undertaken during suitable weather conditions and between the months of mid March to mid June; with at least two of these visits occurring between mid April and mid May.

Method.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Egg search.												
Bottle trapping.								(L)	(L)			
Torch survey.								(L)	(L)			
Refuge search.												

Most effective		Less effective		Not effective		Larvae search	(L)
----------------	--	----------------	--	---------------	--	---------------	-----

7.5.3 Birds

- 7.5.3.1 It is concluded that the study site is a good habitat for woodland and urban bird species with various designations. There is nesting potential for a range of bird families such as finches, tits, sparrows, thrushes, chats and raptors at the site.
- 7.5.3.2 The Phase 1 survey recorded habitats potentially valuable to protected and/or birds of conservation concern. **Wold Ecology recommends a breeding bird survey to enable the suit of breeding species to be assessed and mitigation recommended as appropriate.** The breeding bird survey would follow an abridged version of the Common Bird Census originally set up by the British Trust for Ornithology (BTO) and described within Bird Monitoring Methods, a manual of techniques for key UK species Gilbert et.al RSPB 1998. The Common Bird Census was designed to gather a large amount of detailed data in order to assess the number of territories for every species breeding within an Allocated Area. For this reason the CBC recommends 10 visits. Organisations such as the RSPB have more recently designed a simpler version of the CBC for projects such as the Volunteer Farming Alliance scheme by incorporating the detailed mapping of all species using the BTO recording codes but recommending only three visits. The purpose of this simplified method of breeding bird survey is to establish actual or likely breeding. If more detailed information is required on precise territories the full CBC would be recommended. Visits would be spaced evenly and made between March and late June.
- 7.5.3.3 Any trees, shrubs and vegetation to be removed should be cleared outside of the bird nesting season (i.e. clearance should be undertaken between mid-September and early February inclusive) or be carefully checked by an ecologist to confirm no active nests are present - prior to removal during the summer period. If nesting birds are found during the watching brief, works will need to stop until the young have fledged. Since a number of nests are active, work will need to wait until fledging has occurred, then trees should be removed immediately to avoid other nests being created.

7.5.4 Hedgehogs

- 7.5.4.1 Care must be taken whilst carrying out vegetation clearance, or strimming. A thorough check of the vegetation prior to removal will help ensure that no hedgehogs are injured or killed during development works. Sleeping hedgehogs frequently suffer severe injuries from strimmers.
- 7.5.4.2 Avoid setting fire to piles of vegetation unless they have been turned, checked or moved immediately prior to burning. Hedgehogs often get killed or injured in fires during vegetation removal and during early November.

7.5.5 White-clawed crayfish

- 7.5.5.1 White-clawed crayfish is widespread in clean, calcareous streams, rivers and lakes in England and Wales. This species is listed in Appendix III of the Bern Convention and Annexes II and V of the EC Habitats Directive. It is classed as *Globally Threatened* by IUCN/WCMC. It is protected under Schedule 5 of the WCA in respect of taking from the wild and sale, and is proposed for addition to Schedule 5 of the Wildlife (Northern Ireland) Order 1985.

- 7.5.5.2 International status: The white-clawed crayfish is listed under Appendix III of the Bern convention, and annexes II and V of the Habitats Directive. It is classed as globally threatened by the IUCN red data book. Formerly widespread across Europe, populations are now confined to a diminishing number of areas.
- 7.5.5.3 UK status: This is the only crayfish native to the UK. It used to be commonly found in clean calcareous streams, but numbers are now significantly reduced, with a 25–49% decline in numbers and range in the last 25 years. It has been identified by the UK Steering Group for Biodiversity as a Priority Species, and is listed under Schedule 5 of the Wildlife and Countryside Act 1981 in respect of taking from the wild and sale. The native UK crayfish is threatened by crayfish plague and competition from non-native crayfish species.
- 7.5.5.4 White-clawed crayfish are protected under Schedule 5 of the WCA in respect of taking from the wild and sale, and is proposed for addition to Schedule 5 of the Wildlife (Northern Ireland) Order 1985. The freshwater white-clawed crayfish has been targeted as a priority for conservation under the UK Biodiversity Action Plan (UK BAP). The Species Action Plan aims to maintain the current distribution of the species through a combination of restricting the spread of non-native crayfish and crayfish plague, as well as providing suitable habitat features. It is an offence under Schedule 9 of the Wildlife and Countryside Act to release the three introduced species of crayfish into the wild.
- 7.5.5.5 The following factors are currently causing loss or decline:
- Crayfish plague, a disease caused by the fungus *Aphanomyces astaci* which is carried by some North American crayfish including the signal crayfish *Pacifastacus leniusculus*. Spores from the fungus can also be transmitted by a variety of other means, including water, fish and damp equipment.
 - Direct competition for food and habitat from non-native crayfish: three non-native crayfish species are now breeding in the wild.
 - Habitat modification and management of water bodies.
 - Pollution, particularly pesticides and sewage.
- 7.5.5.6 White clawed crayfish are typically found in water between 0.75 and 1.25m deep but can occur in very shallow streams with as little as 50mm and in deeper, slow flowing rivers. They are typically found under rocks and submerged logs or among tree roots and in river-banks. White clawed crayfish are omnivorous but primarily carnivorous, eating macro invertebrates and carrion when available. They will also eat worms, insect larvae, snails, small fish, macrophytes, algae and calcified plants.
- 7.5.5.7 Crayfish can live for up to ten years and generally reach sexual maturity after three to four years. Breeding takes place between September and November when the water temperature drops consistently to below ten degrees centigrade. Females over winter with a clutch of eggs held beneath their tail. These eggs may number from 20 to 120 and hatch on the female. The juveniles are released from the mother from June in the south to August in the north.
- 7.5.5.8 Often when records of white-clawed crayfish exist in a watercourse, they are not uniformly spread along the channel. The population can be highly localised, occupying only favourable sections of a river. The crayfish may also be localised within a channel cross section. For example, the animals may be found mainly in the margins and may be sparse or even absent in the mid-channel (Peay 2000). This

makes crayfish prone to localised population extinctions if one of the colonies is destroyed.

7.5.5.9 Due to the white clawed crayfish being introduced to the site in the past, works still need to be carried out with caution in case white-clawed crayfish are present at low density. The following points should be implemented (Peay 2000):

- Have a contingency plan ready just in case one appears during the work.
- Be ready to stop work immediately.
- Store the crayfish in a bucket (see 6.3.8.10)
- Call in the Environment Agency

7.5.5.10 It is possible to keep approximately 50 crayfish in a suitable sized bucket containing clean water (River water DO NOT use tap water). The bucket should be placed in a cool area and not allowed to become warm. They can be held for a little longer if you divide them among several buckets with clean water and some cover - submerged aquatic plants or other suitable cover.

7.5.5.11 **In order to comply with the requirements of the latest Natural England guidance (EN 2000), a full presence or absence survey, must be undertaken. Crayfish surveys are best carried out during the period July to October, the peak time of activity and minimal disturbance. This will be conducted by a crayfish licence holder and will involve searching refugia across the river bed and carrying out torchlight surveys during the night.**

Crayfish Cycle	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Activity and Growth	Dark Red	Dark Red	Dark Red	Orange	Green	Green	Green	Green	Green	Orange	Orange	Dark Red
Mating										Orange	Green	Orange
Females with eggs	Green	Green	Green	Green	Green	Orange	Dark Red			Dark Red	Orange	Green
Surveying	Orange	Orange	Orange				Green	Green	Green	Green	Orange	Orange

(Modified from Peay 2000)

Activity Key

Maximum	Green
Medium	Orange
Minimum	Dark Red
Insignificant	

7.5.6 Invasive species

7.5.6.1 Japanese knotweed, Himalayan Balsam, Cotoneaster sp., Rhododendron sp. and Canadian pondweed were recorded within the boundaries of Allocated Area (see Target Notes 1 and 3-6).

7.5.6.2 Invasive non-native plants are species which have been brought into the UK which have the ability to spread causing damage to the environment, the economy and human health.

7.5.6.3 As invasive plants listed under schedule 9 of the wildlife and countryside act have been identified on site, the site owner has a responsibility to prevent them spreading into the wild or causing a nuisance/damage.

7.5.6.4 You must not plant or otherwise cause to grow in the wild any plant listed on schedule 9 of the Wildlife and Countryside Act 1981.

- 7.5.6.5 Due to the presence of invasive plants within the Allocated Area, the owner must comply with specific legal responsibilities, including:
- Spraying invasive plants with an approved herbicide
 - Cutting and burning invasive plants
 - Burying invasive plant material on site
 - Disposing of invasive plants and contaminated soil off site.
- 7.5.6.6 The site owner is not obliged to remove or treat invasive plants, but must not:
- Allow invasive plants to spread onto adjacent land - the owner of that land could take legal action against you;
 - Plant or encourage the spread of invasive plants outside of your land - this can include moving contaminated soil from one place to another or incorrectly handling and transporting contaminated material and plant cuttings.
- 7.5.6.7 It is recommended that a specialist contractor is employed to remove the invasive species off site.

7.6 Discussion

7.6.1 **A Construction Method Statement and an Ecological Enhancement Management Plan should be produced as a condition of planning and should consider the following:**

- **Freshwater**
 - All watercourses containing running water must be retained and enhanced including removal of silt, improving connectivity and the creation of buffer zones adjacent to the watercourses.
 - All ponds on site must be retained and enhanced; further ponds should be created and linked where possible. Buffer zones and ecological valuable habitat at least 10m wide should be created adjacent to each pond.
 - Potential discharge of foul water into the adjacent watercourses should be addressed by Land Drainage Consultant.
- **Woodland**
 - Woodland corridors should be created in a north to south direction to enhance habitat connectivity. Where possible this will be linked with grassland, scrub, ponds and watercourses to improve the landscape for wildlife.
 - Surrounding semi-natural woodland should be retained and enhanced.
 - Existing woodland should be planted to create scalloped and structurally diverse woodland edges.
 - Consideration should be given to planting traditional apple varieties.
 - Native and local provenance broadleaf species should be planted as an alternative to non-native and coniferous species.
- **Meadows**
 - Where possible meadows and wildflower areas will be created to benefit bees, butterflies, small mammals and insects.
 - Grassland habitats should be created in adjacent to watercourses, ponds and woodland.
- It is recommended that specific parts of the site are designated for nature

conservation, especially adjacent to the woodland along the northern boundary of the Allocated Area.

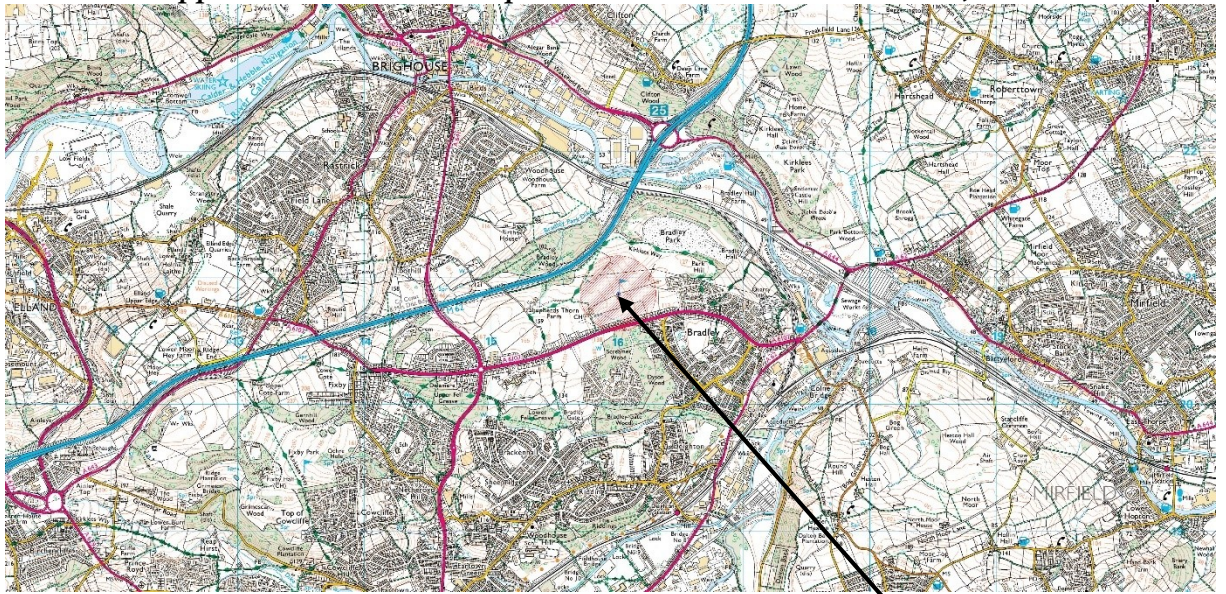
- The Management Plan will also include bat and bird box provision, planting schemes and ongoing management of the site; based on site surveys and stakeholder consultation.

- Andrews, H., *et al*, (2013). *Bat Tree Habitat Key*. AEcol, Bridgewater.
- Arntzen, J.W. & Teunis, S.F.M (1993). *A six year study on the population dynamics of the crested newt (Triturus cristatus) following the colonisation of a newly created pond*. Herpetological Journal 3: 99-110.
- Baker, J., Beebee, T., Buckley, J., Gent, T. and Orchard, D. (2011). *Amphibian Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth.
- Beebee. T., & Griffiths. R., (2000), *Amphibians and Reptiles*, Harper Collins.
- Chinery, M., (2007), *Insects of Britain and Western Europe*, A & C Black.
- Chinery, M., (2011), *Britain's Plant Galls*, Wild Guides.
- Cramp, S. and Simmons, K.E.L., (1980), *The Handbook of the Birds of Europe the Middle East and North Africa, The Birds of the Western Palaearctic*. (eds.), 1, 2, 3, 4, 5, 6, 7, 8, 9, Oxford University Press.
- Dietz, C., Helversen, O.V., & Nill, D., (2009), *Bats of Britain, Europe & Northwest Africa*. A & C Black.
- Entwhistle, A.C., Harris, S., Hutson, A.M., Racey, P.A., Walsh, A., (2001). *Habitat Management for Bats - A guide for land managers, land owners and their advisors*. JNCC.
- Ferguson-Lees, J., Castell, R., & Leech, D., (2011) *A Field Guide to Monitoring Nests*, BTO.
- Gent, T., & Gibson, S., (2003), *Herpetofauna Workers' Manual*. Pelagic publishing.
- Gilbert G., Gibbons D.W. & Evans J. (1998) *Bird Monitoring Methods: A manual of techniques for key species*, RSPB, Sandy.
- Gregory R., D., Wilkinson N.,I., Noble D.,G., Robinson J.,A., Brown A.,F., Hughes J., Procter D., A, Gibbons D., W. and Galbraith C., A.,(2002), *The population status of birds in the United Kingdom, Channel Islands and Isle of Man: an analysis of conservation concern 2002–2007*. British Birds 95: 410–450.
- Greenhalgh, M., & Ovenden, D., (2007), *Freshwater Life; Britain and Northern Europe*. Harper Collins.
- Habitats Directive*. (1994) European Commission.
- Harris, S., & Yalden, D.W., (2008), *Mammals of the British Isles, Handbook, 4th Edition*. The Mammal Society.
- Jehle, R., Thiesmeier, B., & Foster, J., (2011), *The Crested Newt a dwindling pond-dweller*, Laurenti-Verlag (Germany).
- JNCC, (2010), *Handbook for Phase 1 habitat survey - a technique for environmental audit*.

- Johnson, O., & More, D., (2004), *Collins Tree Guide*, Harper Collins.
- Langton, T, Beckett, C, & Foster, J, (2001), *Great Crested Newt Conservation Handbook*.Froglife.
- Lever, C., (2009), *The Naturalized Animals of Britain and Ireland*, New Holland Publishers (UK) Ltd.
- Macdonald, D., & Barrett, P., (1993), *Mammals; Britain and Europe*, Harper Collins.
- Mitchell-Jones A.J. (2004). *Bat Mitigation Guidelines*, English Nature, Peterborough.
- Mather, J., (1986). *The Birds of Yorkshire*. Christopher Helm Publishers Ltd.
- Natural Area Profile*. English Nature, 1997.
- Protection of Badgers Act*. 1992.
- Roper, T.J., *Badger*, New Naturalist, Harper Collins.
- Streeter, D., Hart-Davies, C., Hardcastle, A., Cole, F., & Harper, L., (2009), *Collins Flower Guide*, Harper Collins.
- Svensson, L., (2009) *Collins Bird Guide: The most complete guide to the birds of Britain and Europe*, 2nd Ed., Harper Collins.
- The Wildlife and Countryside Act*, HMSO. Anon, 1981.
- Tranche 2 Action Plans: Terrestrial and Freshwater Habitats*. UK Biodiversity Group, 1998. Crown Copyright.
- Wembridge, D., (2012), *Urban Mammals a concise guide*, Whittet Books Ltd.
- Williams, J., (2010), *The Otter*, Merlin Unwin Books.
- http://www.english-nature.org.uk/citation/citation_photo/1003238.pdf. 1984
- <http://www.ukbap.org.uk/UKPlans.aspx?ID=7>
- <http://www.natureonthemap.org.uk/identify.aspx>

9.1 Appendix 1 –Location map

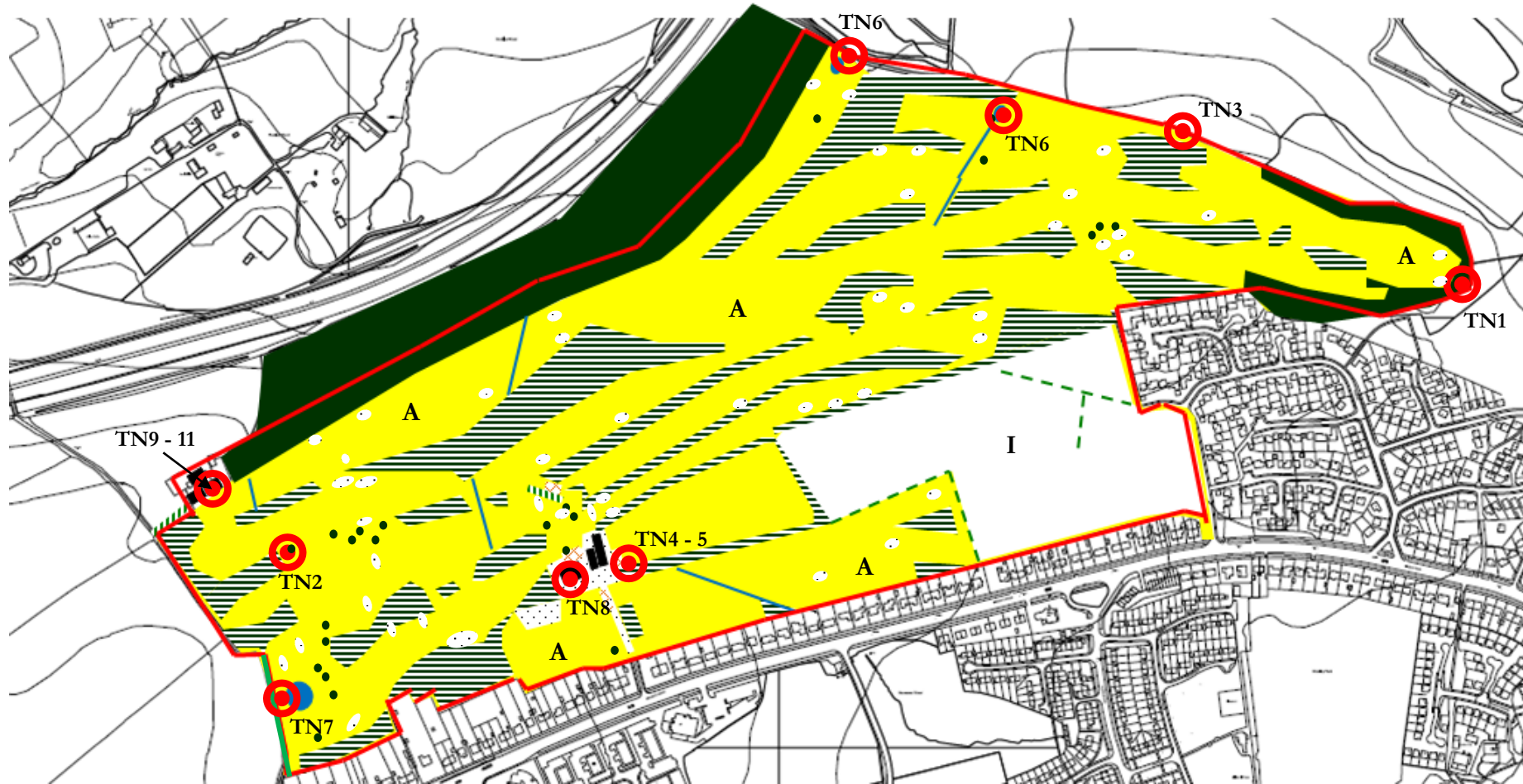
Scale 1:25,000









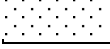






Allocated Area


Appendix 2a – Phase 1 Habitat Map for all accessible land.

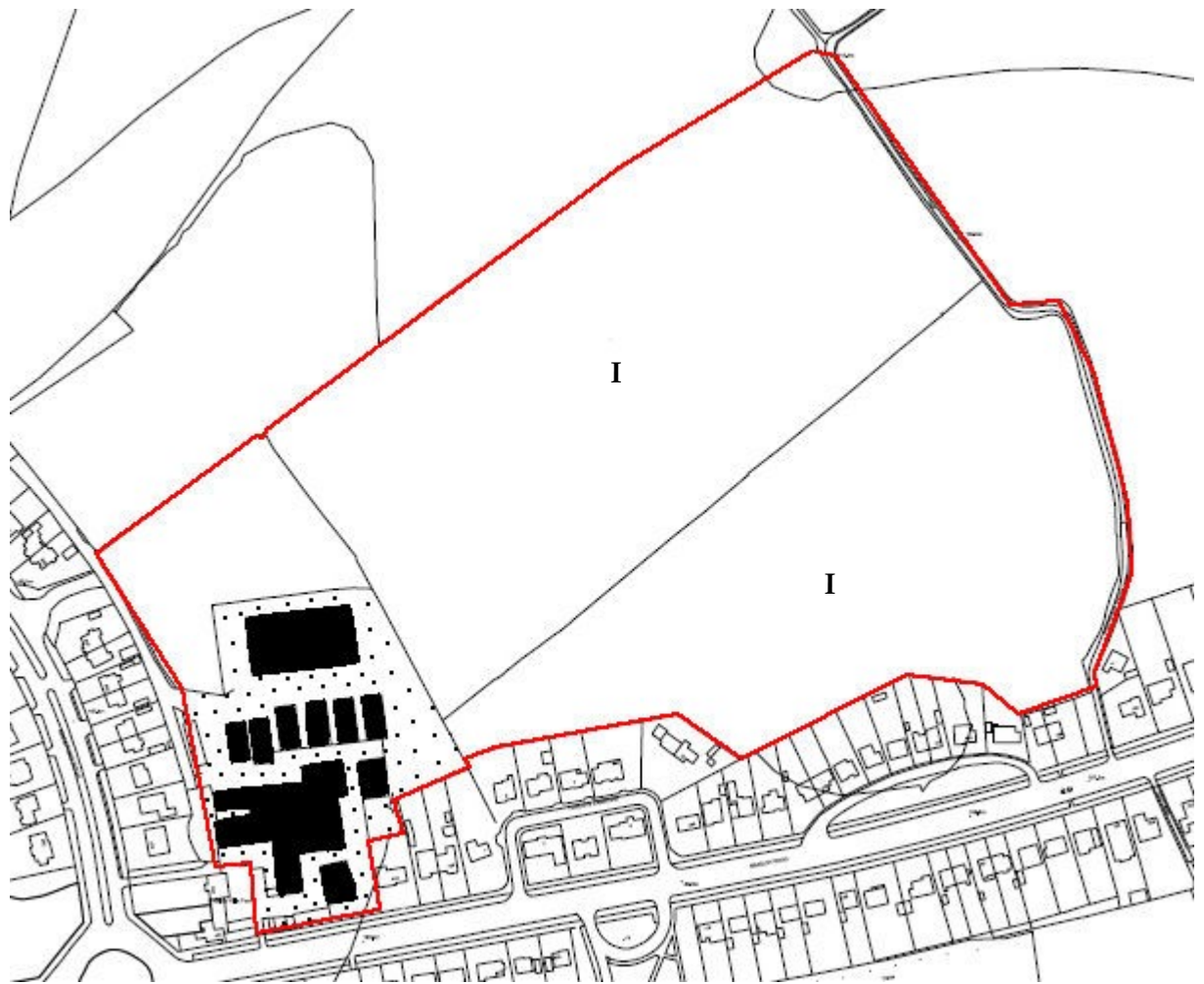
Not to scale. N↑



KEY.

	Improved neutral grassland.
	Broadleaf woodland and scattered trees.
	Scattered Trees
	Broad-leaved plantation.
	Conifer plantation.
	Amenity grassland.
	Bare ground.
	Open water.
	Introduced shrub.
	Buildings.
	Running water.
	Hedgerow.
	Site boundary.

	TN 1 - Location of woodland supporting Himalayan Balsam NGR - SE 16790 21045
	TN2 – Ash tree with bat and ecological potential NGR - SE 15436 20734
	TN 3 – Location of Japanese Knotweed NGR - SE 16545 21171
	TN 4 – location of cotoneaster spp. NGR - SE 1579 2068 (in shrubberies)
	TN 5 – location of Rhododendron spp. NGR - SE 1579 2068 (in shrubberies)
	TN 6 – location of Canadian pond weed. NGR - SE 16051 21281 and SE 16258 21245
	TN 7 - Pond 1, White clawed crayfish were moved to this "Ark" site in 2011, NGR - SE 15443 20581(source – Kirklees Council 2015).
	TN 8 – Clubhouse with potential to support roosting bats NGR – SE 15761 20706
	TN 9 – Storage building with potential to support roosting bats NGR - SE 15313 20789
	TN 10 - Storage building with potential to support roosting bats NGR - SE 15322 20803
	TN 11 - Storage building with potential to support roosting bats NGR - SE 15322 20803



KEY.

I	Improved grassland.
•••••	Bare ground.
■	Buildings.
—	Site boundary.

9.3 Appendix 3 – Summary of desktop study

Organisation.	Response Summary.	Date.
Natural England.	Local designations.	January 2016
Natural England.	UKBAP species and habitats within 2 km of Bradley Park Golf Course.	January 2016
West Yorkshire Ecology	Species lists within 2 km of Bradley Park Golf Course.	January 2016
National Biodiversity Network.	Species lists within 2 km of Bradley Park Golf Course.	January 2016
Magic.co.uk	Species lists within 2 km of Bradley Park Golf Course.	January 2016
Kirklees Council	Species lists within 2 km of Bradley Park Golf Course.	January 2016

9.4 Appendix 4 - Protected Species Legislation

The following provides background to the current legislation in England - for full details reference should be made to the relevant legislation. A number of wild animals are classified as Protected Species as they are protected by various pieces of legislation. The most commonly encountered Protected Species of animal are listed in the table below. This table summarises which sections of legislation each species is protected by and the legislative text is provided on the following pages.

Legislation	Schedule 5 Wildlife and Countryside Act 1981 (As amended) Part 1							EPS	PBA
	S1 (1)	S1 (4 & 5)	S9 (1)	S9 (2)	S9 (4)(a)	S9 (4)(b)	S9 (5)		
Adder <i>Vipera berus</i>			✓*				✓		
Common lizard <i>Zootoca vivipara</i>			✓*				✓		
Grass snake <i>Natrix natrix</i>			✓*				✓		
Slow worm <i>Anguis fragilis</i>			✓*				✓		
Smooth snake <i>Coronella austriaca</i>			✓	✓	✓	✓	✓	✓	
Sand lizard <i>Lacerta agilis</i>			✓	✓	✓	✓	✓	✓	
Great Crested Newt <i>Triturus cristatus</i>			✓	✓	✓	✓	✓	✓	
Natterjack Toad <i>Epidalea calanita</i>			✓	✓	✓	✓	✓	✓	
All UK bats Chiroptera			✓	✓	✓	✓	✓	✓	
Water vole <i>Arvicola amphibious</i>			✓	✓	✓	✓	✓		
Otter <i>Lutra lutra</i>			✓	✓	✓	✓	✓	✓	
Dormouse <i>Muscardinus avellanarius</i>			✓	✓	✓	✓	✓	✓	
Badger <i>Meles meles</i>									✓

Red Squirrel <i>Sciurus vulgaris</i>			✓	✓	✓	✓	✓		
Pine Marten <i>Martes martes</i>			✓	✓	✓	✓	✓		
Scottish Wildcat <i>Felis silvestris silvestris</i>			✓	✓	✓	✓	✓	✓	
White-clawed crayfish <i>Austropotamobius pallipes</i>			✓				✓		
All Nesting birds	✓								
Specific Nesting birds i.e. Barn Owl, Black Redstart	✓	✓							

S = Section

() = Paragraph

EPS = European Protected Species i.e. listed under Regulation 40 of the Conservation (Natural Habitats &c.) Regulations 2010

PBA = Protection of Badgers Act 1992

* = Only part of this section

Legislative Text

Wildlife and Countryside Act 1981 (as amended)

Since its original enactment, the Wildlife and Countryside Act has been subject to many changes (notably via Schedule 12 of the Countryside and Rights of Way Act 2000). These have in particular affected penalties and enforcement. Offences under section 9 of the Act are now 'arrestable'. Enforcement is usually by the Police and less frequently by Natural England. However, section 25(2) of Wildlife and Countryside Act also states that a local authority may institute proceedings. Prosecutions can result in a level five fine (currently £5000) for each offence (and the Act is specific that killing/injuring of each individual animal can constitute a separate offence), the forfeiture of any equipment, etc., used to perpetrate that offence and (under the Countryside and Rights of Way Act 2000) up to six months imprisonment.

The Wildlife and Countryside Act 1981 (as amended), transposes into domestic law the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention). It is an offence under the various sections of Part 1 of the Act to -

S.1(1) intentionally kill, injure, or take any wild bird or their eggs or nests.

S.1(4) intentionally or recklessly kill, injure, or take any wild bird listed on Schedule 1 of the Act, or their eggs or nests (special penalties apply if convicted) (For a full list of Schedule 1 bird species see the full text of the Wildlife and Countryside Act 1981 [as amended])

S.1(5) (a) disturb any wild bird listed on Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or
(b) disturb dependent young of such a bird

S.9(1) intentionally or recklessly kill, injure or take any wild animal included in

Schedule 5 (certain reptiles are only protected from killing and injuring);

S.9(2) be in possession or control of any live or dead wild animal included in Schedule 5 or any part or derivative;

S.9(4)(a) intentionally or recklessly damage or destroy, or obstruct access to, any structure or place used by a Schedule 5 animal for shelter or protection;

S.9(4)(b) disturb any such animal while it is occupying such a structure or place which it uses for that purpose

S.9(5)(a) sell, offer for sale, possess or transport any live or dead wild animal included in Schedule 5 for the purpose of sale or any part or derivative;

S.9(5) (b) advertise for buying or selling such things.

European Protected Species (EPS)

EPS and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats & Species Regulations, 2010. These Regulations transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law.

A person who—

(a) deliberately captures, injures or kills any wild animal of a European protected species,

(b) deliberately disturbs wild animals of any such species,

(c) deliberately takes or destroys the eggs of such an animal, or

(d) damages or destroys a breeding site or resting place of such an animal, is guilty of an offence.

For the purposes of paragraph (b), disturbance of animals includes in particular any disturbance which is likely—

(a) to impair their ability—

(i) to survive, to breed or reproduce, or to rear or nurture their young, or

(ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

(b) to affect significantly the local distribution or abundance of the species to which they belong.

(However, please note that the existing offences under the Wildlife and Countryside Act, which cover obstruction of places used for shelter or protection (for example, a bat roost), disturbance and sale, still apply to EPS.)

These actions can be made lawful through the granting of licenses by the appropriate authorities, e.g. Natural England. Licenses may be granted for a number of purposes (such as science and education, conservation, preserving public health

and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on the wild population of the species concerned.

Protection of Badgers Act 1992 (PBA)

The main legislation protecting badgers is the Protection of Badgers Act 1992. This Act consolidates all previous legislation including the Badgers Act 1973 (as amended) and the Badgers (Further Protection) Act 1991. Under the 1992 Act it is an offence to-

- destroy a sett;
- interfere with a badger sett by damaging a sett or any part thereof;
- obstruct access to a sett;
- disturb a badger while occupying a sett;
- wilfully kill, injure, take or attempt to kill, injure or take a badger;
- dig for a badger;
- possess a dead badger or any part of a badger;
- cruelly ill-treat a badger;
- use badger tongs in the course of killing, taking or attempting to kill a badger;
- sell or offer for sale or control any live badger;
- mark, tag or ring a badger;
- cause a dog to enter a sett;

The 1992 Act defines a badger sett as: “any structure or place which displays signs indicating current use by a badger”. Since development operations may take place over a protracted period, Natural England recommends that licences be sought for developments that may affect seasonally-used setts as well as main setts. Natural England considers a good guide to be that if a sett has shown signs of occupation within the past twelve months it is considered active.

The Protection of Badgers Act 1992 allows for licences to be issued for a number of purposes, including development under the Town and Country Planning Act 1990 and to prevent serious damage to property. Licences to interfere with badger setts or disturb badgers for development are issued by the Government’s statutory nature conservation agencies, e.g. Natural England.

9.5 Appendix 5 - Staff Profiles

Surveyor Profile – Chris Toohie M Sc., MCIEEM.

Job title : Director.

Expertise.

- Phase 1 habitat field surveys and biodiversity assessments including Building Research Establishment Environmental Assessment Method (BREEAM) and Code for Sustainable Homes (CODE) assessments.
- Bat surveys, bats and wind turbine assessments, writing and implementing bat development licenses, bat sound analysis and monitoring
- Great crested newt and reptile surveys.
- Management planning, woodland and orchard management and community environmental projects including funding applications.

Qualifications.

- M Sc. Arboriculture and Community Forest Management.
- HND Countryside Management.
- Great Crested Newt License – 2016-19412-CLS-CLS.
- Bat License – RC027.

Professional Membership.

- Member of the Chartered Institute of Ecology and Environmental Management.

Career Summary.

- Chris has worked in the environmental sector for all of his working life. He is an experienced and competent site manager with well-developed organisational skills and a proven ability to deal with a variety of situations in pressurised and challenging environments. As the former site manager of Millington Wood Site of Special Scientific Interest (SSSI), Beverley Parks Millennium Orchard and three reserves on the Flamborough Head Heritage Coast/SSSI, Chris has gained an understanding of the functioning of local government and the skills to operate within such structures and multicultural environments. Chris completed over 14 years within local authority countryside services.
- Chris has also instigated accreditation from the Forest Stewardship Council at all East Riding of Yorkshire Council owned woodlands. As group manager, Chris ensures compliance with the UK Woodland Assurance Standard and demonstrates that the woodlands are managed in a socially, economically and environmentally sustainable manner.
- Chris is currently heavily involved in local projects and has volunteered his time and resources to benefit local conservation projects that include The Wolds Barn Owl Study Group, North Cliff Marsh Flamborough and apple conservation. As a trustee of Driffield's Millennium Green, Chris has allocated his own time and financial resources to enhance the ecological value of the site.
- Chris is an excellent communicator and his enthusiasm for his work has enabled the successful deliverance of numerous conservation schemes. Chris has been instrumental in raising over £100,000 for environmental and community projects since 2005. These have included grants from Natural England, landfill tax credits and Heritage Lottery funding.

Project Experience in last 5 years.

- Chris has undertaken over 750 bat activity surveys since 2006 including writing and implementing Natural England bat development licenses. Successful projects have included the conservation of maternity roosts at Low Catton, Watton, Harwood Dale, Woodhall Spa and Myton on Swale.
- Phase 1 surveys and biodiversity assessments have included National Nature Reserves, SSSI's, local wildlife sites and urban sites; specifically Chris has undertaken ecological surveys at Raincliffe Wood SSSI, sections of Hadrian's Wall and numerous English Heritage Castles. Reports have also meet BREEAM/CODE criteria, when applicable.
- Contracts have included Natural England, English Heritage, East Riding of Yorkshire Council, Scarborough Borough Council, NPS London, Hull City Council, Gateway, Riverside Housing, IMS Windpower, Kier London Ltd, NHS, Castle Howard Estates, Stroma and Pell Frischman.

Surveyor Profile – Daniel Lombard B Sc. (Hons), MCIEEM.

Job title: Ecologist.

Expertise.

- Phase 1 habitat field surveys and ecological appraisals including Building Research Establishment Environmental Assessment Method (BREEAM) and Code for Sustainable Homes (CODE) assessments.
- Bat surveys, bats and wind turbine assessments, bat sound analysis and monitoring.
- Great crested newt and reptile surveys.
- Mammal surveys including water vole, otter and badger.
- Management planning, pond and wetland management.

Qualifications.

- B Sc. Environmental Science.
- Great Crested Newt License – CLS01634
- Bat License – CLS01634

Professional Membership.

- Member of the Chartered Institute of Ecology and Environmental Management.

Career Summary.

- Daniel has spent all his working life in the environmental sector. He is an experienced and competent field ecologist with proven skills in species identification across a range of biota and an in-depth appreciation of many aspects of biodiversity, ecology and biology.
- Upon leaving University Daniel volunteered with a range of conservation organisations including The Wildlife Trust, North York Moors National Park, BTO and RSPB.
- He briefly operated as a freelance ecologist before starting full time at Wold Ecology.
- Daniel is currently involved in a number of local projects in which he has volunteered his time and resources. He is a member of Filey Bird Observatory and acts as the recorder for both Dragonflies and Butterflies within the group. He contributes to the BTO bird ringing scheme, is a member of Scarborough Field naturalists and contributes to national invertebrate, bird, fungi and mammal recording schemes.

Project Experience in last 5 years.

- Daniel has undertaken over 250 bat activity surveys since 2010 including dawn and dusk surveys at a range of sites across England.
- Daniel specialises in reptile, amphibian, bird and mammal surveys and has undertaken a wide range of surveys for species including otter, water vole, badger, adder, grass snake, common lizard, slow worm and great crested newt. This includes writing and contributing towards mitigation strategies and habitat enhancements where appropriate. He has also contributed to white clawed crayfish surveys.
- Daniel has undertaken numerous Phase 1 surveys and biodiversity

assessments as well as both BREEAM and CODE reports.

- Daniel has undertaken and helped supervise a seabird surveys on the North Yorkshire coastline at an internationally important seabird colony on the behalf of Natural England and the Environment Agency. This has involved leasing with a variety of conflicting stakeholders to mitigate against potential adverse impacts to the colony.

9.6 Appendix 6 – Identification of Legal and Planning Policy Issues in England

Scope of Assessment

The first step is to identify any biodiversity features found on the site that are subject to legal or policy controls, as follows:

Designated Sites

The location of the site is compared to the distribution of sites with a statutory or non-statutory nature conservation designation using information derived from the desk study. Consideration is given to designated sites that could be affected directly or indirectly by the proposed development.

Habitats outside Designated Sites

The habitats known to occur on the site are compared to those which receive some protection, in law or policy, outside of designated sites i.e. hedgerows, uncultivated land and semi-natural areas, habitats listed as Priorities in the UKBAP, habitats listed as Habitats of Principal Importance for the Conservation of Biodiversity by the Secretary of State and habitats listed as requiring action in the Local Biodiversity Action Plan.

Ancient Woodland

The ancient woodland inventory is checked to determine whether any known ancient woodland occurs either on the site or nearby.

Protected Species

The species known to occur on the site as a result of the desk study and Phase 1 habitat survey are compared with those listed in nature conservation legislation i.e. the Wildlife and Countryside Act 1981, as amended, the Conservation (Habitats &c) Regulations 1994.

In addition, the species known to occur on the site as a result of the desk study and Phase 1 habitat survey are compared with those listed in animal welfare legislation, i.e. the Badgers Act 1992 and the Wild Mammals (Protection) Act 1996.

Biodiversity Action Plan Priority Species

The species known to occur on the site are compared with those listed as Priorities in the UKBAP, Species of Principal Importance for the Conservation of Biodiversity by the Secretary of State or requiring action in the Local Biodiversity Action Plan.

Other Species of Conservation Concern

The species known to occur on the site are compared with other nature conservation listings, such as red data books.

Invasive Plant Species

The species of plant present on the site are compared with those listed by government agencies as invasive non-natives, with particular attention given to those listed in the Wildlife and Countryside Act.

Review of Legislation and Policy

If any of the above are found to occur on or near the site and are likely to be affected by the development in any way, the relevant legislation and planning policy (including national, regional, county and borough policies) are examined to determine whether the proposed development is compliant.

Ecological Enhancement

Planning policy generally requires new developments to be enhanced for biodiversity. The existing proposals are considered to determine whether biodiversity enhancements are offered and whether they are adequate to meet the policy requirements. Again, national, regional, county and borough policies are considered.

Identification of Potential Further Ecological Issues

Further ecological issues are those which cannot be resolved during the desk study and extended Phase 1 habitat survey for any reason, including the following:

- The development is near a designated site and consultation with the relevant regulator is required in order to determine whether further assessment is required;
- Suitable habitat is present on or near the site for a protected species/species of conservation concern and specialist survey techniques are required for their detection;
- Suitable habitat is present on or near the site for a protected species/species of conservation concern and the extended Phase 1 habitat survey was not undertaken at a suitable time of year for their detection;
- A protected species/species of conservation concern was found on or near the site but further information on population size or distribution is required in order to resolve any legal and planning policy issues (such as obtaining licences).

Discussion of issues raised by 3rd parties, e.g. reports of protected species from the site by local people, may also be discussed under this heading.

The desk study is used as a guide to the protected species/species of conservation in the local area, however, the list is not taken to be exhaustive and it is borne in mind that some species may no longer occur in the locality.

No attempt is made to evaluate the importance of the site for species not yet

confirmed to be on or near the site, nor to discuss the implications for the development if the species were to be found on the site.