



Cornhill, Leek
Ecological Appraisal

Staffordshire Moorlands District Council

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Summary

Ecus Ltd was commissioned in August 2016 to undertake an ecological appraisal of the Cornhill Economic Regeneration Scheme, on the southern edge of Leek, Staffordshire and review of the existing Preliminary Ecological Assessment. Britannia House and grounds occupies approximately 45% of the study area, the majority of which is built environment: hard standing for car-parking and the large Britannia House building itself. Birchall Meadow is an area of species-rich semi-improved grassland of sufficient value to qualify as a Site of Biological Importance. Other areas of the site consist of scrub, scattered trees and rank semi-improved grassland. Linear site features that might be expected to provide commuting and foraging routes for bats are the dismantled railway line along the western boundary and the watercourse along the southern boundary.

The ecological appraisal identified habitat within the site potentially suitable to support reptile species and therefore a reptile presence/absence survey was undertaken in October 2016 and April- May 2017. A single grass snake was recorded once during the survey, indicating a low population of the species. It is unlikely that the site is important in maintaining the local population of grass snake, but the brook corridor may be important in providing connectivity to other habitats in the local area.

Three transect surveys and three associated 5-day periods of static detector monitoring were undertaken in each of October 2016, May 2017 and June 2017 to assess bat activity at the proposed Cornhill development site. Foraging and commuting bats are present throughout the site but species diversity and levels of activity are low. It is also probable that population densities are low. No single area of the site appeared to be a focal point for bat activity.

Recommendations are made to avoid impacts to nesting birds, bats, badgers, hedgehogs and reptiles.

The proposed development offer opportunities to provide biodiversity enhancements and recommendations have been included within the report.

1. Introduction

1.1 Background

- 1.1.1 Ecus Ltd was commissioned in August 2016 to undertake an ecological appraisal of the Cornhill Economic Regeneration Scheme, on the southern edge of Leek, Staffordshire and review of the existing Preliminary Ecological Assessment. The site is approximately 8.1 ha in area, with a central grid reference of SJ 983 553. It is bounded to the north by housing, to the east by the A520, to the south by Birchall playing fields and to the west by a disused railway line and Barnfields Industrial Estate. The proposed development includes residential and commercial buildings as well as an access road and landscaping.
- 1.1.2 The purpose of survey was to carry out an extended Phase 1 habitat survey and to review the potential for the site to contain, or be used by, species protected under either UK or European nature conservation legislation, namely, the Wildlife & Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2010 and the Natural Environment and Rural Communities Act 2006 (NERC Act) Any identified impact upon such habitats or species that is likely to result from the proposed development has been assessed.
- 1.1.3 This report details the findings of the survey work and subsequent impact assessment. Methodologies employed are described including site surveys and evaluation and the need for any further survey work and/or mitigation measures are included, where appropriate. Ecological enhancements are also recommended.

3. Methodology

3.1 Extended Phase 1 Habitat Survey

3.1.1 A site survey was undertaken by Ecus Ltd ecologist Dermot McKee on 22nd August 2016, following extended Phase 1 habitat survey methodology (JNCC, 2010). The habitats and vegetation types present were recorded on to a field map and any evidence of protected species was recorded. This included observations of field signs and an assessment of the suitability of the habitats present to support protected species. Habitats and species of principal importance that are listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and the Local Biodiversity Action Plan (LBAP) for the area were noted where necessary. The value and sensitivity of ecological features present on site was determined based on the guidance given in 'Guidelines on Ecological Impact Assessment' (CIEEM, 2016). Individual ecological receptors (habitats and species that could be affected by the development) for the scheme were assigned levels of importance for nature conservation.

3.1.2 A verification of Birchall Meadow was undertaken to assess the grassland against the SBI criteria.

3.1.3 Notable, rare or scarce plant species were highlighted if present. Evidence of protected species or species of nature conservation importance was recorded where present at the time of survey. Species recorded are included within the report as appropriate with further information presented in Figure 1.

3.1.4 The value and sensitivity of ecological features present on site were determined based on the guidance given in 'Guidelines on Ecological Impact Assessment' (CIEEM, 2016). Individual ecological receptors (habitats and species that could be affected by the development) for the scheme were assigned levels of importance for nature conservation. The highest level is international, then decreasing in order of importance through national, regional, county, local and site level.

3.2 Protected and Key Species

3.2.1 Any evidence of protected species or groups encountered during the survey was recorded. This included observations of field signs and an assessment of the suitability of the habitats present to support protected species. For full details of legislation relating to habitats and species discussed within this report visit <http://www.legislation.gov.uk>.

Amphibians

3.2.2 Amey (2015) found no evidence of the presence of great crested newt (*Triturus cristatus*) in the ornamental pond next to Britannia House. Habitat and pond conditions have not altered and therefore great crested newts are not considered likely to pose a constraint to future development. They are not discussed further in this report.

Badger

3.2.3 Signs of badger (*Meles meles*) activity were searched for within the survey area as part of the extended Phase 1 survey. Survey followed standard methodology (Harris *et al.*, 1989). This included survey for badger setts, along with survey of linear features and boundaries for signs of badger activity including dung pits, foraging marks, feeding signs and pathways.

Bats

3.2.4 Bat surveys carried out by Amey (2015) reported a ‘moderate’ level of bat activity at Cornhill. Species recorded were mainly common pipistrelles (*Pipistrellus pipistrellus*) with a few soprano pipistrelles (*Pipistrellus pygmaeus*) and a single record each of Nathusius’ pipistrelle (*Pipistrellus nathusii*) and noctule (*Nyctalus noctula*). Activity was concentrated in the western area of the site and along the watercourse forming the southern boundary.

3.2.5 An update ecological appraisal of the site by ECUS (2016) subsequently assessed site habitats as being of low suitability for bats (i.e. providing limited foraging and commuting opportunity) and as providing negligible roosting opportunity. This was due to a combination of factors including general paucity of mature trees, hedgerow and unmanaged grassland across the site, as well as its suburban location and relative lack of connectivity to high quality habitat in the surrounding countryside. However, such habitat may still be of importance to local bats, especially if there is not much of it around.

Transect Surveys

3.2.6 A total of three transect surveys were undertaken by ECUS ecologist Dermot McKee (Level 2 bat licence: 2015-12585-CLS-CLS, GradCIEEM) between October 2016 and June 2017 (Table 1). The route covered the entire site, focusing on areas of suitable bat foraging and commuting habitat, and was approximately 2 km in length (Figure 3). It was walked at a steady speed, with stops for 3 minutes at each of 11 pre-determined vantage points. Each survey started at sunset and lasted for two hours, with starting locations being varied between surveys to avoid data bias.

Table 1. Basic Transect Survey Information

Date	Weather Conditions	Sunset	Bat Detector and recording device
12-10-16	Start: 11 °C, no precipitation, light air (Beaufort 1), 80% cloud cover. Finish: 10 °C, no precipitation, light air (Beaufort 1), 80% cloud cover.	18:18 h	BatBox Duet with Roland Edirol digital recorder.

24-05-17	Start: 21 °C, no precipitation, calm (Beaufort 0), 0% cloud cover. Finish: 16 °C, no precipitation, calm (Beaufort 0), 40% cloud cover.	21:14 h	BatBox Duet with Roland Edirol digital recorder.
12-06-17	Start: 14 °C, no precipitation, light air (Beaufort 1), 90% cloud cover. Finish: 14 °C, no precipitation, light air (Beaufort 1), 70% cloud cover.	21:34 h	BatBox Duet with Roland Edirol digital recorder.

Static Monitoring Surveys

3.2.7 On the date of each transect survey a Wildlife Acoustics SM2 static bat detector was deployed at ground level in a location considered to offer good potential to support commuting and foraging bats (Table 2; Figure 3). The SM2 was left in place for five consecutive nights and was programmed to begin recording bat activity 30 minutes before sunset and then throughout the night until 30 minutes after sunrise. All echolocating bats flying past the detector were, in theory, recorded.

Table 2. Static Monitoring Dates and Locations

Monitoring Period	Location (Grid Reference)	Figure 1 Reference
12-10-16 to 17-10-16	SJ 98385 55314	A
24-05-17 to 29-05-17	SJ 98307 55319	B
12-06-17 to 17-06-17	SJ 98135 55365	C

3.2.8 Analysis of SM2 sound files was undertaken using AnalookW software and bat calls determined to species level or species group, with reference to Russ (2012).

Limitations

3.2.9 All bat survey work followed good practise guidelines (Collins, 2016) and was undertaken during the appropriate season and in weather conditions when bats would be expected to be normally active. No limitations were encountered.

Birds

3.2.10 Detailed bird survey was not undertaken as part of this assessment, however, whilst on site the opportunity was taken to record all species of birds encountered and habitats on site were assessed for their likely value to nesting and foraging birds.

Reptiles

3.2.11 The habitats present on site were assessed for their suitability to support

basking, foraging and hibernating reptiles, with reference to their connectivity with other suitable habitat in the surrounding area.

- 3.2.12 A reptile presence/absence survey was undertaken in accordance with methods detailed in the Herpetofauna Workers' Manual (Gent and Gibson, 2003). Methods included the use of refugia to attract any reptiles on site; manual searching of existing suitable refugia present on site; checks for signs of reptile activity including sloughed skins, burrows, egg laying sites etc. and sustained visual observation of suitable areas such as banks within the site.
- 3.2.13 A total of 76 artificial refugia comprising 0.5 x 0.5 m squares of roofing felt were placed around the site in areas of suitable habitat. Locations of reptile refugia are presented on Figure 2.
- 3.2.14 The refugia warm up faster than the surrounding habitats and retain heat, making them attractive as reptile basking spots. Refugia were in place for 7 days before the first survey visit to allow them to bed in and any reptiles in the area to locate and start using them. During the visit to set out the traps, visual observation of the site was undertaken, including grassed areas, and raised banks.
- 3.2.15 A total of seven survey visits were undertaken by Ecus ecologists during suitable weather conditions during October 2015 and April/May 2017. Surveys were undertaken during late morning or early afternoon/ evening, based on the most suitable weather conditions and temperatures. Details are provided in Appendix 1.

Riparian Mammals and White-clawed Crayfish

- 3.2.16 Habitats were assessed for their potential to support riparian mammals and white-clawed crayfish.

Other Protected and Key Species

- 3.2.17 The opportunity was taken whilst on site to assess habitats for their potential to support other protected species, search for signs of nationally or locally scarce or notable species, or any species protected under national or international nature conservation law.

3.3 Invasive species

- 3.3.1 During the extended Phase 1 habitat survey, any evidence of invasive species, as listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), was recorded.

3.4 Limitations

- 3.4.1 Phase 1 habitat surveys are intended to provide a rapid assessment of habitats present within a site at any time of year. The walkover was undertaken in March by an experienced ecologist and, whilst outside the optimal season for botanical survey, it is considered that an accurate assessment of site habitats and a robust evaluation of their importance to nature conservation has been made.

4. Baseline and Evaluation

4.1 Site Description

4.1.1 The site is approximately 8.1 ha in area, with a central grid reference of SJ 983 553. It is bounded to the north by housing, to the east by the A520, to the south by Birchall playing fields and to the west by a disused railway line and Barnfields Industrial Estate. The proposed development includes residential and commercial buildings as well as an access road and landscaping.

4.2 Habitats

4.2.1 Britannia House and grounds occupies approximately 45% of the study area, the majority of which is built environment: hard standing for car-parking and the large Britannia House building itself (Figure 1; Appendix 4, photograph 2). Areas of ornamental planting (introduced shrub) and amenity grassland with scattered young trees are frequent here (Appendix 4, photograph 3). An ornamental pond (Appendix 4, photograph 4) is located at the eastern extremity. Such landscaped habitat is not rich in native species and is widespread throughout the country. It is therefore considered of importance for nature conservation at the site level only.

4.2.2 The parcel of land sandwiched between the Britannia House grounds and Sandon Street consists of a series of improved grassland fields, used for grazing livestock (Figure 1; Appendix 4, photograph 5). The field boundaries consist principally of wire fencing, with areas of species-poor intact hedgerow (dominated by hawthorn (*Crataegus monogyna*)). A number of small stable buildings are located in the north-west corner of the area. This habitat is not rich in native species and is widespread throughout the country. It is therefore considered of importance for nature conservation at the site level only.

4.2.3 The small parcel of land adjacent to the south-east corner of the cattle market is dominated by semi-improved rank grassland with frequent tall ruderal vegetation. Frequently occurring species here include cock's foot (*Dactylus glomerata*), false oat grass (*Arrhenatherum elatius*), nettle (*Urtica dioica*), bramble (*Rubus fruticosus*), creeping thistle (*Cirsium arvense*) and broad-leaved dock (*Rumex obtusifolius*). Two small buildings (wooden huts) are located at the northern end of this land. A series of garage-type modern buildings (Appendix 4, photograph 6) with associated hard standing and metal fencing are located immediately to the north-east. This habitat is not rich in native species and is widespread throughout the country. It is therefore considered of importance for nature conservation at the site level only.

4.2.4 Birchall Meadow supports a diverse range of species, comprising of tall herbs and rank grasses in the areas of unmown grassland. Species-rich grasslands are a priority habitat for the Staffordshire Biodiversity Action Plan and the meadow fulfils the Staffordshire SBI guidelines criteria.

4.3 Species

Badger

4.3.1 Evidence of recent badger activity (pathways, faeces, hair, snuffle holes)

was found in the north-eastern area of Birchall Meadow and along the edge of the adjoining scrub belt to the east (Appendix 4, photograph 7). A clearly active sett was located on site (Appendix 5).

- 4.3.2 Badgers are common and widespread. The population of badgers using the site is of negligible importance. The legislation protecting badgers is primarily aimed at preventing their persecution. However, any impacts to badgers or their setts would need to conform with planning policy relating to protected species.

Bats

- 4.3.3 No evidence of the presence of bats was found on close external inspection of the Britannia House building. The building appears sound with no obvious features that might present roosting opportunities for bats (e.g. gaps under roofing, gaps in brickwork because of loose masonry, etc). Although it is virtually impossible to completely rule out the presence of bats, given that the building is not scheduled for any direct development and given that the habitat immediately surrounding the building is of marginal quality for foraging bats, the building was assessed as having negligible suitability for roosting bats. This means that, currently, no further bat survey concerning the building is necessary.
- 4.3.4 A number of other small buildings occur on site in the area adjacent to housing at the end of Sandon Street (photographs 5 and 6). These buildings were externally inspected as closely as possible. No evidence of bat presence was found and none of the buildings presented obvious features suitable for roosting bats. They were therefore assessed as having negligible suitability for roosting bats and do not, currently, require a further bat survey.
- 4.3.5 No evidence of bats was found at the dead tree, described by Amey (October 2015).

Transect Surveys

- 4.3.6 Bat activity was low (Figure 4; Appendix 2). The only species recorded was common pipistrelle and observations were of only one or two individuals. No particular area of the site appeared to be a focal point of bat activity, with records being distributed fairly evenly along the length of the transect.

Static Monitoring Surveys

- 4.3.7 A total of 465 sound files were recorded during the static monitoring period from two bat species, common pipistrelle and soprano pipistrelle (Appendix 3). Both species were recorded at all three static detector locations at similar frequencies during October and May. In June, common pipistrelle recordings far outnumbered those of soprano pipistrelle (256 cf. 2). This may indicate that soprano pipistrelles switched their activity away from the site at this time, perhaps because females were entering the peak period of giving birth and had different requirements. It perhaps also indicates the importance of the disused railway line as a commuting and foraging route for common pipistrelle bats.
- 4.3.8 Different species of bats emerge from their roost sites at characteristic times (for example, before sunset or only when it is totally dark). The timings of

the earliest recording made by a static detector (or surveyor in the field) can therefore help to indicate whether a roost is close to that particular location. Common pipistrelle and soprano pipistrelle bats typically emerge from their roost sites around 20 minutes after sunset. Results from the static monitoring ('first bat', Appendix 3) suggest that the roosts that these species were emerging from were unlikely to be on site. Both species will roost in buildings and so were probably flying to the site from somewhere in the surrounding housing estate.

- 4.3.9 The static detector recordings support observations from the transect surveys, that bat activity and species diversity across the site is low. It is likely that the number of bats using the site is also low although, clearly, this information cannot be directly inferred from static detector data.

Summary of Bat Survey Findings

- 4.3.10 Site habitats were previously assessed as being of low quality for foraging and commuting bats and survey results reflect this assessment. Bat activity across the site was low, with species represented only by common and soprano pipistrelles. No particular area of the site appeared to be a focal point for bat activity. Nevertheless, the southern and western site boundaries are probably of some importance as commuting and foraging routes.
- 4.3.11 The community of bats recorded using the site comprises common and widespread species. It is of no more than local importance.

Birds

- 4.3.12 A number of common bird species were recorded on site. Much site habitat has good potential to provide nesting sites for these resident species as well as summer migrants. Additional common wintering birds are likely to be supported in small numbers. It may be beneficial to update the breeding survey undertaken in 2009 as the importance of the site may have increased if there has been loss of nearby habitats through development in the intervening period.

Reptiles

- 4.3.13 Site habitats are considered of marginal suitability for reptiles.
- 4.3.14 One female adult grass snake was recorded under refugia 10A, adjacent to the brook in Birchall Meadow on 5th May 2017. Survey dates, timings, temperature and results are provided in Appendix 1. The grass snake population using the site is of no more than local importance.
- 4.3.15 Reptiles are unlikely to pose a significant constraint to future development and a large scale translocation and mitigation project is considered unnecessary, although mitigation may be required to facilitate site clearance.

Riparian Mammals and White-clawed Crayfish

- 4.3.16 No evidence of the presence of water vole was found on site. However, water voles are mobile and it is possible the site may become colonised prior to development. The site is highly unlikely to support otter (*Lutra lutra*) or white-clawed crayfish (*Austropotamobius pallipes*).

Other Protected and Key Species

4.3.17 Hedgehogs (*Erinaceus europaeus*) may use the grassland, scrub and hedgerow on site for foraging and shelter. Habitats within or adjacent to the site are unlikely to support any other protected or notable species.

4.4 Invasive Species

4.4.1 The invasive, non-native plants, Japanese knotweed (*Fallopia japonica*) and Indian balsam (*Impatiens glandulifera*) were recorded on site (see Figure 1). Japanese knotweed was occasional along the northern boundary of Birchall Meadow (Appendix 4, photograph 8). Indian balsam was rare along the water course in the grounds of Britannia House.

5. Ecological Assessment and Mitigation

5.1 Proposals

- 5.1.1 The proposed development plot will mean landtake of the majority of site and habitats assumed during the assessment of impacts. The following assessment is based on Draft Illustrative Masterplan & Ownership Areas provided, 2016 provided by Staffordshire Moorlands District Council (see Appendix 5).

5.2 Habitats

- 5.2.1 The main areas of ecological interest are Birchall Meadow and the immediately adjoining scrub / rank grassland, the railway corridor and the watercourse running along the southern boundary of the site. These areas provide the best habitat for bats, birds, badgers and, potentially, reptiles, as well as other flora and fauna. As the majority of site habitats will be lost under the current development proposals, it is suggested that connecting habitat should be maintained as much as possible along the southern and western boundaries of the site (the watercourse and old railway line, respectively; Figure 1).

5.3 Species

Badgers

- 5.3.1 Badgers and their setts are protected under the Protection of Badgers Act 1992. It is an offence under the act to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct a currently active badger sett, or to disturb animals within the sett.
- 5.3.2 Badgers are likely to be affected by the proposed development, as a sett has been identified on site (Appendix 5). It is recommended that an updated badger survey is undertaken prior to development to inform any mitigation requirements. This may include closing the sett under licence.

Bats

- 5.3.3 All species of bat occurring within the UK are included in Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended). Under regulation 41 bats are protected from deliberate capture, injury or killing, from deliberate disturbance and from deliberate damage or destruction of a breeding site or resting place (roost).
- 5.3.4 All UK bats are also included on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). However, their protection is limited to certain offences. Under the 1981 Act (as amended) it is an offence to intentionally or recklessly disturb bats while they are occupying a structure or place used for shelter or protection, or to obstruct access to any such place. Lesser horseshoe bats, greater horseshoe bats, barbastelle and Bechstein's bat are also included on Annex II of the Habitats Directive, which means that their conservation requires the designation of Special Areas of Conservation (SAC) for roosts of European importance.
- 5.3.5 The site is likely to be part of a diffuse mosaic of habitat used by local bats, including surrounding gardens, Birchall playing fields, Leek golf club, the

dismantled railway line and the River Churnet. Given that bat activity and species diversity across the site is low, that numbers of individual bats are also likely to be low and that there is other similar habitat in the area, it is probable that site habitats are of importance to foraging and commuting bats at site level only. However, such marginal habitat is currently being extensively eroded by development and therefore every effort to enhance the resulting landscape for the benefit of wildlife should be taken. With regard to bats, three complimentary approaches to habitat enhancement are readily available: attention to lighting; provision of roosting opportunities; and promotion of foraging opportunities.

- 5.3.6 Bats are sensitive to artificial lighting and, in general, will avoid brightly lit areas (Stone, 2013). Type of lighting may also influence their behaviour. It is recommended that lighting across the development should be both spatially and temporally minimal. A plan should be formulated in which potentially more sensitive areas are not subject to light-spill (for example the southern boundary along the watercourse and the western boundary along the disused railway line). The plan should be reviewed by an ecologist and secured via a planning condition attached to consent.
- 5.3.7 Placing bat boxes in appropriate locations on buildings and trees may provide roosting opportunity for a number of bat species, including common and soprano pipistrelles (the Bat Conservation Trust provide a useful information pack, available at http://www.bats.org.uk/pages/bat_boxes.html). Retention of existing trees, as well as new planting, may also help to provide roosting sites over the longer term.
- 5.3.8 Planting a diverse array of native trees and shrubs as part of the landscape scheme will encourage invertebrate populations which in turn are a food resource for bats. Once matured, this new habitat may help to maintain foraging opportunity for bats within the local area.

Birds

- 5.3.9 All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) against destruction of the nest during the bird nesting season, which falls between March and August, inclusive.
- 5.3.10 Although landtake of onsite habitats will result in the loss of some foraging and nesting habitat this is unlikely to affect the conservation status of any bird populations beyond the site.
- 5.3.11 During vegetation clearance works there is potential for active bird nests to be destroyed. It is therefore recommended that works of this kind should be undertaken outside of bird nesting season i.e. undertaken between September and February inclusive.
- 5.3.12 If it is not possible to schedule clearance works for these months, a breeding bird check undertaken by a suitably qualified ecologist will be required no more than two days prior to clearance, to check for the presence of active bird nests. An active nest would require an exclusion zone to be established and maintained until chicks have fledged (to be confirmed by an ecologist).
- 5.3.13 Inclusion of a range of bird nesting provision across the development would be considered a positive enhancement for biodiversity and would conform

with planning policy seeking biodiversity enhancements during development. Suitable provision may include general bird boxes with 26 mm and 32 mm entrance holes suitable for a range of garden bird species and/or sparrow terrace bird boxes, designed to support house sparrows. The bird boxes should be placed at a minimum height of 3 m in a number of locations facing different aspects to maximise the chances of occupation. However, full south aspects which receive full sun all day during the summer months present a risk of overheating and should therefore be avoided.

Reptiles

5.3.14 It is an offence to intentionally kill or injure reptiles under the Wildlife and Countryside Act 1981. Therefore, it is recommended that a reptile method statement is implemented during the construction phase to reduce the risk of impacts to reptiles. This should include the following measures:

- Retention and protection of areas of suitable reptile habitat.
- Provision of a toolbox talk to construction staff.
- Hand searching areas of suitable habitat by a suitably qualified ecologist.
- Phased vegetation clearance undertaken between March and September, whilst reptiles are active and likely to move of their own volition.

5.3.15 A single grass snake was recorded once during the survey, indicating a low population of the species. It is unlikely that the site is important in maintaining the local population of grass snake, but the brook corridor may be important in providing connectivity to other habitats in the local area. In order to minimise impacts to grass snakes it is recommended habitat connectivity should be maintained along the southern and western boundaries of the site. Linear features such as brooks provide an important corridor for wildlife such as grass snakes and suitable habitats should be retained where possible. Habitat enhancements could be incorporated within the proposed development to help maintain the local grass snake population.

5.3.16 The following actions are therefore advised:

- Retaining a vegetated buffer along the brook.
- Creation of new compost heaps in sunny areas to provide egg-laying sites.
- Retaining of scrub, trees and terrestrial refugia where possible.
- Creating new refugia for reptiles e.g. roof tiles, logs etc.
- Retaining ponds and creation of new ponds where possible.

6. Other Key and Notable Species

Hedgehog

6.1.1 Hedgehog is included as a species of principal importance under Section 41 of the NERC Act 2006 and whilst not afforded a high level of protection, they are a species in decline and taking a best practice approach, should be taken into consideration during works.

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- 6.1.2 Hedgehogs are highly mobile and inquisitive animals that have potential to move onto site at any time, therefore as a precautionary measure, it is recommended that any excavations left overnight should be covered or have a suitable escape ramp e.g. a long scaffold board, inserted to allow escape should a hedgehog fall in.
- 6.1.3 Should a hedgehog be discovered on site at any time, it should be moved carefully with gloved hands to a sheltered area away from the footprint of works.
- 6.1.4 Providing gaps (75 mm x 75 mm) within any fence bases is recommended to ensure hedgehogs are able to move between gardens.

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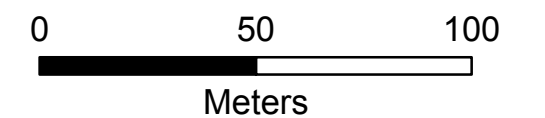
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Figure 1. Habitat Map

Legend

- Survey
- TN Target Note
- Scattered Tree
- Building
- Hardstanding
- Pond
- Species Poor Intact Hedgerow
- Area of Greatest Ecological Interest (for bats & reptile)
- Retained Area for Connectivity
- A Amenity Grassland
- Introduced Shrub
- I Improved Grassland

Target Note Number	Description
TN1	Japanese Knotweed
TN2	Indian Balsam
TN3	Area of Badger Activity
TN4	Compost Heap (Amey, 2015)



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Figure 2
Ecological Constraints Plan

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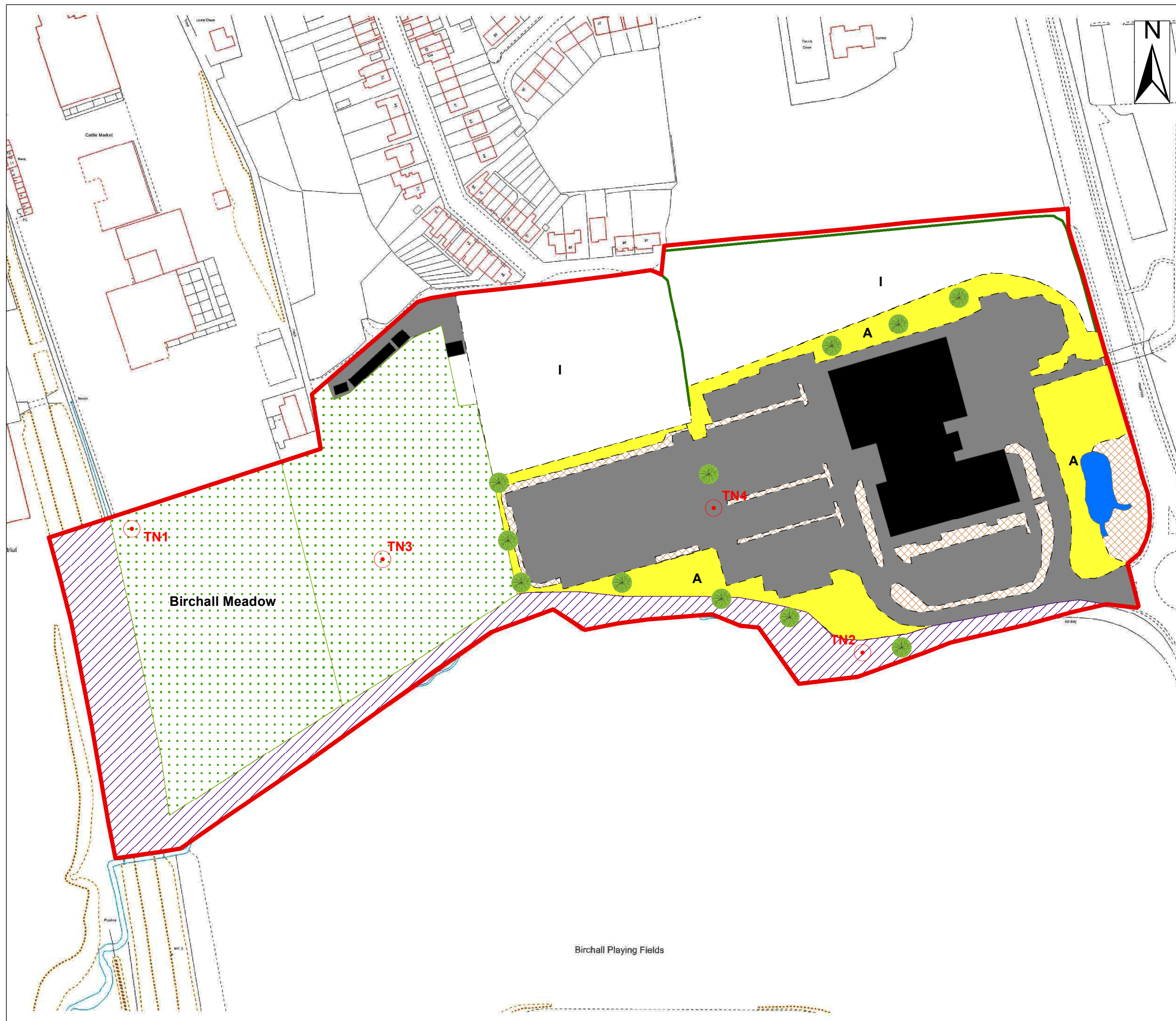
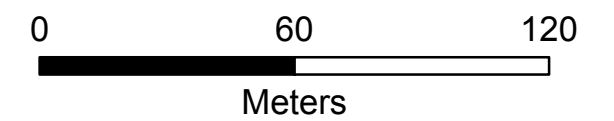
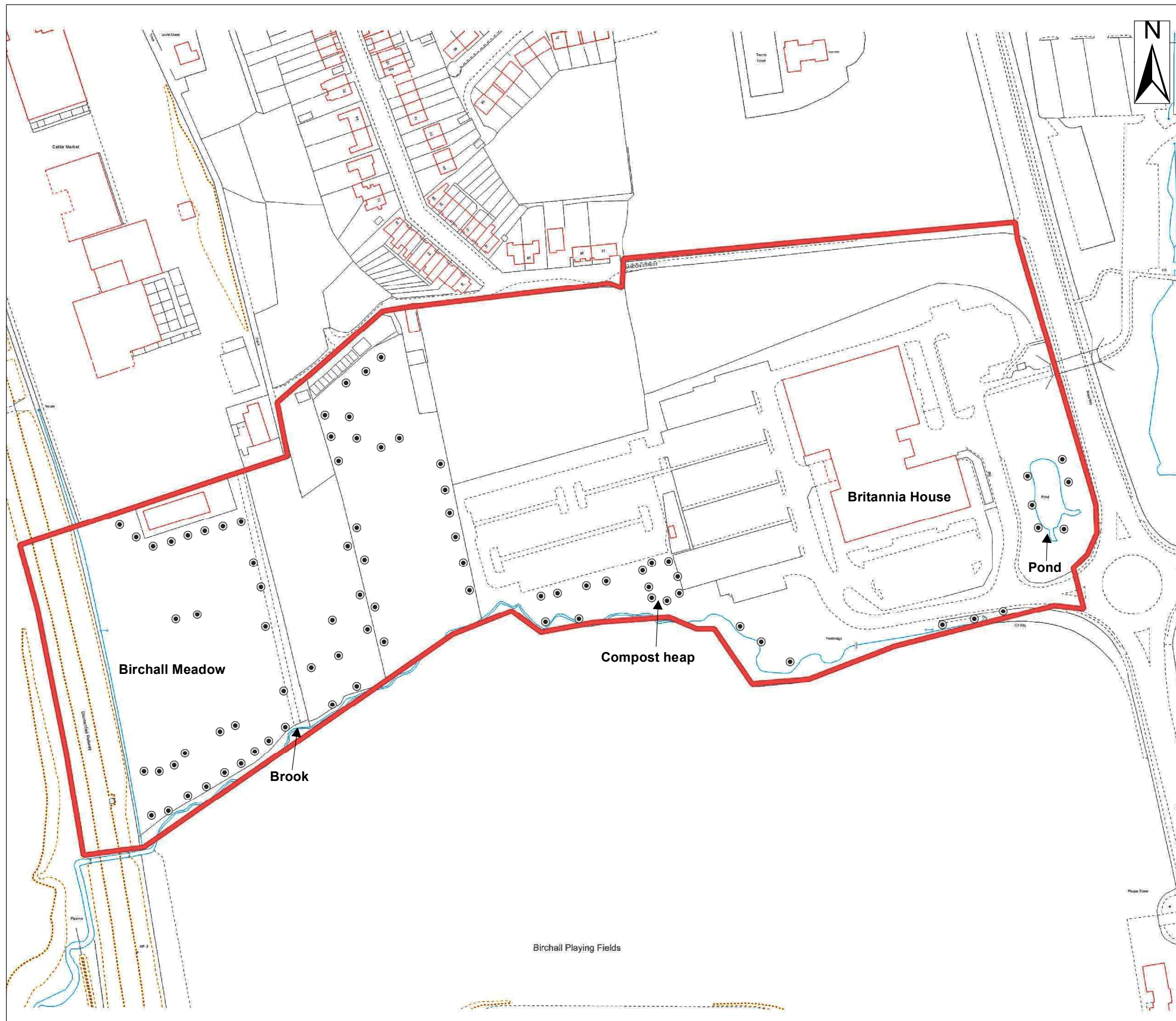


Figure 2. Reptile Mat Locations

Legend

- ⊙ Reptile mat locations
- Site boundary



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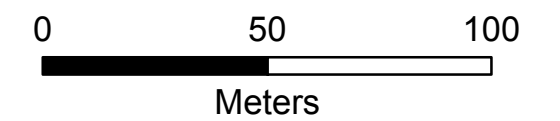
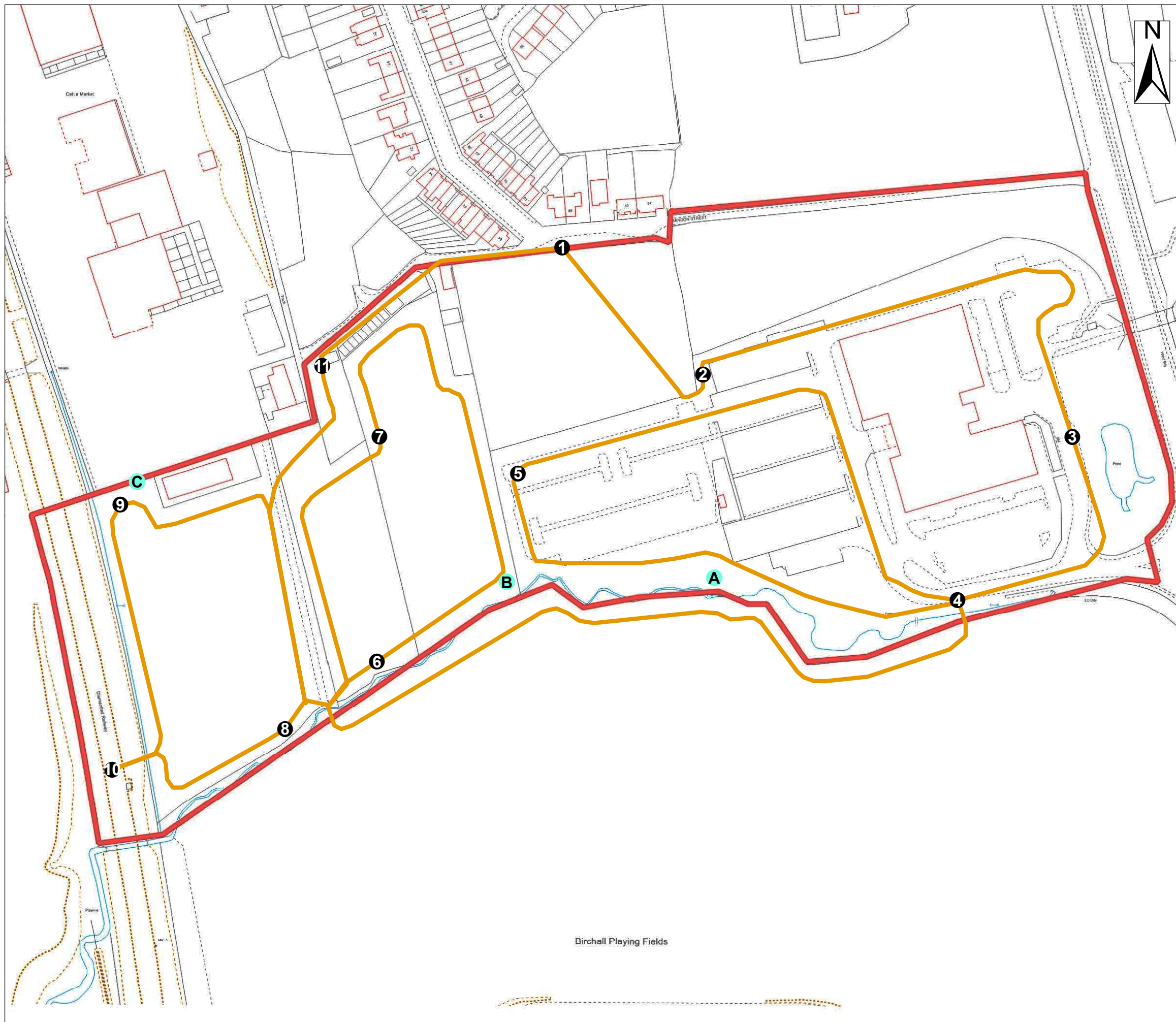
Figure 1
Reptile Mat Locations

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Figure 3. Transect Route and Static Bat Detector Locations

Legend

- Static Detector Location
- Vantage Points
- Transect Route
- Site Boundary



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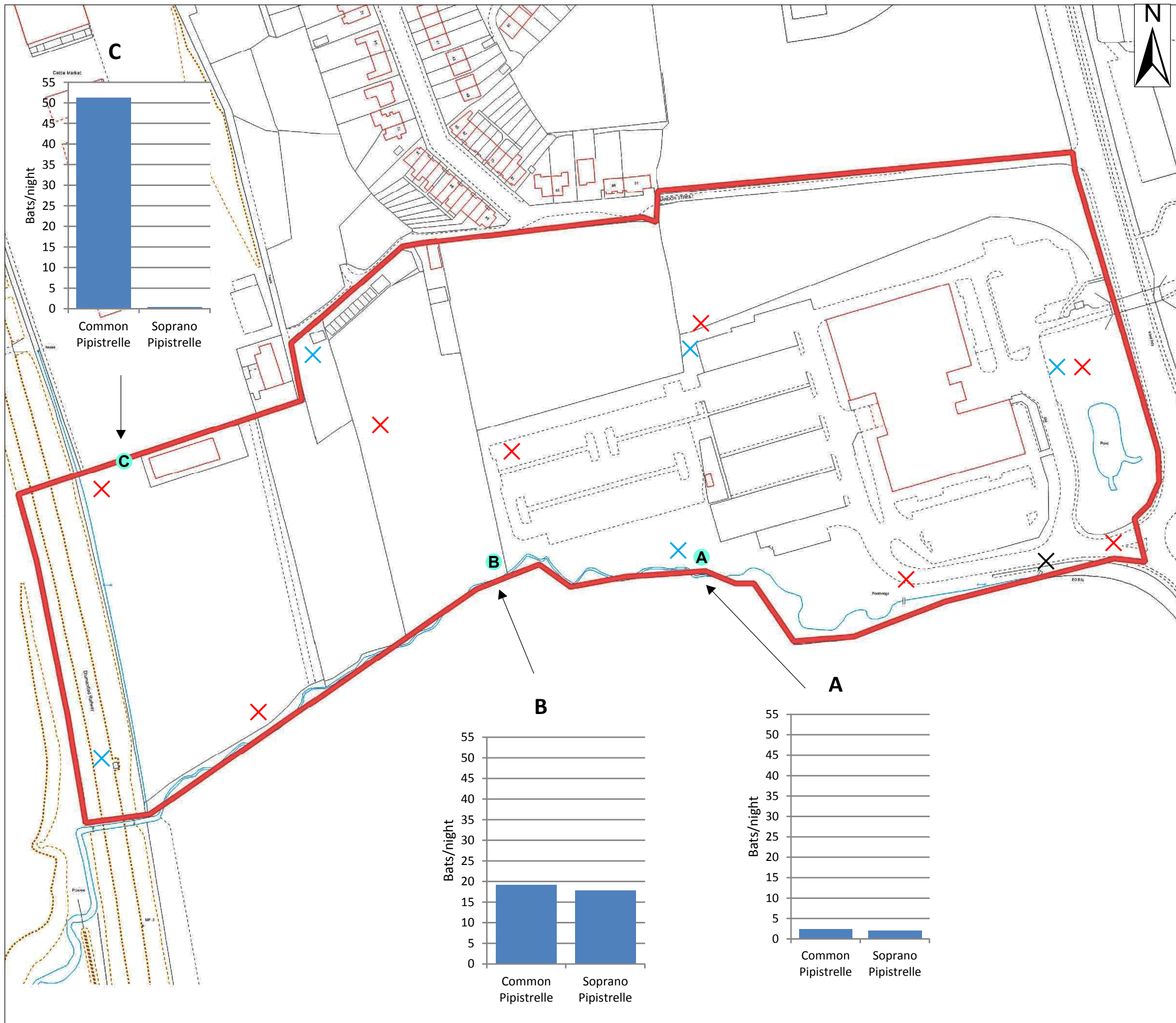
Figure 1
 Bat Transect Route and Static
 Detector Locations

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Figure 4. Locations of Bat Observations

Legend

- × Common pipistrelle 12-10-16
- × Common pipistrelle 24-05-17
- × Common pipistrelle 12-06-17
- Static Detector Locations
- Site Boundary

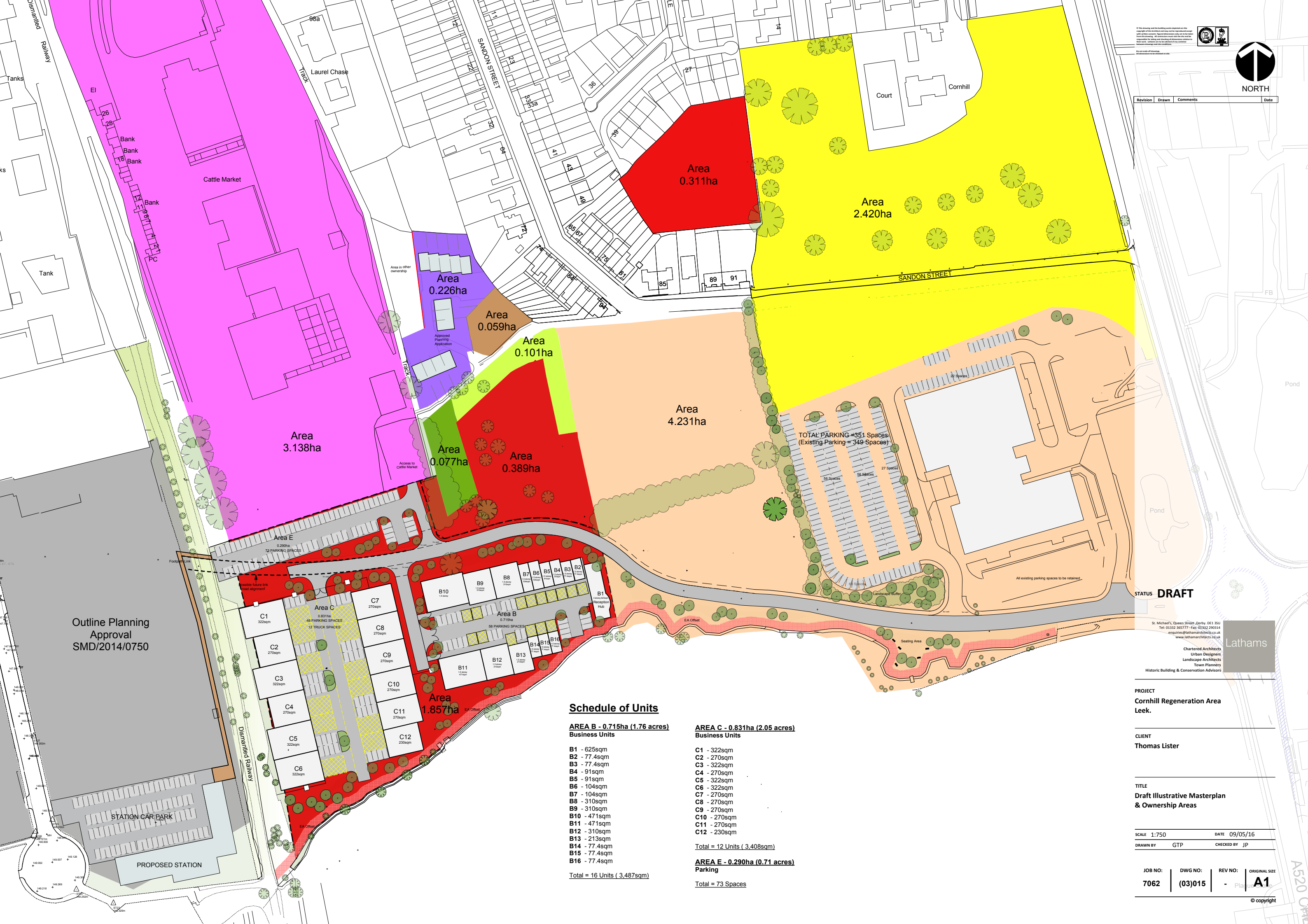


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Cornhill, Leek – Bat Activity Survey

Figure 2
Transect and Static Monitoring Results

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Figure 5. Proposed Development



Outline Planning Approval SMD/2014/0750

STATUS **DRAFT**

St. Michael's, Queen Street, Derby, DE1 3SU
 Tel: 01332 365777 - Fax: 01332 290314
 enquiries@lathamarchitects.co.uk
 www.lathamarchitects.co.uk

Latham's
 Chartered Architects
 Urban Designers
 Landscape Architects
 Town Planners
 Historic Building & Conservation Advisors

PROJECT
Cornhill Regeneration Area Leek.

CLIENT
Thomas Lister

TITLE
Draft Illustrative Masterplan & Ownership Areas

SCALE 1:750 DATE 09/05/16
 DRAWN BY GTP CHECKED BY JP

JOB NO: 7062 DWG NO: (03)015 REV NO: ORIGINAL SIZE A1

Area 3.138ha

Area 0.311ha

Area 2.420ha

Area 0.226ha

Area 0.059ha

Area 0.101ha

Area 4.231ha

Area 0.077ha

Area 0.389ha

Area 1.857ha

Schedule of Units

AREA B - 0.715ha (1.76 acres) Business Units

- B1 - 625sqm
- B2 - 77.4sqm
- B3 - 77.4sqm
- B4 - 91sqm
- B5 - 91sqm
- B6 - 104sqm
- B7 - 104sqm
- B8 - 310sqm
- B9 - 310sqm
- B10 - 471sqm
- B11 - 471sqm
- B12 - 310sqm
- B13 - 213sqm
- B14 - 77.4sqm
- B15 - 77.4sqm
- B16 - 77.4sqm

Total = 16 Units (3,487sqm)

AREA C - 0.831ha (2.05 acres) Business Units

- C1 - 322sqm
- C2 - 270sqm
- C3 - 322sqm
- C4 - 270sqm
- C5 - 322sqm
- C6 - 322sqm
- C7 - 270sqm
- C8 - 270sqm
- C9 - 270sqm
- C10 - 270sqm
- C11 - 270sqm
- C12 - 230sqm

Total = 12 Units (3,408sqm)

AREA E - 0.290ha (0.71 acres) Parking

Total = 73 Spaces

TOTAL PARKING = 351 Spaces
 (Existing Parking = 349 Spaces)

Area E
 0.290ha
 73 PARKING SPACES

Area C
 0.831ha
 48 PARKING SPACES
 12 TRUCK SPACES

Area B
 0.715ha
 58 PARKING SPACES

STATION CAR PARK

PROPOSED STATION

Disused Railway


55 Spaces
 58 Spaces
 27 Spaces

All existing parking spaces to be retained.

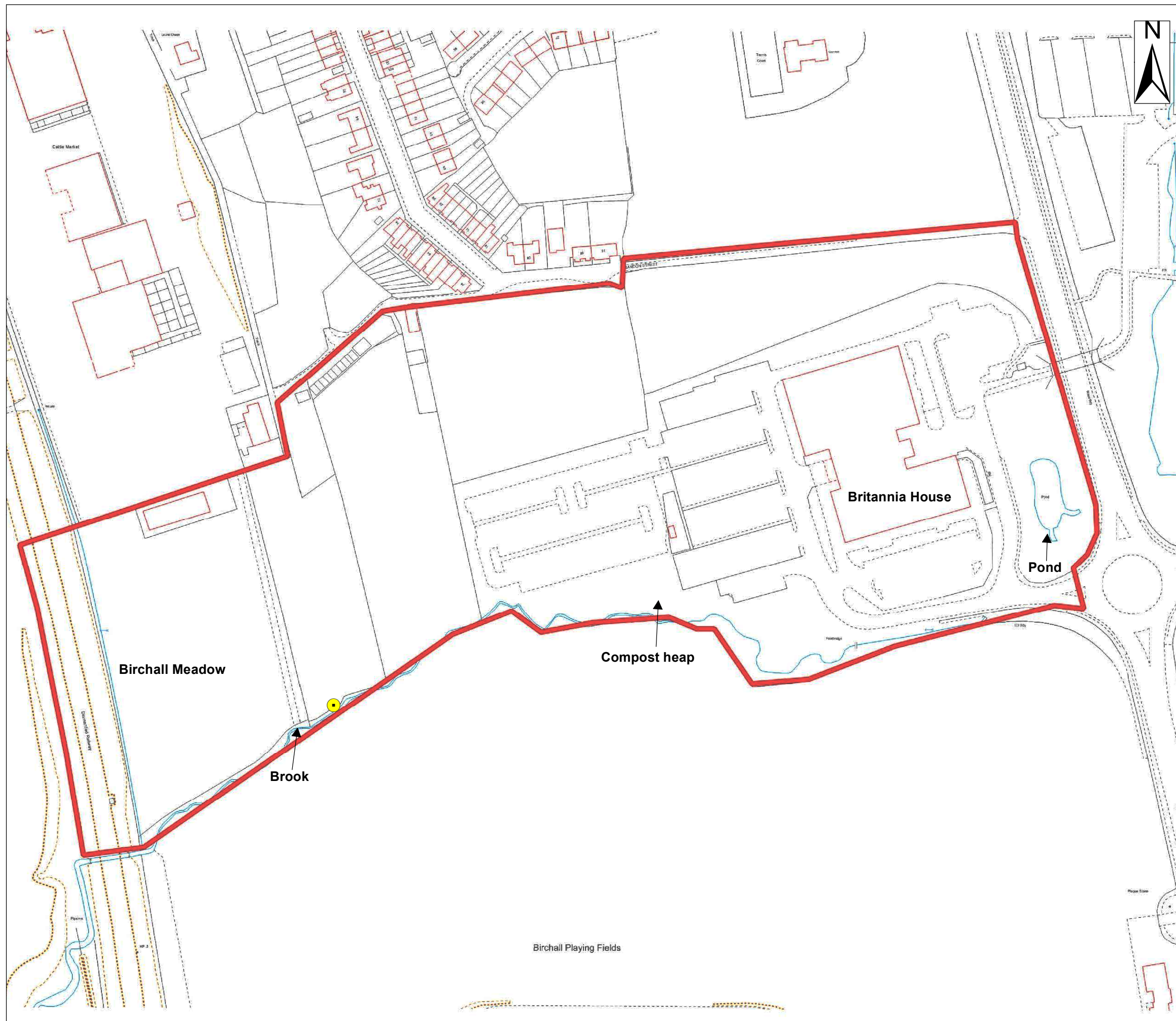
A520 CRT

Figure 6. Location of Reptile Observation

Legend

 Grass snake location

 Site boundary



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Cornhill, Leek – Ecological Appraisal

Figure 6
Reptile Observation Locations

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Appendix 1. Reptile Survey Results

Visit 1 Results

Date	26 th Oct	Time	10:30- 12:00
Weather	Drizzle, sunny later	Temp	12.5°C – 13.5°C
Surveyor	C John		
Results			
No reptiles recorded.			
Notes			
Some mats missing along first hedgerow and unable to locate along applying field boundary. Lots of badger activity noted (probably is a fairly important local resource). Some knotweed within the area of dense scrub. More reptile mats needed at the railway boundary and probably within the areas of tussocky and SI grassland.			

Visit 2 Results

Date	31 st Oct	Time	10:30- 12:00
Weather	Sunny	Temp	13.5°C – 13.5°C
Surveyor	C John		
Results			
No reptiles recorded, single juvenile toad and single vole.			
Notes			
9 mats re-located from margin of car park to rear of site along railway corridor. c. 50 additional mats required for centre of site.			

Visit 3 Survey Results

Date	29 th March 2017	Time	13.50 – 15.46
Weather	Overcast, light breeze	Temp	14°C
Surveyor	Dermot Mckee & Zoe Barrett		
Results			
No reptiles recorded, single vole in Birchall (and vole's nest) and juvenile common frog found near pond.			
Notes			
There were 6 mats missing in Birchall Meadow and 17 new ones put out, 30 mats in total. Britannia House 23 mats in total. 8 new mats put out around compost heap to replace missing ones. In the field there were 20 mats, almost all			

others removed since last visit.
Lots of badger activity noted – active sett found under brambles, also snuffle marks and badger runs found.

Visit 4 Results

Date	4 th April 2017	Time	1.00-12.30
Weather	Broken cloud then clear and sunny, light breeze	Temp	14-15°C
Surveyor	Zoe Barrett		

Results

No reptiles recorded, two voles in Birchall area.
Birds noted: Sparrowhawk, House sparrow, Blackbird, Goldcrest (S), Chaffinch (S), Robin (S), Dunnock (S), Chiffchaff (S), Bullfinch, Goldfinch, Long-tailed tit, Jackdaw.
Tree bumblebee also seen in field area.

Notes

Field – 37 mats in total, (1 missing from last visit)
Birchall meadow – 29 in total but none missing from last visit
Britannia House – 23 in total but none missing from last visit (11 mats at compost heap including all 8 put out previous visit; 6 at pond and 6 along brook).
Badger activity – active sett.

Visit 5 Results

Date	4 th May 2017	Time	13:00 – 14:50
Weather	Bright sunny day, Moderate breeze	Temp	18°C
Surveyor	D McKee		

Results

No reptiles recorded.

Notes

4 mats missing in Birchall meadow area. Additional mats placed near badger sett.

Visit 6 Results

Date	5 th May 2017	Time	13.24 – 15.00
Weather	Sunny, light breeze	Temp	16-17°C
Surveyor	Zoe Barrett		

Results

1 Grass snake female (under mat 10A – along brook in Birchall meadow)

Notes

No new mats put out, some already put out on previous visit (day before). Common frog juvenile (under mat near pond).
Birds recorded: Garden warbler (singing), House sparrow, dunnock (singing), House martins, wren, long-tailed tits, jackdaw, goldfinch, robin pair (confirmed breeding on edge of site), Blackcap (singing), mallard pair on pond.
Other species: orange tips, small tortoiseshells, ant's nests

Visit 7

Date	11/05/2017	Time	11.55 – 12.57
Weather	Sunny, clear sky, wind ESE at 12mph	Temp	18 C
Surveyor	Zoe Barrett & Dermot McKee		

Results

No reptiles

Notes

All mats collected. 1 common frog juvenile at Britannia house and 1 toad at Birchall meadow.

Appendix 2: Bat Transect Survey Results

12-10-16

Location	Time	Species and activity
Vantage point 4	20:03 h	Common pipistrelle, brief pass.

24-05-17

Location	Time	Species and activity
Vantage point 10	21:45 h	Common pipistrelle, brief foraging.
Vantage point 2	22:06 h	Common pipistrelle, 2 brief passes.
Vantage point 3	22:15 h	Common pipistrelle, distant brief pass.
Watercourse between vantage points 4 and 5	22:23 h	Common pipistrelle, pass.
Vantage point 11	23:07 h	Common pipistrelle, brief pass.

12-06-17

Location	Time	Species and activity
Vantage point 4	22:08 h	At least 2 common pipistrelles, foraging continuously.
Above trees near road entrance to Britannia House	22:17 h	Common pipistrelle, foraging.
Vantage point 2	22:25 h	Common pipistrelle, brief pass.
Watercourse along Birchall meadow	22:38 h	Two common pipistrelles, foraging.
Vantage point 9	22:46 h	Common pipistrelle, brief pass.
Vantage point 7	22:57 h	Common pipistrelle, brief pass.
Vantage point 5	23:14 h	Common pipistrelle, pass.
Vantage point 3	23:22 h	Common pipistrelle, pass.

Appendix 3. Static Monitoring Results

Location reference	Date	Sunset (h) (survey mid-point)	Sunrise (h) (survey mid-point)	Species	Total no. sound files	First bat (h)	Last bat (h)	Nights recorded	Bats/night
A	12-10-17 to 17-10-17	18:11	07:35	Common pipistrelle	12	18:45	04:48	3	2.4
				Soprano pipistrelle	10	18:37	05:55	2	2.0
B	24-05-17 to 29-05-17	21:18	04:53	Common pipistrelle	96	21:59	04:09	5	19.2
				Soprano pipistrelle	89	21:59	04:25	5	17.8
C	12-06-17 to 17-06-17	21:36	04:41	Common pipistrelle	256	22:09	03:57	4	51.2
				Soprano pipistrelle	2	22:05	22:14	2	0.4

Key. Location reference = position of static detector (see Figure 1). Total no. sound files = the number of recordings made for each bat species. First bat = time of the earliest recording for that bat species over the entire survey period. Last bat = time of the latest recording for that bat species over the entire survey period. Nights recorded = the total number of nights on which that bat species was recorded over the entire survey period. Bats/night = total number of recordings for that bat species divided by the total number of survey nights.

Appendix 4. Site Photos



1. Birchall Meadow.



2. Britannia House.



3. Ornamental planting.



4. Ornamental pond.



5. Grazed fields and associated buildings.



6. Garage-type building.



7. Badger pathway.



8. Japanese knotweed.

