



Harworth Group

Houghton Main Colliery

Bat Report

January 2022

FPCR Environment and Design Ltd

Registered Office: Lockington Hall, Lockington, Derby DE74 2RH

Company No. 07128076. [T] 01509 672772 [F] 01509 674565 [E] mail@fpcr.co.uk [W] www.fpcr.co.uk

This report is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without the written consent of FPCR Environment and Design Ltd. Ordnance Survey material is used with permission of The Controller of HMSO, Crown copyright 100018896.

Rev	Issue Status	Prepared / Date	Approved/Date
-	Draft	AMS / 16.11.21	JD / 17.11.2021
A	Final		JD / 20.01.2022

CONTENTS

1.0	INTRODUCTION	3
2.0	LEGISLATION	4
3.0	METHODOLOGY.....	5
4.0	RESULTS	8
5.0	DISCUSSION AND RECOMMENDATIONS	10

TABLES

Table 1: Static Survey Timings and Conditions

Table 2: May Static Detector Results Summary

Table 3: August Static Detector Results Summary

Table 4: September Static Detector Results Summary

Table 5: Species Breakdown Across All Static Surveys

FIGURES

Figure 1: Static Detector Location Plan

1.0 INTRODUCTION

- 1.1 The following report has been prepared by FPCR Environment & Design Ltd. on behalf of The Harworth Group and details the results of a suite of bat surveys and assess the bat suitability of the site. This report should be read in conjunction with the Ecological Appraisal for the site¹.

Site Location and Context

- 1.2 The site extends to 14 acres (5.6ha) and is located to the north of Little Houghton and approximately 5.5km east of the centre of Barnsley. It comprises a single compartment of land, part of the former Houghton Main Colliery, with a mosaic of habitats largely comprising established broadleaved woodland, scrub and grassland, with a drainage ditch also extant.
- 1.3 To the immediate west, the boundary is formed by the A6195, Park Spring Road, beyond which lies largely farmed habitats through which the River Dearne flows. Immediately to the east, is further woodland, with farmland and a golf course beyond this, also with wooded areas. Woodlands also extends to the south and north, where the built habitats associated with existing distribution warehouses are also present. An informal pathway bisects the Site north-south and a lane forms the southern boundary.

Site Proposals

- 1.4 The Site is proposed for employment development comprising five units, with associated parking and access infrastructure, with a mix of retained and created habitats surrounding the built areas. The main access will be formed along the western boundary off the A6195, with allowance for an altered bus turning head in the south and re-routed public path to this through habitats to the east from the north.

¹ FPCR Environment and Design Ltd. 2021. *Houghton Main Colliery; Ecological Appraisal*

2.0 LEGISLATION

Bats

- 2.1 All UK bat species are afforded full protection under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended), in addition brown long-eared *Plecotus auritus*, soprano pipistrelle *Pipistrellus pygmaeus* and noctule *Nyctalus noctula* are listed on the Barnsley BAP as Local Priority Species.
- 2.2 Under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended) it is illegal to:
- Deliberately capture, injure or kill any wild animal of a European Protected Species (EPS),
 - Deliberately disturb wild animals of an EPS (affecting ability to survive, breed or rear young) – disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young,
 - Deliberately disturb wild animals of an EPS (impairing ability to migrate or hibernate) – disturbance of animals includes in particular any disturbance which is likely to impair their ability in the case of hibernating or migratory species to hibernate or migrate,
 - Deliberately disturb wild animals of an EPS (affecting local distribution and abundance) – disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong,
 - Deliberately disturb wild animals of an EPS (whilst occupying a structure or place used for shelter or protection) – intentionally or recklessly disturb any wild animal while it is occupying a structure or place which it uses for shelter or protection,
 - Damage or destroy a breeding site or resting place of a wild animal an EPS.
- 2.3 Under the Wildlife and Countryside Act 1981 (as amended) it is illegal to:
- Recklessly or intentionally kill, injure or take any wild animals included in Schedule 5.
 - Recklessly or intentionally damage or destroy, or obstruct access to any structure or place which any wild animal included in Schedule 5 uses for shelter or protection,
 - Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.
- 2.4 If impacts to bats or their roosts cannot be avoided a European Protected Species Licence from Natural England is required in order to allow proposals to derogate from the Legislation (Licences cannot be obtained to provide protection against offences under the Wildlife & Countryside Act 1981 (as amended)). As part of the application process a number of 'Tests' have to be met by the application.
- 2.5 Natural England Guidance Note: European Protected Species and the Planning Process – Natural England's Application of the 'Three Tests' to Licence Applications (March 2011) states:
- "In determining whether or not to grant a licence Natural England must apply the requirements of Regulation 53⁵ of the Regulations and, in particular, the three tests set out in sub-paragraphs (2)(e), (9)(a) and (9)(b)⁶.*

(1) **Regulation 53(2)(e)** states: a licence can be granted for the purposes of “preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment”.

(2) **Regulation 53(9)(a)** states: the appropriate authority shall not grant a licence unless they are satisfied “that there is no satisfactory alternative”.

(3) **Regulation 53(9)(b)** states: the appropriate authority shall not grant a licence unless they are satisfied “that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.”

2.6 Conservation status is defined as “the sum of the influences acting on the species concerned that may affect the long term distribution and abundance of its population within its territory”. It is assessed as favourable when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, or will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis.

2.7 These tests must not only reach agreement with Natural England when assessing a Licence application they must also be assessed by the planning authority when determining a planning application.

3.0 METHODOLOGY

Desk Study

Bat Sites

3.1 Multi Agency Government Information Centre (MAGIC²) was searched for nationally designated sites within a 2km radius, extending to 5km for international sites designated for bats.

Bat Records

3.2 In order to compile existing baseline information, relevant ecological information was requested from Barnsley Biological Records Centre (BBRC). The search area for protected species records including bats was 1km around the Site.

Ground-Based Tree Assessments

3.3 Tree assessments were undertaken from ground level, with the aid of a torch and binoculars (where appropriate) on the standing mature tree. These surveys were undertaken on 15th May 2021 by a suitably experienced ecologist. During the survey Potential Roosting Features (PRF) for bats such

² Defra Multi Agency Government Information Centre website available at: <https://magic.defra.gov.uk/MagicMap.aspx> [accessed 03.09.20]

as the following were sought (Based on P16, British Standard 8596:2015 Surveying for bats in trees and woodland, October 2015):

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.
- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems).
- Woodpecker holes.
- Cracks/splits in stems or branches (horizontal and vertical).
- Partially detached, loose or bark plates.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with included bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.

- 3.4 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings, and its location in respect to other features may enhance or reduce the potential value.
- 3.5 Trees were classified into general bat roost potential groups based upon the presence of these features based upon Table 4.1 and Chapter 6 in Bat Surveys for Professional Ecologists: Good Practice Guidelines³.
- 3.6 Although the British Standard 8596:2015 document groups trees with moderate and high potential, these have been separated (as per Table 4.1 in The Bat Conservation Trust Guidelines) to allow more specific survey criteria to be applied.

Activity Surveys

Foraging and Commuting Habitat Suitability Assessment

- 3.7 Undertaken as part of the Phase 1 habitat survey an initial assessment of suitability for foraging and commuting bats within the wider survey area was made including overall hedgerow structure and connectivity, the presence of tree cover and woodland edge habitat and overall connectivity of these features to suitable linear habitat networks offsite.

Automated Static Bat Detector Surveys

- 3.8 Given the nature of the site and the limited areas with which to undertake a transect, bat monitoring was undertaken using a static detector in May (spring), August (summer) and September (autumn) 2021.
- 3.9 Passive monitoring was undertaken using an automated logging system Wildlife Acoustics Inc. Song Meter® SM4Bat FS bat detectors with outputs saved to an internal storage device. The

³ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London

detectors used SMM-U2 microphones. Detectors were placed along linear features considered to be of value to bats, such as hedgerows, woodlands, watercourses and tree lines.

- 3.10 Devices were placed in each location for an extended period of time of suitable weather conditions (little no rain/wind and temperatures above 10°C). The conditions over each of the survey period were however representative for the timing of the survey. Detectors were programmed to activate 30 minutes before dusk and recorded continuously until 30 minutes following sunrise.
- 3.11 For the purposes of analysis if the static detector was out more than 5 nights the additional nights were only assessed for bat species listed on Annex II⁴ of the Habitats Directive. The recorded data were analysed using Kaleidoscope Viewer® (Wildlife Acoustics, Inc) software package to assess the amount of bat activity on site by recording the number of bat passes.
- 3.12 In accordance with the size of the site and the assessment of habitat suitability to support foraging and commuting bats, static units were deployed on site for a minimum of 5 consecutive nights during May, August and September 2021 (see Figure 1) at various locations across the site.
- 3.13 The detector units record sound files of up to 12 seconds in length before a new file is created. The analysis of the SM4BAT FS files recorded can highlight the presence of more than one bat where recorded simultaneously on the same sound file. However, it is not possible to determine whether consecutive sound files have been recorded as the result of several different bats passing the detector as they commute across the landscape or by one bat repeatedly triggering the detector as it forages in close proximity for an extended period. Therefore, each sound file is counted as a single bat registration. The number of sound files recorded does however reflect the relative importance of the location of the detector by calculating the bat registrations per hour.
- 3.14 Table 1 below provides the survey timings and weather conditions. Figure 1 illustrates the locations where the units were deployed.

Table 1: Static Survey Timings and Conditions

Date	Survey type	Area covered
27.05.2021 – 01.06.2021	Static SM4BAT Recording Unit 7	Along eastern woodland edge in north-east of Site
25.08.2021 – 30.08.2021	Static SM4BAT Recording Unit 19	On goat willow by path in south-west of Site
22.09.2021 – 27.09.2021	Static SM4BAT Recording Unit 2	On young ash tree in woodland to the north of Site

Survey Limitations

- 3.15 Where bat calls could not be identified to species level, for example due to the lower quality of those recordings or where there are similarities between species echolocation calls (particularly for *Myotis* and *Nyctalus* species) making a definite identification difficult, a likely species identification is provided. This is based on the features displayed by the calls when analysed using the Kaleidoscope data analysis software package and taking into account the geographical location of the site and the habitats present.

⁴ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

4.0 RESULTS

Desk Study

- 4.1 No records for bats were provided for the site itself or habitats immediately adjacent, with all records provided located over 500m to the north. Records of common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, pipistrelle species *Pipistrellus*, Daubenton's *Myotis daubentonii* and unidentified bat species *Chiroptera* have been returned within 1km of the site. Refer to Figure 1 of the separate Ecological Appraisal (FPCR, September 2021) for an annotated plan.

Ground-Based Tree Assessments

- 4.2 A single tree was noted to provide potential for roosting bats (T1), being the horse chestnut at the south of the site. The features were considered to provide moderate roosting potential and comprised a natural knothole at 5m height on the eastern aspect of the tree, facing upwards on a tertiary branch. No evidence of roosting bats was noted from ground level at the time of survey

Activity Surveys

Foraging and Commuting Habitat Suitability Assessment

- 4.3 The site provided potential for foraging bats, around the grassland and along the edges of the woodland areas. However as a result of the relatively young age of the woodland and the overall species-poor nature of the grassland reducing the likelihood of significant insect prey, the site was not considered to provide optimal foraging habitat. The site has some linkage with woodland in the local and wider area, notably with more significant woodland blocks located to the north east linked via further younger woodland and hedgerows. As a result of this habitats were considered to provide low-moderate suitability for bat activity and a series of bat activity surveys recommended, based on guidance as set out in the bat survey guidelines⁵. These guidelines state at paragraph 1.1.3 that:

The guidelines should be interpreted and adapted on a case-by-case basis according to site-specific factors and the professional judgement of an experienced ecologist. Where examples are used in the guidelines, they are descriptive rather than prescriptive.

- 4.4 Due to size and nature of habitats at the site it was considered the deployment of a static detector would provide the most appropriate means of survey, as the open areas of grassland would provide a limited walked transect for the requisite time required. Therefore a single static detector was deployed for a period of 5 consecutive nights on a seasonal basis, in May, August and September.

Automated Static Bat Detector Surveys

May 2021 Survey

- 4.5 Static detector unit 7 was located along the edge of the woodland in the north east of the site, recording for 41 hours over five consecutive nights from 27th May to 1st June 2021.

⁵ Bat Survey Guidelines, Bat Conservation Trust, 2016.

- 4.6 A total of five species were recorded during this time: common pipistrelle, *Myotis* species, soprano pipistrelle, noctule and brown long-eared. Common pipistrelle was the most recorded species, making up 65% of the registrations, with *Myotis* species making up a further 15%.

Table 2: May Static Detector Results Summary

Unit number	Avg. registrations per hour	Total registrations	Most recorded species (number of registrations)	Other species recorded (number of registrations)
7	5.671	237	Common pipistrelle (153)	<i>Myotis</i> species (36) Soprano pipistrelle (34) Noctule (10) Brown long-eared (4)

August 2021 Survey

- 4.7 Static detector unit 19 was located along the edge of the path in the south west of the site, recording for 55.5 hours over five consecutive nights from 25th to 30th August 2021.
- 4.8 A total of six species were recorded during this time: *Myotis* species, soprano pipistrelle, common pipistrelle, noctule, brown long-eared and pipistrelle species. *Myotis* species was the most recorded species, making up 40% of the registrations, with soprano pipistrelle making up a further 28%. *Myotis* species had a peak in activity between 21:00 and 22:00.

Table 3: August Static Detector Results Summary

Unit number	Avg. registrations per hour	Total registrations	Most recorded species (number of registrations)	Other species recorded (number of registrations)
19	3.572	198	<i>Myotis</i> species (80)	Soprano pipistrelle (57) Common pipistrelle (48) Noctule (9) Brown long-eared (3) Pipistrelle species (1)

September 2021 Survey

- 4.9 Static detector unit 2 was located along the edge of the woodland in the north west of the site, recording for 65 hours over five consecutive nights from 22nd to 27th September 2021.
- 4.10 A total of six species were recorded during this time: common pipistrelle, *Myotis* species, soprano pipistrelle, noctule, pipistrelle species and brown long-eared. The most recorded species was common pipistrelle, making up 46% of the registrations with *Myotis* species making up a further 31%.

Table 4: September Static Detector Results Summary

Unit number	Avg. registrations per hour	Total registrations	Most recorded species (number of registrations)	Other species recorded (number of registrations)
2	0.890	58	Common pipistrelle (27)	<i>Myotis</i> species (18) Soprano pipistrelle (5) Noctule (4) Pipistrelle species (3) Brown long-eared (1)

Activity Survey Summary

- 4.11 Activity from common pipistrelle and *Myotis* species dominated in all surveys and lower number of other species were recorded. Overall levels of bat activity were considered to be low and reflected the limited foraging opportunities present on site in comparison to the wider area. Activity levels were highest in spring along the woodland edge in the north east of the site. The total number of registrations from 162 static survey hours was considered very low at 493, with the species assemblage heavily skewed toward common pipistrelle as illustrated by Table 5 below. Just under 30% of activity was from species considered more sensitive to artificial light (*Myotis* species and brown long-eared).

Table 5: Species Breakdown Across All Static Surveys

Species	Registrations	Percentage
Common Pipistrelle	228	47.401%
<i>Myotis</i> species	134	27.859%
Soprano Pipistrelle	96	19.958%
Noctule	23	4.782%
Brown Long-eared	8	1.622%
Pipistrelle species	4	0.811%

5.0 DISCUSSION AND RECOMMENDATIONS

Development proposals

- 5.1 The Site is proposed for re-development as an employment site comprising 5 units with associated hardstanding, parking and access roads. The main access will be from the A6195 along the western boundary, with the southern end of the hedgerow along the A6195 likely to be lost. Proposals will entail the loss of grassland on site and much of the woodland, with the exception of boundary habitats which will be incorporated as green infrastructure and landscaping areas. The Development will include a slightly re-designed turning head, with the horse chestnut standard retained here, and a re-aligned footpath through the eastern habitat buffer.

Bat Activity

- 5.2 Much of the Site provides potential foraging and commuting habitat for a range of bat species local to the area, although is generally not considered optimal and is considered to provide low-moderate suitability at most. The extent of grassland currently available is considered unlikely to form a significant part of the foraging habitat for the local population given its relatively small size and the presence of other areas of potential open foraging habitat in the local and wider area, with woodland and associated edge habitat providing connectivity to potential habitat in the local and wider area.
- 5.3 During the suite of surveys carried out in 2021 relatively low numbers of bats were recorded using the site, with species recorded dominated by common pipistrelle (not listed as a priority species), with small numbers of five other species recorded (*myotis* species, brown long eared, noctule, pipistrelle species and soprano pipistrelle), including the three local BAP species recorded. Overall the species assemblage recorded is considered typical of the habitats on Site, with numbers recorded being considered unremarkable.
- 5.4 The loss of the grassland will lead to the reduction in potential open foraging habitat. New wildflower grassland areas adjacent to the retained woodland areas will provide small areas of potential foraging, likely to attract an invertebrate prey resource due to its increased floristic diversity. Whilst woodland will be lost, edge habitat suitable for foraging and commuting along will still occur at the retained/new edges and as such, habitat connectivity around the site and into the wider area will be retained.
- 5.5 One tree provided moderate potential as roosting habitat. This will be retained within the proposals and therefore no further survey is currently recommended. If this changes further assessment will be required.
- 5.6 New and retained planting along the frontage with the A6195 will continue to provide a movement corridor. Where the access road breaches this line, mitigation to minimise effects to any bats moving along this line and minimise the potential for harm or mortality during the active bat season is required in the form of a hop-over across the breach. This would entail the implementation of habitat management works, combined with the tree planting either side of the breach to increase the overall height and width of the upper canopy and raise its base above the height of vehicular traffic. This will allow bats to have continued echolocation across the break at a suitable height, thereby allowing continued usage of this line as a foraging/commuting area. It will also reduce the potential for road traffic accidents to bats (and also for birds).
- 5.7 The boundary features present on Site are considered to be the habitats of most value to bats for foraging and commuting. Given that these are to be retained and additional planting is to be included across the Site, the loss of habitats associated with the proposals is considered unlikely to significantly affect the local population of bat species. Through the planting of new wildflower grassland adjacent to retained woodland, the creation of bat hop-overs and the implementation of a sensitive lighting scheme detailed below, the favourable conservation status of the local bat population will be retained in the long term.
- 5.8 Potential enhancements that could be incorporated in the current proposals include artificial bat roost features. A mix of 6 of the box types (or similar) recommended below, placed on suitable retained trees across site or pole mounted boxes where suitable trees do not occur, will provide suitability for difference species, roosting both singularly and in groups at different times of year.

- Schwegler 2FN/1FD
- Schwegler 2F-DFP
- Schwegler 1FF

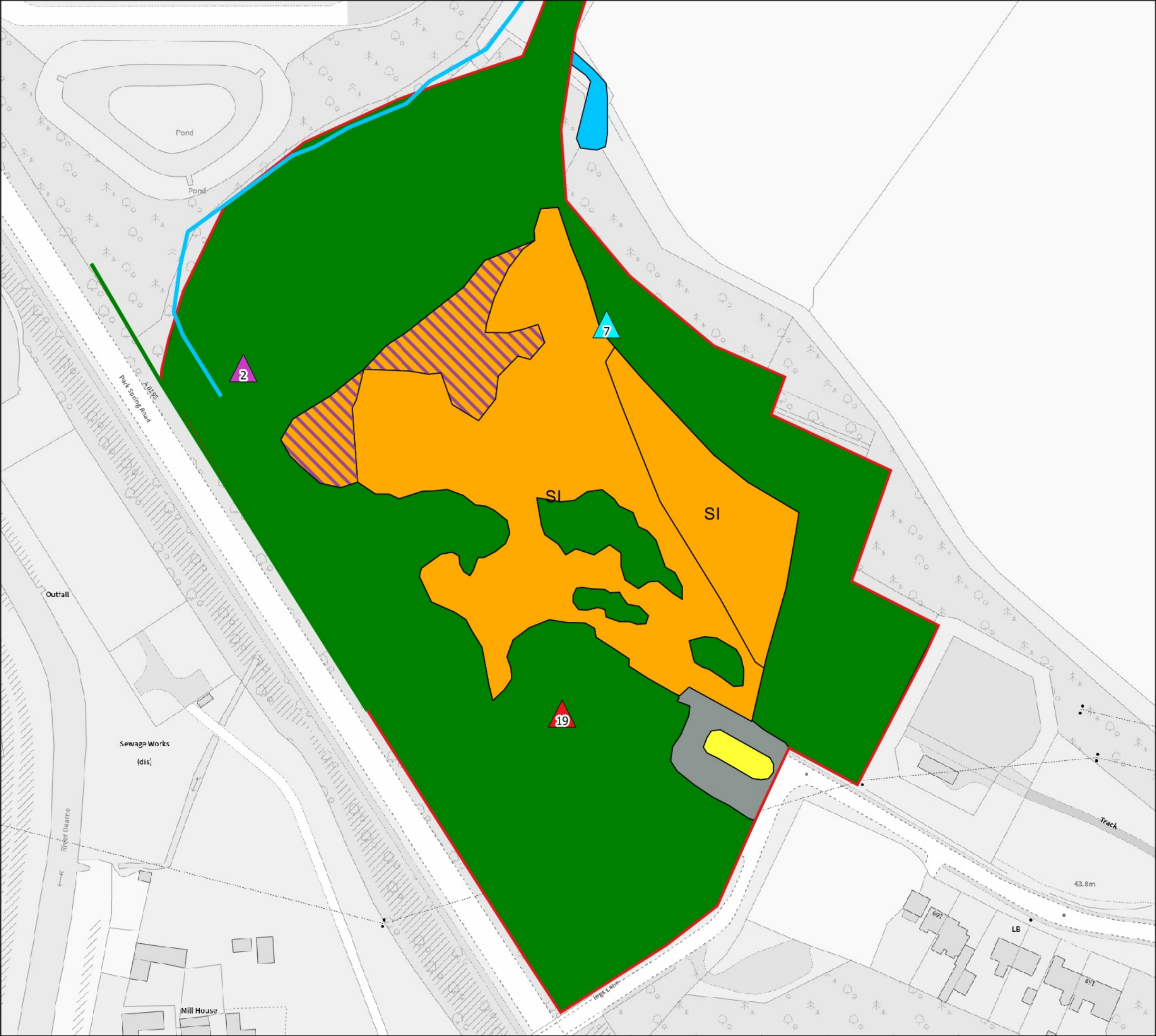
- 5.9 Boxes should be installed in groups of 2 or 3 at least 4m from the ground. Ideally bat boxes will be on south eastern or south western aspects.

Lighting Design

- 5.10 Illumination either from external lighting or light spill as a result of the development may impact on bats commuting and foraging along the site boundaries, in particular the light sensitive species recorded using the Site (*Myotis* species and brown long-eared) or using the potential tree roost. In order to avoid indirect impacts of light spill to features used by bats, a sensitive lighting scheme as detailed below would be implemented, designed to minimise light-spill onto habitats both within and adjacent to it that are used by the local bat population foraging or commuting. This will be achieved by ensuring that the design of lighting is based upon guidelines presented in the Bat Conservation Trust and Institution of Lighting Professionals Guidance Note 08/18 'Bats and artificial lighting in the UK - Bats and Built Environment Series', the Bat Conservation Trust & Institute of Lighting Engineers 'Bats and Lighting in the UK - Bats and Built Environment Series', the Bat Conservation Trust 'Artificial Lighting and Wildlife Interim Guidance' and the Bat Conservation Trust 'Statement on the impact and design of artificial light on bats'. Therefore, the lighting scheme should include the following:

- The avoidance of direct lighting of existing or new hedgerows and trees
- The strategic use of structural landscaping and planting to avoid light spill on sensitive habitats, including retained hedgerows, to help to retain a dark corridor.
- The avoidance of unnecessary lighting.
- Lighting designed to automatically switch off or be dimmable where possible.
- The use of low intensity lighting (sodium lamps or similar) where possible
- Column mounted luminaires fitted with flat glass where appropriate to aid 0% upward light discharge.
- Luminaires adjacent to the site boundary fitted with light baffles to prevent light spill.

- 5.11 As a result of implementing the above strategy residual effects of new lighting are expected to be below that considered to have a significant impact on foraging and commuting bats.



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

Key

Site Boundary

Static Detector Location (with ref.)

May

August

September



Client
Harworth Group
Project
Houghton Main Colliery,
Houghton
Drawing Title
Static Detector Location Plan

Scale
1:1500

Drawn
AMS

Issue
16/11/2022



Figure 1