



Site: Long Lane, Shipley

Survey: Ecological Appraisal Report

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1 Introduction

1.1 Background to Development

1.1.1 Rex Procter and Partners (RPP) are assessing site suitability for the construction of new crematorium facilities in the Bradford area. Land adjacent to Long Lane, Shipley, hereby referred to as 'the site', is one of these locations and is situated at Ordnance Survey National Grid Reference SE 13072 36312 (see Figure 1).

1.1.2 The proposed works to create new crematorium facilities will hereby be referred to as 'the development'. The indicative site layout can be found in Appendix 1. The proposals have not been finalised at this stage but will likely include tree/vegetation clearance, construction of access roads, car parking facilities and buildings with associated landscaping, and overhead power lines may be diverted underground.

1.2 Existing Ecological Information

1.2.1 BL Ecology were commissioned in April 2019 to undertake a desktop ecological study of the site (report ref: 031_19b_RE01). This included a desk study for protected and notable species and nature conservation sites within 2km and a basic assessment of the habitats on site and their potential to support protected species using OS maps and aerial photography.

1.2.2 The desk study found 11 Local Wildlife Sites (LWS) within 2km, the closest, Noon Nick, located 0.16km to the north-west of the site. Species records of amphibians, birds, fish, flowering plants, invertebrates, reptiles and terrestrial mammals (including bats, otter, hedgehog and badger) were also retrieved (also see Figure 1)

1.2.3 Habitats with the possibility to support amphibians, badgers (*Meles meles*), bats, breeding birds, reptiles and S41 NERC species such as hedgehogs (*Erinaceus europaeus*) were identified through aerial photography. An Extended Phase 1 Habitat Survey of the site including a further Presence/Absence Survey for badgers and a Bat Scoping Assessment of trees likely to be impacted was recommended, as well as HSI's of any suitable waterbodies in and around the site to inform a future planning application.

1.2.4 This report includes the survey methodologies undertaken (included as Appendix 2), the results, impacts, relevant legislation, and any mitigation or further surveys required to enable the project to comply with current European/UK legislation and policies.

1.3 Objectives

1.3.1 The purpose of this report is to identify any ecological constraints to a potential development on land adjacent to Long Lane. The assessment therefore sought to classify habitats within the site, establish the presence or likely absence of species protected by European/UK legislation and policy, establish the value of the species/habitats identified, and assess the potential for development. This information will be used to inform a planning application.

1.4 Agreed Brief

1.4.1 BL Ecology was commissioned on 9th March 2020 to undertake a preliminary ecological appraisal of the site. The agreed brief was to:

- Complete a Phase 1 habitat survey of the areas likely to be affected by works;
- Assess the habitat suitability for protected and BAP species; and

-
- Submit a report with associated mapping, outlining the likely mitigation for the site including the need for additional surveys.

2 Results

2.1 Background

2.1.1 This section outlines the field survey results. All explanations of the law pertaining to the European or UK protected and particular common species with the potential to be on site are listed in Section 3.

2.2 Phase 1 Habitat Survey

2.2.1 Habitats found during the Phase 1 Habitat Survey are shown on Figure 2 and are illustrated within the photographs of Figure 3. All are common habitats found across the UK, with no rare flora or communities recorded during the survey.

Improved Grassland

2.2.2 The majority of the site was improved grassland being over 90% perennial ryegrass (*Lolium perenne*); other species within the sward included occasional patches of giant fescue (*Festuca gigantea*) and common chickweed (*Stellaria media*). The field had been relatively recently cut and baleage were stored on site. The grassland was also moderately wet, particularly in some areas resulting in bare mud and waterlogging. Along the field margins and growing up and over the dry-stone walling some more common herb and tall ruderal species were recorded including common nettle (*Urtica dioica*), dock (*Rumex sp.*) species, cleavers (*Galium aparine*) and cow parsley (*Anthriscus sylvestris*) (See Figure 3, Photograph 1).

Broad-Leaved Woodland

2.2.3 There were two small patches of woodland on site; one in the west and one in the east adjacent to the site boundary and surrounded by old dry-stone walling. Both areas of woodland were similar, although the woodland in the west of the site displayed a more diverse range of ground flora species. The trees were mostly semi-mature with some self-set saplings. Species present included beech (*Fagus sylvatica*), sycamore (*Acer pseudoplatanus*), cherry species (*Prunus sp.*), elder (*Sambucus nigra*), silver birch (*Betula pendula*) and lime species (*Tilia sp.*). The understorey included bramble (*Rubus fruticosus agg.*), holly (*Ilex aquifolium*) and dog-rose (*Rosa canina*) scrub, cock's-foot (*Dactylis glomerata*), perennial ryegrass, umbellifer species (*Apiaceae sp.*), cleavers, moss species, snowdrop (*Galanthus nivalis*), garlic mustard (*Alliaria petiolate*), wood avens (*Geum urbanum*) and herb-Robert (*Geranium robertianum*) (See Figure 3, Photograph 2).

Scattered Trees

2.2.4 There were various scattered trees around the site boundary and in the middle of the site along the old dry-stone wall field boundaries. The trees were semi-mature to mature with species including hornbeam (*Carpinus betulus*), sycamore, lime species, elder and willow species (*Salix sp.*) (See Figure 3, Photograph 3).

Scattered Scrub

2.2.5 A few areas of scattered bramble scrub were recorded around the peripheries of the site, particularly in both the west and east corners.

Species-Poor Intact Hedge

2.2.6 A few sections of managed, species-poor leyland cypress (*Cupressus × leylandii*) hedge were recorded growing 'above' the wall along the northern boundary of the site (see Figure 3, Photograph 6).

Bare Ground

- 2.2.7 A muddy access track from Long Lane road ran onto site and past the section of woodland to the west.

Dry-Stone Walls

- 2.2.8 This habitat surrounded the site, the pockets of woodland and across the fields as old field boundaries. In places they are partially collapsed and/or becoming overgrown with tall ruderal vegetation and scrub. Walls provide crevices for reptiles, birds, mice and voles, invertebrates as well as a variety of plants.

Standing Water

- 2.2.9 A small pond was recorded on site (P1), within the area of woodland to the east. It was also possible to access a large pond/lake (P2) within the adjacent golf course, located approximately 0.1km south of the site. P1 had no aquatic vegetation present and no sign of aquatic invertebrates. The pond was full of leaf litter with some algae present although the water was relatively clear. Vegetation within the pond just included those species recorded within the woodland understorey, suggesting it had recently formed following heavy rain and that the pond is ephemeral.
- 2.2.10 P2 was in the middle of the golf course to the south of the site and would be classified as a large ornamental pond or lake. Canadian geese (*Branta canadensis*) were present around the edges of the lake although not on the water. From the edges of the pond, it was only possible to identify emergent rush species (*Juncaceae sp.*), no other aquatic vegetation was noted. Emergent willow trees were also present. Within the water around the edges of the lake, and on the banks, species were restricted to scrub, tall ruderal and herb species including bramble, dog-rose, bracken (*Pteridium aquilinum*), common nettle and grasses (see Figure 3, Photograph 4 & 5). No aquatic vegetation or invertebrates were recorded around the water's edge.

Target Notes

- 2.2.11 Target notes are descriptions of areas or features of particular or potential ecological interest or requiring further description. A number of areas were target noted during the Extended Phase 1 Habitat Survey; piles of stones and brash present in both woodlands on site where areas have been cleared of vegetation and where the dry-stone walls have collapsed. These piles could provide suitable refuge/hibernation areas for small mammals, amphibians and reptiles (see Figure 2, TN1 and Figure 3, Photograph 7).

Invasive Non-Native Species¹

- 2.2.12 It is unlikely that any significant stands are present due to no dead plants being visible during the survey. However, the survey was undertaken during a sub-optimal period for vegetation surveys. Cutting and grazing can also make stems difficult to locate in winter; future invasive plants cannot therefore be ruled out.

2.3 Faunal Species

- 2.3.1 The walkover survey identified no field signs for any European or UK protected species. The following paragraphs provide site-specific descriptions for each species.

Amphibians

- 2.3.2 Within the Desktop Study (031_19b_RE01) records of common frogs (*Rana temporaria*), common toads (*Bufo bufo*), smooth newts (*Lissotriton vulgaris*) and great crested newts (*Triturus cristatus*) were returned. The closest record was 0.8km to the north of the site consisting of common frogs and common toads in 1988 and the majority of the records

¹ Plants featured on Sch. 9 of the Wildlife and Countryside Act 1981 (as amended).

were from the early 2000's and older. One individual great crested newt was recorded 1.8km to the north of the site under a garden shed in 2004.

- 2.3.3 One water body (P1) was identified on site, described in paragraph 2.2.9 above. A desktop search for local waterbodies was also undertaken using aerial images and ordnance survey, which revealed two other waterbodies within a 500m radius of the site. One of the waterbodies is separated from the site by a main road which would act as a major barrier to amphibians, but the other (P2) was separated from site by the much quieter road, Long Lane and otherwise connected by the golf course habitats which surround the site to the south, east and north including rough grassland, scrub, lines of trees and the dry-stone walls.
- 2.3.4 The habitats on site were also considered to be suitable for amphibians during the terrestrial phase of their life cycle. In particular the two woodland pockets, the dry-stone walls, areas of scrub and the target noted areas of stone and brash which would provide foraging and shelter/hibernation potential for these species.
- 2.3.5 In order to assess the potential for P1 and P2 to support great crested newts and other amphibians, a Habitat Suitability Index (HSI) was undertaken, the results of which are displayed in Table 1 below.

Table 1: Habitat Suitability Index Assessment of P1

Criteria	P1 Score	P2 Score
Location	1	1
Pond area	0.02	0.8
Pond drying	0.1	0.9
Water quality	0.33	0.67
Shade	0.2	1
Fowl	1	0.67
Fish	1	0.67
Number of ponds within 1km	0.65	0.65
Terrestrial habitat	1	1
Macrophytes	0.4	35
Resulting HSI score	0.36	0.69

- 2.3.6 The resulting score of 0.36 for P1 falls within the range in which a pond is deemed to be *poor* suitability for a great crested newt breeding pond, however the resulting score of 0.69 for P2 falls within the range in which a pond is deemed to be *average* suitability for great crested newts.
- 2.3.7 However, BL Ecology have extensive experience of working within the Bradford district, during which there has been an absence of known great crested newt populations. The record of a great crested newt 1.8km to the north of the site dates from 2004 and is separated from the site via dense residential development. The record was located 60m from Leeds-Liverpool Canal and it is possible that the newt entered the canal from a pond some distance from the site, potentially during a flooding event. On balance it is considered highly unlikely that a viable great crested newt population is present within this area and therefore no further action is required for this species. The presence of other amphibian species is, however, still likely on site.

Badger

- 2.3.8 One record of badger was returned from the desk study within 1km of the site, however no evidence of this species was observed on or around the site during the site visit.
- 2.3.9 The site is generally water-logged making the creation of setts for example within the woodland pockets highly unlikely. Extensive foraging habitat exists however within the improved grassland, woodland and scrub on site. The site is also well connected to the surrounding habitats to the south, east and north, including Northcliffe golf course/Shay

Grange golf centre and Cliff Wood also suitable for badger; and to the various local wildlife site woodland and meadows further afield (see Figure 1). The presence of foraging badger therefore cannot be ruled out.

Bats

Daytime Inspection for Signs of Roosting Bats

- 2.3.10 No signs of roosting bats were found during the daytime survey. An absence of droppings and staining on the trees suggest that no bats have recently or are currently roosting within any potential roosting features (PRFs). It should, however, be noted that signs such as these are not persistent and can be removed by the wind and the rain. No buildings existed within the site boundary therefore no buildings were searched.

Daytime Inspection for Bat Roosting Potential

- 2.3.11 Several trees within the Extended Phase 1 habitat survey area were considered to have potential to support roosting bats. These are summarised in Table 2 below with the locations of the trees shown on Figure 2.

Table 2: Trees with bat roosting potential

Tree no.	Photo Number (Fig. 3)	Species	PRFs	Height of PRFs	Aspect of PRFs	Overall Bat Potential
BT1	8	Mature sycamore (DBH ² ~ 30)	3 knot holes of unknown depth and rotting branch	4m	West	Moderate
BT2	9	Dead cherry species (DBH ~ 20)	Main dead stem rotting from the top down (therefore likely to be damp)	3m	Various	Low
BT3	10	Semi-mature beech (DBH ~ 20)	Main stem rotting from the top down (therefore likely to be damp)	3-4m	Various	Low
BT4	11	Semi-mature birch (DBH ~ 30)	Rotting limbs and peeling bark (shallow features)	2+	Various	Low
BT5	12	Semi-mature birch (DBH ~ 15)	General rot throughout and possible cavity into main stem but which is open to the elements	3m	Various	Low
BT6	13	Mature beech (DBH ~ 50)	Large cavity in main stem which extends upwards	2m	East	High
BT7	14	Mature beech (DBH ~ 40)	Long linear crevice in main limb showing exposed rotting heart wood. Cracked bark	6m	North	Moderate
BT8	15	Mature beech (DBH ~ 44)	Two knot holes of unknown depth	3-4m 12m	North-east East	Moderate
BT9	16	Mature sycamore (DBH ~ 50)	Mature tree outside the field boundary that has fallen into the field with various rotting wound features	0+m	Various	High

- 2.3.12 BT6 and BT9 were both awarded high potential for roosting bats. The size and depth of the feature in BT6 was considered suitable for both maternity roosts and as a hibernation

² Diameter at breast height

roost. Bats require a humid roost with a relatively stable temperature in which to hibernate over winter, which a hollow trunk can provide. Hibernation roosts can also be closer to the ground (or accessed from rotting butt features) as was found in BT9.

2.3.13 An endoscope inspection of BT6 was undertaken as the feature could be reached from the ground. At the time of the survey no bats were recorded although it is possible the crevices inside extended further than the endoscope could reach. At the time of the survey this feature was also in use by a grey squirrel (*Sciurus carolinensis*). The features in BT9 were not wide enough to inspect with the endoscope or extended beyond where the endoscope could reach.

2.3.14 The woodlands, scattered trees and hedges are all likely to provide good quality commuting and foraging habitats for the local bat populations, particularly as these link to similar habitats within the wider landscape including the large water body in the golf course. Various records of common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Daubenton's (*Myotis daubentonii*), whiskered (*Myotis mystacinus*), noctule (*Nyctalus noctula*) and several unknown Vespertilionidae bats were also returned during the desk study; with the closest record approximately 0.67km from the site (in 2007), and a maternity roost located approximately 0.92km from the site (in 2002).

Breeding Birds

2.3.15 Of the habitats present on site the woodlands, scattered trees, hedges and scrub all have the potential to support pairs of breeding birds with nesting passerines noted at the time of the survey. Old nests were noted within some of the trees and BT6 also had evidence of an old birds' nest in the cavity feature on the main stem. The site as whole would also provide good foraging habitat for a number of different bird species.

Otter, Water Vole, White-clawed Crayfish and Migratory Fish and Coarse Fish

2.3.16 No suitable waterbodies are present on or adjacent to the site therefore these species are no longer considered within this report.

Reptiles

2.3.17 Records of grass snake (*Natrix natrix*) were returned for Northcliffe Woods and Meadows LWS approximately 850m from the site; however, these were over 60 years old and may not reflect the current distribution of this species. The lack of a suitable water body to support foraging grass snake and the levels of disturbance on site make it unlikely for this species to be present on site.

2.3.18 Although the site is likely to be too disturbed, habitats on site are suitable to support other common reptile species such as common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*) and the site is connected to the wider landscape through the golf course. The woodlands, grassland, scattered trees and scrub and the piles of stone, brash and the dry-stone walls all provide a mosaic of habitats which could support foraging, basking, breeding and hibernating reptiles. Although the presence of reptiles is considered unlikely, this species cannot be ruled out completely.

Biodiversity Action Plan Species (S41 NERC)

2.3.19 Five records of hedgehog were returned from the desk study, the closest of which was approximately 1km to the north-east of the site, recorded in 1996. All habitats on site are suitable for hedgehogs especially the woodlands and TN1 for refuge and hibernation.

2.3.20 Six species of UK BAP butterflies and moths were identified on the desk study, comprising large heath butterfly (*Coenonympha tullia*), wall butterfly (*Lasiommata megera*), white-letter hairstreak butterfly (*Satyrion w-album*), autumnal rustic moth (*Eugnorisma glareosa*), buff ermine moth (*Spilosoma luteum*) and cinnabar moth (*Tyria jacobaeae*). The closest record was for white-letter hairstreak located approximately

0.5km to the south-east of the site in 1996. Habitats on site are suitable to support the moth species recorded.

3 Impacts and Legislation

3.1 Habitats and Botany

- 3.1.1 The indicative site layout used to inform the Desktop Study has not yet been updated, therefore the predicted impacts and recommended mitigation within this report will be based on this drawing (see Appendix 1 of this report and Figure 2 - Ecological Constraints Map within the RE01 Desktop Study).
- 3.1.1 The habitats found on site are common and widespread; although most of these habitats are considered of low conservation value, they do function as potential habitat to support common species of nesting birds, common reptile species and the priority species common toad and hedgehog (see below).
- 3.1.2 The site is approximately 5.5ha, of which at least 2.9ha is likely to be developed. This will result in the loss of approximately 2.7ha of improved grassland and field margins, and the potential loss of some of the scattered trees, scrub and dry-stone wall habitats on site. At present it is unclear whether any trees will require removal although the trees along the southern boundary are most likely to be impacted by the development being at particular risk of root severance or compaction or other damage due to their proximity to the proposed works. However, other semi-mature/mature trees around the edge of the site and along the dry-stone wall field boundary to the east may also be indirectly impacted during the development from the siting of haul routes and welfare cabins, for example, if appropriate care is not taken to prevent root compaction and accidental damage by machinery.
- 3.1.3 After some initial consultation with the project architects Stride Treglown following the phase 1 habitat survey, the following trees (highlighted as having potential to support roosting bats) are situated adjacent to the main site access and service access points:
- BT1 – BT6 – Service Yard Access
 - BT7 & BT8 – Service Main Vehicle / Pedestrian Entrance to the site
- 3.1.4 Following consideration of the Proposed Site Masterplan for Long Lane, it is considered possible by Stride Treglown to amend the road layouts slightly, to incorporate these trees into the design - thereby avoiding the affected trees and maintaining a 5m buffer zone.
- 3.1.5 Due to the proximity of the development to the woodland pockets on site, and the adjacent golf course (and associated habitats) indirect impacts could occur as a result of dust deposition, and general disturbance to faunal species from increased lighting, noise, vibrations and human presence.
- 3.1.6 'Boundaries (Hedgerows and walls)' feature in the Bradford District Council Biodiversity action plan (LBAP) and approximately 185m of wall is likely to be lost to the west of the development as well as likely remedial works throughout the rest of the site. These walls are likely to provide crevices for amphibians, reptiles, birds, mice and voles, invertebrates and plants.

3.2 Amphibians

- 3.2.1 Although P1 on site is not considered suitable for great crested newts, it could support other amphibians (such as common frogs and toads). If the pond were to be impacted during the development this could result in the killing or injury of these species or their failure to breed successfully. P2 is also a potential breeding pond located 116m to the south. It is possible for amphibians using these ponds to use the site in their terrestrial phase. Partial loss of the grassland, scrub, scattered trees, walls and habitat piles (TN1) during site clearance and the diversion of power lines underground could also result in accidental killing/injury of amphibians as well as permanent loss of terrestrial habitat.

However, due to the size of the footprint of the works in relation to similar (and more suitable) immediately surrounding habitats is not considered a key loss to their terrestrial habitats.

- 3.2.2 Common toads are listed as a Priority Species under Section 41 of the NERC Act 2006, indicating that they are considered of principal importance for the purpose of conserving biodiversity. Local authorities, therefore, must take steps to further the conservation of this species.

3.3 Badger

- 3.3.1 Whilst no badger signs were identified during the walkover, this species is highly mobile and can cover large areas as part of their foraging grounds. Foraging badgers present on site during the works could become entrapped in excavations if they are left open overnight. Indirect impacts could also include elevated noise, dust, lighting and increased human presence during the construction phase.

- 3.3.2 Post development there will be some permanent loss in foraging habitat for badgers, although some habitats will still remain for example in the memorial gardens. Due to the size of the footprint of the works in relation to similar (and more suitable) immediately surrounding habitats, this loss is considered negligible.

- 3.3.3 Badgers are protected via the Protection of Badgers Act 1992. This Act makes it an offence to take, injure or kill a badger or to interfere with a badger sett. 'Interference' is taken to mean obstruction or damage to a sett, or disturbance of a badger whilst it is in a sett. Natural England have recently defined 'disturbance' as noise or vibrations that are greater than that which badgers commonly tolerate.

3.4 Bats

- 3.4.1 At this stage in the design it is hoped that those trees (BT1 – BT9) highlighted as having potential roosting features suitable for bats will be retained and that appropriate buffer zones around these trees will be implemented to limit disturbance to any roosting bats. A number of these trees will be within close proximity to the proposed works, and the types of disturbance to be considered include increased noise, lighting and human presence during the construction phase.

- 3.4.2 In the short term, commuting and foraging habitat for bats could also be impacted through the potential removal of other trees, grassland, scrub and dry-stone walls. Additional disturbance to roosting, foraging and commuting bats could also occur through installation of an inappropriate lighting scheme post construction.

- 3.4.3 The following legislation makes it an offence to injure or kill a bat and also to deliberately, recklessly or intentionally disturb a bat or to damage/destroy a roost:

- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Wildlife and Countryside Act 1981 (as amended); and
- The Countryside and Rights of Way Act 2000.

3.5 Breeding Birds

- 3.5.1 Removal or disturbance of the woodland pockets, scattered trees, scrub and grassland during the breeding bird season (March to September inclusive) has the potential to kill/injure/disturb birds and damage/destroy or cause abandonment of active nests, resulting in the subsequent loss of chicks and eggs. Some loss of foraging and nesting habitat will also occur as part of the works.

- 3.5.2 Wild birds are afforded protection through the Wildlife and Countryside Act 1981 (as amended), which prohibits the killing, injuring, taking, or selling, of any wild bird or their eggs, together with the taking, damaging, or destruction of any nest currently in use or being built.
- 3.6 Reptiles**
- 3.6.1 There is considered to be a low risk of common lizard and slow worms being present on site during the works due mosaic of habitats on site. The development therefore carries a low residual risk of killing/ injuring these species during site clearance. Reptiles could also be injured in open excavations and by taking refuge in stockpiles during the construction phase.
- 3.6.2 All UK species of reptiles are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are protected via Section 9, Parts 1, 5a and 5b. This legislation makes it an offence to intentionally kill, injure or take a reptile.
- 3.7 Biodiversity Action Plan Species (S41 NERC)**
- 3.7.1 There is a risk that hedgehogs could be present on site during the development during any stage of their life cycle from hibernation to foraging and shelter and breeding. Therefore, there is a risk of killing/injuring to this species during site clearance. Hedgehogs could also fall into excavations left open overnight and become trapped or injured, or by taking refuge in stockpiles during the construction phase.
- 3.7.2 Hedgehogs are listed as a Priority Species under Section 41 of the NERC Act 2006 indicating that hedgehogs are considered of principal importance for the purpose of conserving biodiversity. Local authorities, therefore, must take steps to further the conservation of this species.
- 3.7.3 The moth species autumnal rustic, buff ermine and cinnabar moth found within the study area, could be present within the habitats on site in particular around the edges of the woodland pockets, the scrub and the dry-stone walls. These species are listed as Priority Species under Section 41 of the NERC Act 2006. Invertebrates also feature in the Bradford LBAP and for the purpose of conserving biodiversity steps should be taken to further the conservation of these species.
- 3.8 Planning Policy Status**
- 3.8.1 The National Planning Policy Framework (NPPF) (Revised, 2019. Section 15, paragraph 170(d)) requires planning authorities to use the planning system to contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
- 3.8.2 Under the Natural Environment and Rural Communities (NERC) Act 2006, all local authorities must, in exercising its functions, have consideration for biodiversity.
- 3.8.3 If the recommendations outlined in Section 4 are undertaken, the development will have no legal or planning or policy constraints and will satisfy the constraints in the NERC Act.

4 Recommendations

4.1 Further Surveys

Bats

- 4.1.1 If, as the design develops, any of the trees with bat roost potential (BT1-BT9) do require either removal, direct works to the tree (such as pruning), or where a suitable buffer zone (usually considered to be 5m) cannot be implemented, further survey will be required.
- 4.1.2 Further survey, in line with the Bat Conservation Trust Guidelines (3rd Ed, 2016), must be undertaken prior to the development commencing. For trees with moderate bat potential, at least two dusk (or dawn) bat activity surveys must be undertaken, and for trees with high bat potential this increases to three. The surveys should take place between May and September (with at least one between June and August). They should be spread at least two weeks apart and should be undertaken in good weather conditions (above 10°C, no heavy wind or rain). Where appropriate one of these activity surveys can be replaced by a daytime at height inspection.
- 4.1.3 BT6 and BT9 have been highlighted as trees with potential for hibernating bats. Should these trees require removal a series of hibernation checks will be required first including further endoscope surveys and the possibility of using camera traps as the features cannot be inspected in full.

4.2 Construction Environment Management Plan (CEMP)

- 4.2.1 There are potential impacts on ecology which can be mitigated for during construction. Good practices now suggest that a formal CEMP document, based on the finalised design layout, can outline numerous measures for protection during works and can be used as a strict guide by contractors working on the site. This document can be 'conditioned' into any planning permissions to ensure delivery during construction. It is therefore recommended to compile a CEMP document which includes the following broad principles:
- Tree protection measures, to include root protection zones in line with British Standard 5837: 2012 '*Trees in relation to Design, Demolition and Construction*';
 - Amphibian and reptile protection measures inclusive of hand searches, vegetation removal and appropriate timing of works;
 - Bat protection measures inclusive of licences/watching briefs where necessary and timing of works, this will be informed by any additional surveys which may be required (see Section 4.1 above). Under the current proposals no trees with bat roosting potential will be felled and therefore 5m buffer zones should be set up to minimise disturbance. If felling is required, further surveys should be conducted on moderate and high potential trees (see Section 4.1 above); trees with low bat roosting potential do not require further survey however should be felled under a precautionary approach and watching brief by a suitably qualified ecologist;
 - Breeding bird protection measures inclusive of nesting bird checks or appropriate timing of works. Any vegetation affected by the development should be removed outside the breeding bird season, i.e. removed between September and February. If these dates cannot be achieved, a suitably qualified ecologist should check for the presence of active nests immediately prior to vegetation removal. The implementation of a tree root protection zone as recommended in

the first bullet point above should also prevent disturbance to any birds nesting with these habitats;

- Mammal protection measures, such as avoiding leaving excavations open overnight without a safe egress point;
- General avoidance of target noted refuge areas were possible such as the brash and rubble piles. Destructive hand searches should be undertaken where avoidance is not possible, including for areas of scrub;
- General pollution mitigation to reduce dust, noise and accidental pollution events and disturbance from increased human presence via good practice organisation of the construction site and following the Environment Agency's Pollution Prevention Guidelines; and
- Security lighting restrictions during the construction phase and an absence of night working.

4.3 Scheme Design

Habitats and Botany

4.3.1 Locally native plants should be used for the landscaping of the new site. Flowering species should be planted to encourage insects, for example buddleia (*Buddleja davidii*), forget-me-not (*Myosotis arvensis*), honeysuckle (*Lonicera periclymenum*), thyme (*Thymus polytrichus*), together with fruiting trees/shrubs such as rowan (*Sorbus aucuparia*) and apple (*Malus domestica*) that birds can use for foraging.

4.3.2 BL Ecology recommends that for every tree lost, two more are planted to ensure a biodiversity net gain in line with the aims of the NPPF. Ideally these should be on the site but if this is not feasible off-site planting could also occur. Tree species planted along strategic links and within areas of landscaping should include a mixture of trees with bat roosting potential, similar to those lost such as oak (*Quercus spp.*), ash and beech (*Fagus sylvatica*), together with trees planted in belts and clusters to support foraging and commuting bats, such as silver birch (*Betula pendula*), elm (*Ulmus spp.*), and willow.

Bat and Bird Boxes

4.3.3 If any trees with bat roosting potential are lost it is recommended that at least one bat box, suitable for erection on trees (such as the Multi Chamber Woodstone Bat Box or the Eco Kent Bat Box), is installed on the site in compensation for every bat tree lost.

4.3.4 Due to the likely loss of nesting bird habitat, it is recommended that at least five bird boxes (such as the Vivara Pro Woodstone Nest Boxes with a range of entrance hole sizes to accommodate different species) are installed on retained semi-mature/mature trees on site and within the woodland. The boxes should be installed as high as possible (minimum 2m) on a north, east or south-east aspect, ensuring a clear flight path and away from any lighting.

Lighting

4.3.5 Any new security lighting installed should be shaded and pointed away from good quality faunal habitat in order to reduce disturbance during and post construction. In particular lighting should avoid the woodland edges, scattered trees, wall and hedgerows and scrub to be retained. The spread of light created should be kept near to or below the horizontal with no upward facing lights. The height at which these lights are mounted should also be kept to a minimum (Gunnell *et al.*, 2012). A maximum of 2000 lumens (150W) lamp should be used, which ideally should be fitted with a movement sensor with the timer set to the minimum amount of 'lit time' (Institute of Lighting Professionals, 2018).

- 4.3.6 The condition of the newly planted areas should be monitored in the first few years post construction to assess survival rates. Any dead trees, shrubs or grassland areas should be replaced.

4.4 Site Enhancements

- 4.4.1 In accordance with recommendations stated in 'Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Build' (Williams, 2010) it is recommended that bat roosting features are incorporated into the new building design. These should take the form of bat boxes either integrated into the walls of the building (e.g. bat bricks of which there are a whole range to fit in with the design) or attached to walls (e.g. a Schwegler 2FE Wall Mounted Bat Shelters). Boxes should be inserted as high as possible on a south/south-east/south-west direction and away from any lighting.
- 4.4.2 Similarly, the inclusion of suitable areas for nesting birds should be considered for the new building, either integrated into the building design or attached onto the building. These should be suitable for a range of species, such as the Schwegler 1SP Sparrow Terrace and general purpose Schwegler 2GR Nest Box.
- 4.4.3 Due to the likely loss of sections of dry-stone wall and scrub, it is recommended that a 'bug hotel' or insect house, is created to provide shelter for insects in an area of sunlight or light shade and in a well-drained area. It should consist of several different sections that provide insects with nesting facilities, for hosting pollinators and particularly during winter, offering shelter or refuge for many types of insects. Where possible, materials from site clearance should be used. If created with space at the base, the insect house can also provide shelter for hedgehogs and amphibians too.

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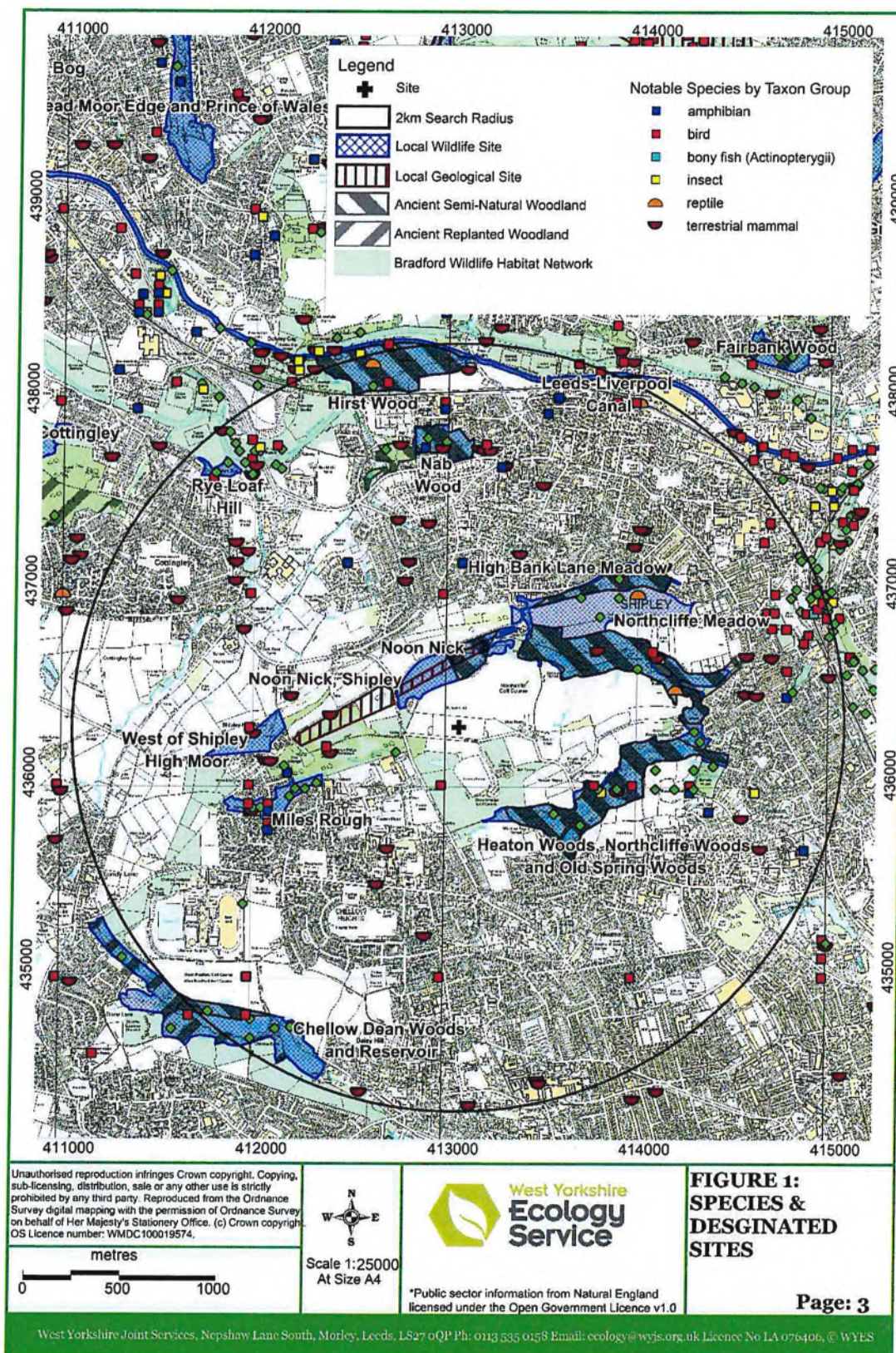
6 Figures

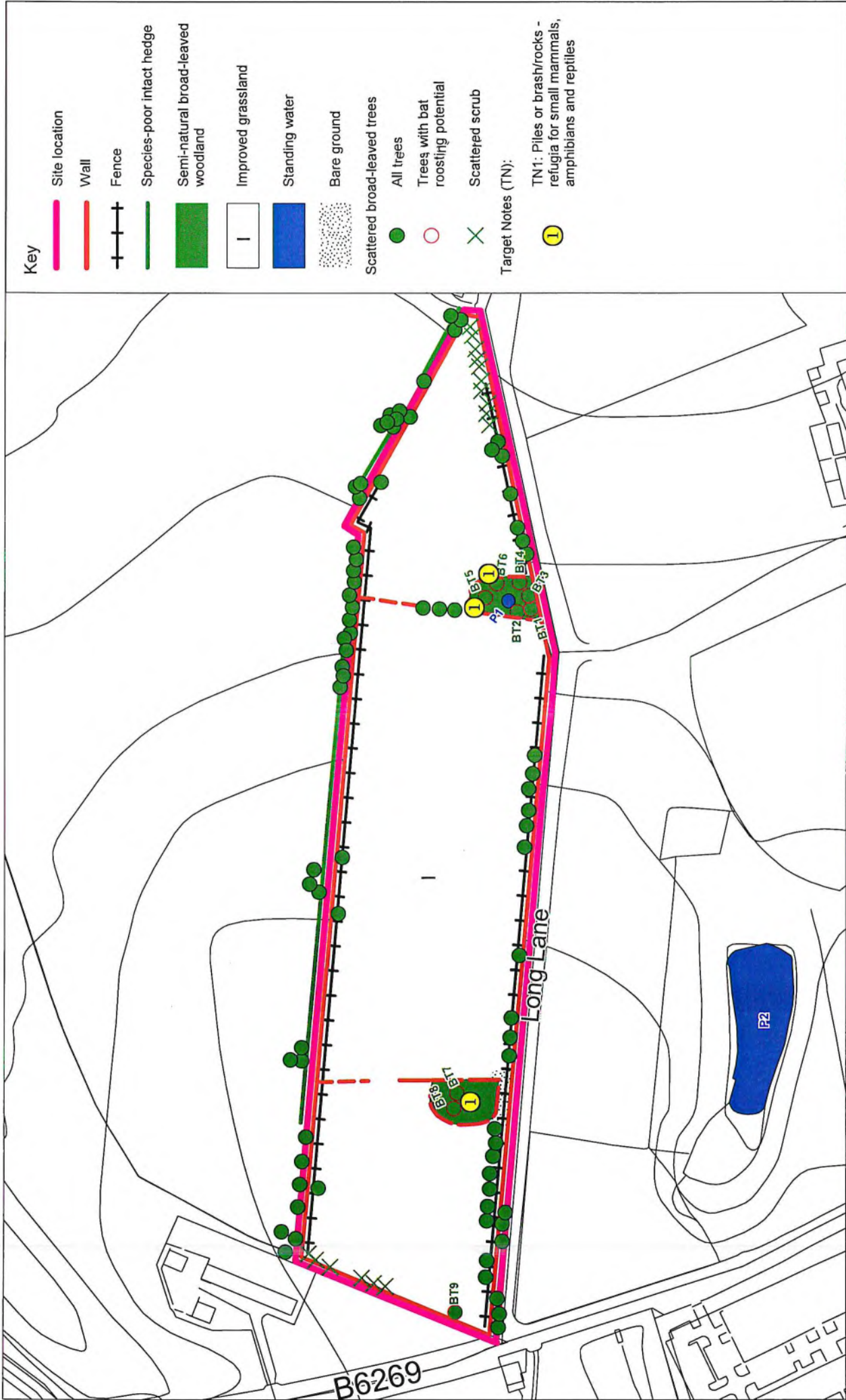
6.1 Figure 1 – Site Location and Desk Study Results

6.2 Figure 2 – Phase 1 Habitat Map

6.3 Figure 3 – Photographs

Figure 1 – Species and Designated Sites





Key

- █ Site location
- █ Wall
- Fence
- Species-poor intact hedge
- Semi-natural broad-leaved woodland
- Improved grassland
- Standing water
- Bare ground
- Scattered broad-leaved trees
- All trees
- Trees with bat roosting potential
- Scattered scrub
- Target Notes (TN):
- TN1: Piles or brash/rocks - refugia for small mammals, amphibians and reptiles

16/03/2020

Map reference
031_19b/RE02 - FIG 2 - V1

Drawn/Approved by
MG/BL

Scale
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Figure 2 - Phase 1 Habitat Map

Long Lane, Shipley - Preliminary Ecological Appraisal

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Ordnance Survey 0100031673



Photograph 1: Improved grassland dominated the site



Photograph 2: Woodland in the west of the site



Photograph 3: Scattered broad-leaved trees along the southern boundary of the site



Photograph 4: Pond P1 on site




Photograph 5: Pond P2 in the golf course near the site



Photograph 6: Example of section of species-poor intact hedge



	Project	Long Lane
	Title	Photographs
	Reference	031_19b
	Figure Number	3, Page 1 of 4
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Photograph 7: Example of TN1 – pile of stones



Photograph 8: BT1




Photograph 9: BT2



Photograph 10: BT3

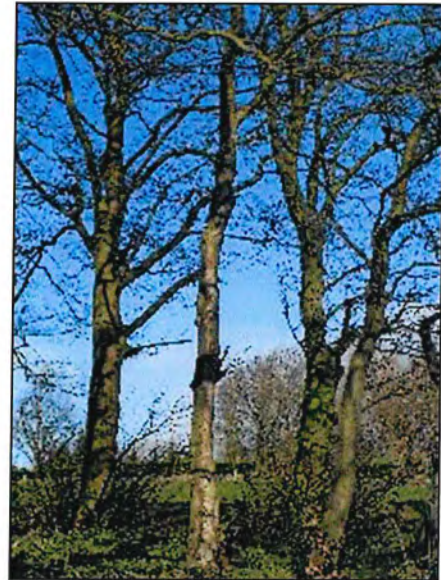


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Photograph 11: BT4



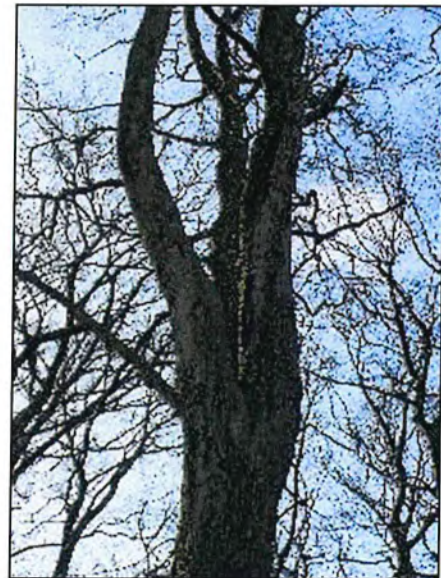
Photograph 12: BT5




Photograph 13: BT6



Photograph 14: BT7




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Photograph 15: BT8



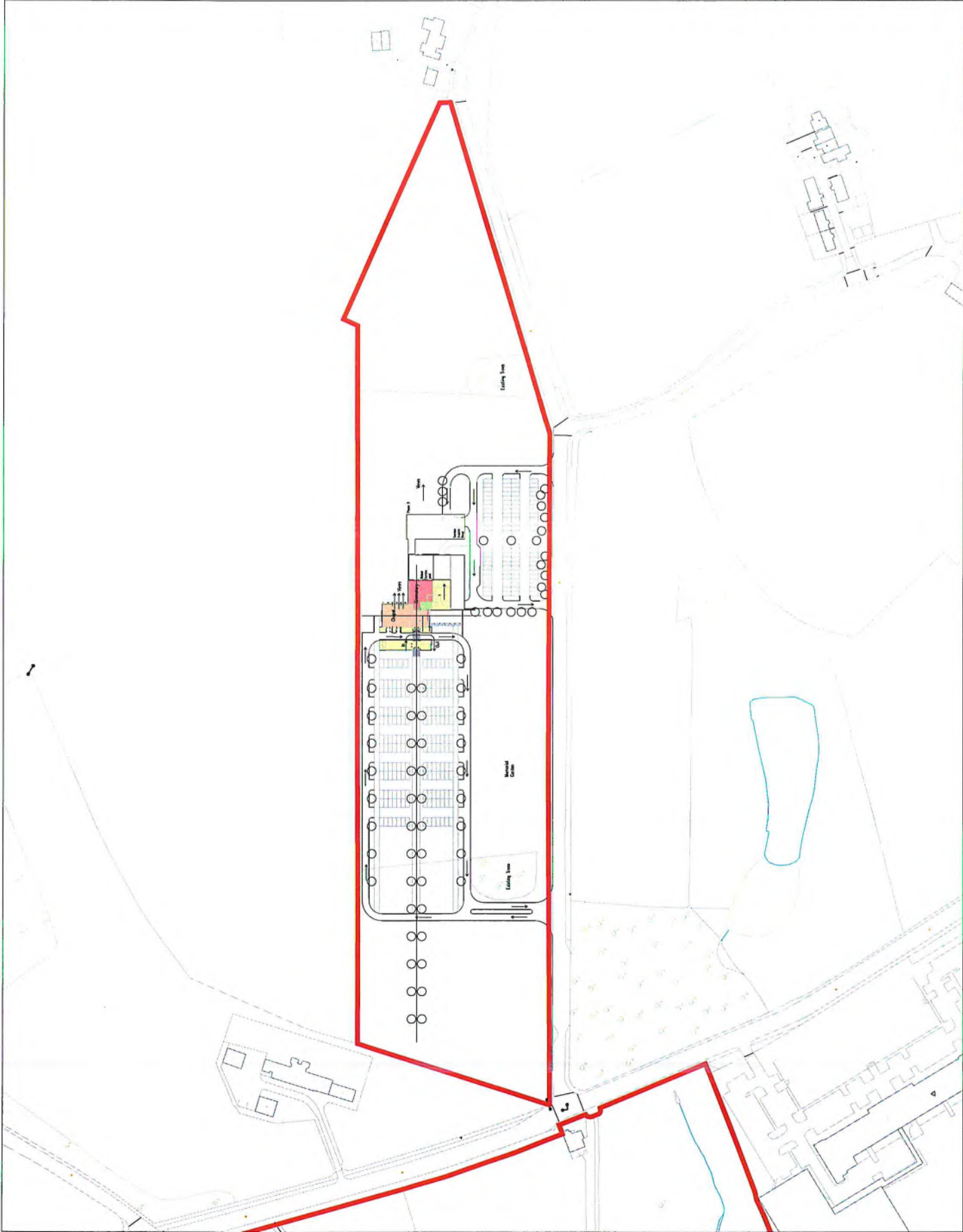
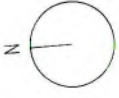
Photograph 16: BT9



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7 Appendix 1 – Proposals

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All information is based on information provided by others. Typical dimensions apply.
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CLIENT BRADFORD
CONSULTANT STRIDE TREGLOWN
BRADFORD METROPOLITAN DISTRICT COUNCIL
DESIGNER GM
CHECKER JE
CONSULTANT NO. 000000

CONSULTANT
STRIDE TREGLOWN
BRADFORD CREMATORIA

DRAWING TITLE
Long Lane Site -
Indicative Site Layout

SCALE
1:1000 @ A1
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PROJECT INFORMATION
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8 Appendix 2 – Survey Methodologies

8.1 General

8.1.1 A survey area was defined which is shown on Figure 1 (hereafter named 'the site'). The walkover was undertaken on 12th March 2020 by [REDACTED] and [REDACTED]

8.1.2 This chapter describes the methodologies involved for each stage of the assessment. Standard stages undertaken for this type of assessment include a desk study, a Phase 1 Habitat Survey, and an assessment of habitats available for the presence of protected faunal species. This methodology follows the CIEEM 'Guidelines for Preliminary Ecological Appraisal' (December 2017).

8.2 Phase 1 Habitat Survey

8.2.1 A walkover survey was undertaken in accordance with Phase 1 Habitat Survey Guidelines (JNCC, 2010). This methodology provides a standard technique for classifying and mapping habitats. The approach is based upon differentiating between various vegetation and other topographical and substrate features such as watercourses. Phase 1 Habitat maps are used to identify and locate features of interest, e.g. Biodiversity Action Plan (BAP) habitats.

8.2.2 Phase 1 habitat mapping also necessitates the production of target notes which are numbered sequentially and mapped. Target notes are used to provide further information on habitat features of particular or potential interest.

8.2.3 All animal and plant names are referred to in the text under their common names and scientific names. All nomenclature for vascular plants follows Stace (1997). Floral diversity and broad NVC of plant communities has been recorded wherever possible.

8.2.4 Any plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) that may be present, particularly Japanese knotweed (*Fallopia japonica*), giant hogweed (*Heracleum mantegazzianum*) and Himalayan balsam (*Impatiens glandulifera*), have been recorded and mapped.

8.3 Faunal Surveys

Badger Presence/Absence Survey

8.3.1 Badgers can be found on a variety of habitat types. They generally prefer to create setts in undisturbed areas and within topography that is sloped. Preferred habitats for foraging include woodlands and grassland (Woods, 1995). The site was searched for any signs of badger presence. Signs searched for included entrance holes (setts), dung pits, hair, footprints, badger footpaths, scratching posts, and snuffle holes.

Bat Survey

Daytime Inspection for Signs of Roosting Bats

8.3.2 The daytime survey was undertaken by Emma Mackenzie (Natural England Class 2 Bat Licence 2016-26320-CLS-CLS). The survey included the trees within the site considered likely to be impacted by the proposed development.

8.3.3 Trees were assessed for signs of roosting bats from ground level using binoculars. Signs searched for included bat droppings, scratch and grease marks around entrances, dead juvenile bats, and noises of bats calling from within the roost.

Daytime Inspection for Bat Roost Potential

- 8.3.4 An assessment was also made of the potential for the trees to support bats at other times of year. Features searched for included loose bark, woodpecker holes, rot holes, mature ivy, dead wood, and stress splits and cracks.
- 8.3.5 The trees were then awarded a level of potential to support roosting bats in summer, the breeding period, transitionally and in winter (roost requirements can be found in Appendix 3). The level of potential is defined by the presence of suitable roosting features together with the locality, environmental conditions, age and proximity to suitable bat foraging habitat. The levels of potential are defined below:
- **Negligible** – tree with no roosting potential and located in poor bat foraging habitat;
 - **Low** – tree with limited roosting potential with limited suitable bat foraging habitat. No suitability for breeding and/or hibernating bats;
 - **Moderate** – tree with some roosting potential of varying types and sizes, connected to some optimal bat foraging habitat. Some suitability for breeding bats and/or hibernating bats;
 - **High** – tree with multiple potential roosting cavities of varying types and sizes. High suitability for breeding bats and/or hibernating bats and connectivity to a range of optimal bat foraging habitats; and
 - **Confirmed roost** – Presence of droppings found internally, underneath roost access points or the presence of bats confirmed.

Breeding Bird Habitat Assessment

- 8.3.6 Nesting sites for birds depends on the species involved and can be created within structures (buildings, bridges, cliffs etc.), trees, shrubs, within ground vegetation and on bare ground, providing that suitable foraging habitat is adjacent. Habitats within the site were assessed for their suitability for breeding birds.

Great Crested Newt Habitat Assessment

- 8.3.7 Great crested newts require standing water on the site or on adjacent land. Any ponds that are within 250m of the site were considered. One pond was identified on site, and one suitable pond within 250m of the site, both of which were assessed via the calculation of a Habitat Suitability Index (HSI) in line with the procedure set out by Oldham *et al.* (2000). The HSI is a quantitative assessment of the capacity of a water body to support great crested newts. Ten key suitability indices (SI) are used, and it is assumed that population size is determined by habitat suitability. The indices include criteria such as pond location, size, desiccation rate, water quality, shade, number of waterfowl and fish, number of other ponds within 1km, the quality of the surrounding terrestrial habitat, and the level of macrophyte cover in the pond.
- 8.3.8 The SI scores are expressed as a value between 0 and 1. They are used to calculate the HSI of the water body as a geometric mean, using the equation: $HSI = (SI1 * SI2 * SI3 * SI4 * SI5 * SI6 * SI7 * SI8 * SI9 * SI10)/10$. The final HSI is expressed as a single number between 0 and 1, representing a completely unsuitable habitat or a completely suitable habitat for great crested newts respectively.
- 8.3.9 Great crested newts require different habitats at different times of the year; the site was searched for terrestrial habitat most suitable for newts including scrub, unimproved grassland, woodland and gardens (Oldham *et al.*, 2000).

Otter Habitat Assessment

- 8.3.10 Otters require freshwater habitat in the form of standing or running water. The water must contain prey species, such as fish, crustaceans or amphibians. Suitable riparian habitat

is required that can support resting sites and natal dens, the latter of which are created within secure, undisturbed sites such as within exposed tree roots adjacent to the water, or within disused rabbit entrances. Habitats within the site were assessed for their suitability for otters.

Reptile Habitat Assessment

- 8.3.11 The habitat requirements of this group depend on the species involved. The most likely species to be encountered in the UK are common lizard (*Zootoca vivipara*), grass snake (*Natrix natrix*), slow worm (*Anguis fragilis*) and adder (*Vipera berus*). Reptiles require a heterogeneous habitat with different vegetation types and structures, including bare ground patches for basking. Habitats within the site were assessed for their suitability for reptiles.

Water Vole Habitat Assessment

- 8.3.12 This species requires freshwater habitat that has a relatively stable water level. Undisturbed riparian habitat is required that has an abundance of vegetation species such as grasses and rushes that provide both cover from predators and act as a food source (Strachan, 2011). Habitats within the site were assessed for their suitability for water voles.

White-Clawed Crayfish Habitat Assessment

- 8.3.13 This species of crayfish requires calcareous streams with an abundance of suitable refuges, such as a rocky substrate, tree roots and leaf litter (Holdich, 2003). Habitats within the site were assessed for their suitability for crayfish.

8.4 Limitations

- 8.4.1 The Extended Phase 1 Habitat Survey was conducted during a sub-optimal time of year to survey for fauna and flora. However, it was considered that a sufficient species list was gathered to give an indication of the value of the habitat types found.

9 Appendix 3 - Bats

9.1 Biology

- 9.1.1 Bats make up 20% of all mammal species in the world, the order *Chiroptera* has over 1100 species with 17 species of those being native to the UK.
- 9.1.2 All British bats are insectivores and eat a range of prey from midges and mosquitoes to beetles and spiders. Their nocturnal feeding habits mean they are secretive and often utilise less developed areas such as woodlands, grasslands, watercourses and hedgerows. Bats can however be seen in more urban areas with the most common bats species, common pipistrelle, preferring to roost in buildings throughout the summer.
- 9.1.3 Bats have varying requirements for roosting throughout the year and this also varies vastly between species. Certain species are fairly restricted to trees throughout the year such as the barbastelle and noctules. General bat roosting habitats can include caves, mines, trees, buildings and churches.
- 9.1.4 Female bats require warmer temperatures in the summer where they can raise their young, these summer breeding sites are often used year after year and depending on species can range between 20 individuals to several hundred. Some roosts have been recorded at over 1000 individuals. Females begin to find breeding roosts in May and are normally present all summer.
- 9.1.5 Male bats spend most of the year segregated away from females in solitary roosts or in small numbers. In autumn after the females have had their pups in summer, male bats begin to either seek out breeding females to mate with or create mating roosts or harems. After mating bats disperse to their hibernation sites and fertilisation is delayed until the following spring.
- 9.1.6 In winter when insect prey is at a minimum, bats begin to seek hibernation sites where they can slow their bodies into torpor and save energy. Hibernation sites tend to support stable temperatures with high humidity, these sites are often in caves, tree hollows or deep in stone walls. Upon warming in spring bats begin their yearly cycle once again and pregnant females begin to form their maternity colonies once more.

9.2 Protection

- 9.2.1 Because of the fragility of bats roosting habitats and their massive decline over the last century, bats are now a fully European protected species. The legislation makes it an offence to:
- Deliberately or intentionally capture, injure or kill a bat;
 - Deliberately disturb bats in such a way as to be likely significantly to:-
 - Impair their ability to survive, breed or rear or nurture their young, or to impair their ability to hibernate or migrate; or
 - Affect significantly the local distribution or abundance of that species;
 - Damage, destroy or obstruct a breeding site or resting place of bats.
- 9.2.2 Actions which are likely to cause one or more of the offences listed above can be licensed by Natural England.
- 9.2.3 In addition to this greater and lesser horseshoe, barbastelle and Bechstein's bats are included on Annex II of the Habitats Directive (Conservation (Natural Habitats etc.) Regulations 1994 (as amended 2007). This legislation requires that areas Special Areas

of Conservation (SACs) are designated in suitable areas to protect the habitat of these species.

9.3 Planning Policy

9.3.1 The NPPF states that impacts to biodiversity should be minimised and also biodiversity should be enhanced where possible. Bats are therefore considered under the NPPF; this document is therefore a material consideration when assessing planning applications.

9.4 UK BAP and Species of Principal Importance

9.4.1 Barbastelle, Bechstein's, greater and lesser horseshoe, brown long-eared, noctule and soprano pipistrelle are Priority Biodiversity Action Plan (BAP) species. These Priority species are transposed into the Natural Environment and Rural Communities Act 2006. The act means all government departments must conserve these species and promote others to conserve them and their habitats.

9.5 References

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10 Appendix 4 – Great Crested Newts

10.1 Biology

- 10.1.1 Great crested newts are distributed patchily throughout Great Britain, though the national population is spread across a large area. South-west England, Scotland and Wales contain only sparse populations. Woodland and Scrub habitats provide the most suitable terrestrial habitat, as well as hedgerows and rough grasslands with suitable refuges below ground. Breeding populations of great crested newts are best supported by medium sized ponds with neutral to hard water, no fish and abundant aquatic vegetation.
- 10.1.2 Great crested newts are the largest newt species found in Britain. Movement between terrestrial over-wintering sites and aquatic breeding sites takes place nocturnally, between February and April. Different populations migrate at various paces and dates. At the latest, some individuals arrive at breeding ponds in May. Breeding takes place between April and May and egg-laying takes place between mid-April and mid-June. Most adults will leave the breeding site by August. When migrating to over-wintering sites, great crested newts may travel up to 1km or further, though they typically range within 500m of the breeding site. Larvae most commonly emerge during late Autumn, though they may remain in the pond until the following spring.
- 10.1.3 Smooth newts are widespread across the British Isles and are more commonly found in the south-east, east and midlands of Britain, as well as in Ireland. Smooth newts are not usually found in northern Scotland or south-west England. A wide range of terrestrial habitats provide resources for smooth newt populations; arable land with suitable refuges is sometimes appropriate. Breeding sites are most commonly found in ponds with neutral to hard water with abundant aquatic vegetation, ideally with good exposure to sunlight.
- 10.1.4 Smooth newts are much smaller than great crested newts, though a prominent crest can be seen on males of both species during breeding season. Smooth newts mostly over-winter on land, moving to breeding sites during early spring. Egg laying occurs between March and June. Most adults will return to land by July, and larvae typically emerge in late autumn, although they occasionally remain in the breeding pond over winter.
- 10.1.5 Palmate newts are distributed patchily throughout the British Isles, being most commonly found in northern Scotland and south-west and south-east England. Palmate newts are absent from the east Midlands, East Anglia and Ireland. Ponds with soft water provide the most appropriate habitat for palmate newts, whilst all other requirements are very similar to those of the smooth newt.
- 10.1.6 Palmate Newts are similar in size to the smooth newt. Males have distinctive webbed feet and a thin filament at the end of the tail but no crest. Palmate newt breeding and migration cycles are very similar to those of the smooth newt.

10.2 Protection

- 10.2.1 Individual great crested newts are protected from any disturbance or damage by law. This protection applies within and outside designated areas. They are protected under the Conservation Regulations 1994 and the Wildlife and Countryside Act 1981. These regulations make it an offence to:
- *Intentionally or deliberately kill, or intentionally injure, a great crested newt.*
 - *Deliberately disturb a great crested newt or intentionally or recklessly disturb them in a place used for shelter or protection.*
 - *Damage or destroy a breeding site or resting place of a great crested newt.*

- *Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt.*
- *Possess or control any live or dead specimen or anything derived from a great crested newt unless acquired lawfully.*
- *Sell, barter, exchange, transport or offer for sale great crested newts or parts of them.*

10.3 Planning Policy

- 10.3.1 Any development which could kill, injure or disturb great crested newts or their habitat must include planned and licensed mitigation of any impacts. Implemented mitigation must be licensed by Natural England.
- 10.3.2 Smooth newts and palmate newts are protected from sale or trade under provisions of Section 9 on Schedule 5 of the Wildlife and Countryside Act. They are not subject to European protection.
- 10.3.3 Local Authorities are obliged to take into consideration the presence of great crested newts when considering proposed developments which may cause death, injury or disturbance of great crested newts or their habitat.

10.4 UK BAP and Species of Principal Importance

- 10.4.1 The UK Biodiversity Action Plan lists great crested newts as a priority species (HM Government 1994).
- 10.4.2 Section 74 of the Countryside and Rights of Way act 2000 considers great crested newts to be a Species of Principal Importance for the Conservation of Biodiversity in England. Consequently, all government departments must consider the interests of the conservation of this species.

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