A1 Birtley to Coal House

Scheme Number: TR010031

6.3 Environmental Statement – Appendix 8.4 Preliminary Roost Assessment

APFP Regulation 5(2)(a)

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A1 Birtley to Coal House

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Environmental Statement - Appendix

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EXECUTIVE SUMMARY

WSP was commissioned by Highways England to undertake Preliminary Roost Assessment surveys of several structures, buildings and trees for bats in order to inform the proposals for the A1 Birtley to Coal House Scheme (hereafter referred to as 'the Scheme').

The Scheme is located between Junction 65 (Birtley) and Junction 67 (Coal House) and is approximately 6.5km in length. The Proposed Works of the Scheme include the widening and upgrading of the existing road to provide a three lane carriageway and the replacement of Allerdene Bridge. There are a total of eight bridge structures, hereafter referred to as 'bridges', (two overbridges, four under bridges, one underpass and one footbridge), five trees, two semi-detached buildings and two small areas of woodland, which are located within the footprint of the Scheme and which may be impacted by the Proposed Works.

A Preliminary Roost Assessment (PRA) survey was completed for all of the bridges, buildings and trees which had been highlighted within the preliminary ecological assessments, PEA (WSP, 2016a; WSP, 2016b). Surveys were undertaken in order to determine their value for supporting roosting bats and record any signs of bat presence, as well as evaluating the habitats within the Scheme for bat activity.

In total, eight bridges, two buildings and five trees and the trees within two isolated areas of woodland were subject to assessment and were categorised into the following levels of potential:

- Negligible (screened out) – two bridges (North Dene Footbridge and Longbank Bridleway underpass), one tree (T5), one building B1 (semi- detached property) and the trees located within two areas of woodland;
- Low – one tree (T3);
- Moderate – six bridges (Smithy Lane Overbridge, Allerdene Bridge, Eighton Lodge Slip Road Underbridge, Eighton Lodge North underbridge, Eighton Lodge south underbridge, Northside Overbridge), one building B2 (semi- detached property) and three trees (T1, T2 and T4); and
- High – no bridges, buildings or trees recorded.

The three trees (T1, T2 and T4) with 'Moderate' potential have been screened out of further survey due to their location and their current levels of exposure to disturbance to the A1 road, making it unlikely that they support roosting bats.

Further survey effort is recommended for the six bridges and one of the trees (Tree T4) found to have 'Moderate' suitability to support roosting bats. This is in order to ensure that the Scheme is conducted in accordance with legislative and planning policy. This includes UK and EU legislation protecting bats and their roosts from damage, destruction, obstruction and disturbance; and also, local planning policy outlining obligations to avoid or reduce impacts to biodiversity in the context of development. The recommended survey

effort will involve undertaking two separate survey visits per bridge and tree, including a single dusk emergence and a separate single dawn re-entry. Full details regarding the level of survey effort are presented in Section 6 of this report.

Further mitigation, in the form of a sensitive lighting scheme, is recommended for all the bridges and trees, details of which are contained within this report and which should be determined by further surveying. Longbank Bridleway underpass may be used by commuting bats as a crossing point under the A1. Therefore, if the Scheme requires the underpass to be closed between March and September, the period of time when bats may be active and therefore displaced, further survey effort may be required to determine the importance of the underpass and inform the requirements of mitigation.

Following the completion of all the survey effort recommended, the potential impacts posed by the development, both to roosts and bat habitat, can be quantified and appropriate recommendations provided.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. WSP was commissioned by Highways England to undertake a Preliminary Roost Assessment (PRA) for bats of several bridges, buildings and trees in order to inform the proposals for the A1 Birtley to Coal House Scheme (hereafter referred to as 'the Scheme').

1.1.2. The Scheme is located between Junction 65 (Birtley) at grid reference NZ28331 56480 and Junction 67 (Coal House) at grid reference NZ 24953 58559. The Scheme is approximately 6.5km in length as shown in **Figure 1**.

1.1.3. The Proposed Works for the Scheme include the widening and upgrading of the existing road to provide a three lane carriageway and the replacement of Allerdene Bridge. The proposed works for Allerdene Bridge will involve the replacement of this crossing point with a new section of carriageway.

1.2 ECOLOGICAL BACKGROUND

1.2.1. An extended Phase 1 habitat survey was undertaken during March and April 2015 (WSP | PB, 2016b). An update Ecological Assessment was undertaken during September 2016 (WSP | PB, 2016a). Habitats were identified within the Scheme including broadleaved and mixed woodland, scrub, scattered trees, improved grassland, bracken, ruderal vegetation, hedgerows, buildings, hard standing and standing and running water.

1.2.2. The presence of bridges (including underpasses), buildings and trees which may support roosting bats were also identified (WSP | PB, 2016a).

1.2.3. The update Ecological Assessment (WSP | PB 2016a) concluded that Longbank Bridleway underpass would not be affected by the Proposed Works. It was recommended that if construction activities were to take place at night, then an assessment of this bridge for its potential to support roosting bats should be undertaken in order to determine whether artificial lighting or disturbance from plant and machinery could impact roosting bats.

1.2.4. The desk study data recorded noctule *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus* within 2 km of the Scheme Footprint. These bats were recorded to be foraging and commuting north, south, east and west of the Scheme.

1.3 BRIEF AND OBJECTIVES

1.3.1. Within the update Ecological Assessment (WSP | PB 2016a), it was recommended that any bridges, buildings and trees potentially affected by the Proposed Works are externally assessed for their potential to support roosting bats (WSP | PB 2016a).

1.3.2. Highways England commissioned WSP to complete a PRA in November 2017. The brief was to:

- Complete an external inspection of the bridge structures, buildings and trees within and adjacent to the Scheme, to identify any potential roosting features and/or suitability for bat roosts to be present;
- If present, to determine the species present, number of bats and status of roost, if possible; and
- Evaluate the value of the Scheme for bats and make recommendations as to how proposals should account for bats with respect to legislation, planning and biodiversity policy. Including informing whether a European Protected Species Licence is required.

1.3.3. The results of this assessment will identify the need for further survey effort to determine the presence or likely absence of roosting bats within the Scheme.

2 METHODOLOGY

2.1 OVERVIEW

2.1.1. The PRA was conducted and the report prepared with reference to current good practice guidelines published by the Bat Conservation Trust (BCT) (Collins, 2016). This PRA is based on the following data sources:

- An ecological desk study;
- Open source data search (MAGIC, www.magic.gov.uk [accessed 05/02/2018]); and
- A site survey to assess all bridges, buildings, trees and two areas of woodland within and adjacent to the Scheme.

2.2 DESK STUDY

2.2.1. The desk study was undertaken in March and April 2015 to review existing ecological baseline information available in the public domain and to obtain information held by relevant third parties. For the purpose of the desk study exercise, bat records were obtained for a 1 km radius surrounding the Scheme from Durham Bat Group, Environmental Records and Information Centre North East (ERIC NE) and EnVIS data from Area 14 Managing Agent Contractor (MAC). This approach is consistent with current good practice guidance published by the CIEEM (2013). The findings of the desk study have been incorporated into Section 3 of this report.

2.2.2. In addition to this, and for the purposes of this report, a search for European Protected Species Licenses (EPSL) for bats that fall within 1 km of the footprint of the Scheme Footprint was undertaken using MAGIC in February 2018.

2.3 PRELIMINARY ROOST ASSESSMENT

2.3.1. A visual inspection of the bridges, buildings and trees, using binoculars, a high-powered torch and an endoscope, was undertaken to search for gaps, crevices, holes, cracks, fissures or natural deformities that could provide potential roost features (PRF) for bats. Where suitable features were noted, their location and a brief description of their character recorded. Additionally, each feature was visually inspected for evidence indicating use by roosting bats such as droppings, urine staining, and scratch marks / characteristic staining (from fur oils), where accessible.

2.3.2. The bridges, buildings and trees were categorised in line with the descriptions in **Table 2-1** (Collins, 2016). Based on the features present and the location of the feature, the potential for different types of bat roost was also considered. For the purpose of this PRA, potential roost types were grouped as follows (Collins, 2016):

- Maternity (breeding roost);
- Summer / transitional (to include transitional, satellite, night and day roosts); and
- Hibernation.

2.3.3. All of the PRA surveys were undertaken by experienced WSP ecologists, one of whom has a Natural England Class 2 NE (2015-16155-CLS-CLS).

Table 2-1 - Roost potential categorisation (based on Good Practice Guidelines, Collins, 2016)

Category	Description
Confirmed	Bridge, building or tree with features confirmed to be used by roosting bats either by historic records (verified appropriately), or evidence recorded during survey.
High	Bridge, building or tree with highly suitable features capable of supporting larger roosts, and/or multiple roost locations. Generally, these bridges are located in proximity to highly suitable foraging/commuting habitat such that the presence of a roost is considered highly probable.
Moderate	Bridge, building or tree exhibiting features with definite bat roost potential, but with only one or two suitable features suitable for larger roosts, or multiple features with the potential to be used by individual/small numbers of bats. Surrounding area includes good quality foraging habitat for bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland such that the presence of a roost is considered probable.
Low	Bridge or building with single, or few features capable of supporting individual/small numbers of bats e.g. external roosting features such as fascia or soffit boards, in which bats are considered less likely to be present. Or, a greater number or variety of features located in sub-optimal habitat such that bats would be less likely to use it e.g. isolated from foraging or commuting habitats. A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Negligible	Bridge, building or tree with no potential opportunities for roosting bats, or very few or minor features in an isolated/unsuitable location such that the presence of a roost is considered highly improbable, e.g. isolated from suitable foraging or commuting habitats.

BRIDGES

2.3.4. Eight bridges (also known as crossing points) within the Scheme were subject to a PRA. The bridges which were surveyed are shown in **Figures 2- 4** and are listed below:

- Smithy Lane Overbridge (HE Structure Key 16439);
- Allerdene Bridge (HE Structure Key 8880);
- Eighton Lodge Slip Road Underbridge (HE Structure Key 16441);
- Eighton Lodge north underbridge (HE Structure Key 16440);

- Eighton Lodge south underbridge (HE Structure Key 8883);
- North Dene Footbridge (HE Structure Key 8886);
- Longbank Bridleway underpass (HE Structure Key 26280); and
- Northside Overbridge (HE Structure Key 8887).

2.3.5. The bridge PRA survey was undertaken on the 9th November 2017.

BUILDINGS

2.3.6. Two semi-detached properties, Building B1 and Building B2, the locations of which are shown on **Figure 5** were inspected from ground level.

2.3.7. The building PRA survey was undertaken on the 19th July 2017.

TREES

2.3.8. Five stand-alone trees and approx. 315 trees within two isolated areas of woodland (Woodlands 1 and 2) were inspected individually in order to identify potential bat roost features and determine their overall potential for roosting bats. The locations of these trees and woodlands are shown in **Figure 6**.

2.3.9. The tree PRA survey was undertaken on the 19th July 2017.

2.4 NOTES AND LIMITATIONS

2.4.1. The northern elevation of Eighton Lodge north underbridge could not be viewed fully from an accessible vantage point (see **Figure 3**). Additionally, the southeast aspect of the abutment of the Northside Overbridge (**Figure 4**) could not be viewed.

2.4.2. An endoscope was used on suitable features, where access allowed, to see within the internal structure of the bridges but the majority of the features could not be accessed closely enough to use an endoscope due to the height of their locations on the bridge. Given the good condition of the areas of the bridges which could be viewed and the shallow features which exist within them, it is not expected that these limitations would impact the classification of all the bridges and so do not affect the results and recommendations detailed within this report.

2.4.3. The assessment of Building B1 and Building B2 was restricted to an external assessment only due to landowner permissions, and therefore a survey of any internal loft voids or similar was not undertaken. An in-combination assessment including internal and external surveys is likely to provide greater detail regarding a building's likelihood of supporting a bat roost. A suitable assessment can be made through an external survey only to determine the requirement for further survey effort. As such, it is believed that the assessment remains valid, and a precautionary approach has been adopted where there is uncertainty on the potential value of a building.

2.4.4. It should be noted that since the original assessments (WSP | PB 2016a), an update to the Bat Conservation Trust (BCT) good practice guidelines for surveying bats was published (Collins 2016). During this time, new DEFRA guidelines on bats and linear infrastructure

schemes has been adopted (Berthinussen & Altringham, 2015). These changes are not thought to affect the assessments made in the extended Phase 1 habitat survey (WSP | PB 2016b) or the update ecological assessment (WSP | PB 2016a) but are the guidelines followed in this report.

3 RESULTS AND EVALUATION

3.1 DESK STUDY

3.1.1. Desk study data was obtained from Environmental Records Information Centre North East (ERIC NE). Within the 2km search area conducted by ERIC NE, 115 individual bat records were provided, including common pipistrelle (93), soprano pipistrelle (9), noctule (7) and unidentified pipistrelle species (6). These bats were recorded to be foraging and commuting north, south, east and west of the Scheme.

3.1.2. The desk study returned one Local Wildlife Site (LWS), Birtley Northside LWS. It is approximately 250 m west of the southern end of the Scheme and its location shown in **Figure 4**. “Several roosts” of common pipistrelle bat were recorded within the citation.

3.1.3. The open source data search on MAGIC returned a single EPSL application for common pipistrelle ranging between September 2014 and September 2019. This EPSL is located at grid reference NZ274570, 150 m south-west of North Dene Footbridge and the Scheme and 300 m north of Birtley Northside LWS. The license details that it does not impact or damage breeding or hibernation sites but does allow the destruction of a resting place.

3.2 BRIDGE PRELIMINARY ROOST ASSESSMENT

OVERVIEW

3.2.1. There were eight target bridges (both bridges and underpasses) assessed within the Scheme; as shown in **Figures 2- 4**. All eight bridges are located between Junction 65 (Birtley) and Junction 67 (Coalhouse).

3.2.2. Six of the eight bridges are two-lane road bridges, namely:

- Smithy Lane Overbridge (grid reference NZ 25759 58276);
- Allerdene Bridge (grid reference NZ 25477 58486);
- Eighton Lodge Slip Road underbridge (grid reference NZ 26521 57587);
- Eighton Lodge north underbridge (grid reference NZ 26684 57518);
- Eighton Lodge south underbridge (grid reference NZ 26796 57459); and
- Northside Overbridge (grid reference NZ 28092 56757).

3.2.3. North Dene (grid reference NZ 27535 57099) is a footbridge and Longbank Bridleway underpass (grid reference NZ 27095 57334) is an underpass. See Appendix A for photos of these bridges.

ASSESSMENT

3.2.4. Of the total of eight bridges, no confirmed roosts were recorded, however, the bridges were attributed to the following categories of roost potential (in accordance with **Table 2-1**):

- Negligible (screened out) – two bridges (Longbank Bridleway and North Dene Footbridge) and;

- Moderate – six bridges (Allerdene Bridge, Smithy Lane Overbridge, Eighton Lodge Slip Road underbridge, Eighton Lodge north underbridge, Eighton Lodge south underbridge and Northside Overbridge).

3.2.5. Full details of the assessment are presented within **Table 3-1** below.

Table 3-1 - Bridge preliminary roost assessment results

Bridge Name	Highways England Structure Key	Grid Reference	Description of Bridge	Description of Potential Roosting Features	Evidence of Roosting Bats Recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
Smithy Lane Overbridge	16439	NZ 25759 58276	Concrete deck overbridge. See **Photo 1** in **Appendix A**.	▪ Gaps between the girder and the deck at the top of both piers. ▪ Gaps between the concrete beams on the underside of the bridge deck (see **Photo 2**). ▪ These features are located throughout these areas and are at a height of approx. 10 m. ▪ There is no artificial lighting on these features and they are located directly above the A1. ▪ The features are not in close proximity to the surrounding woodland vegetation.	None	Moderate	Yes

Bridge Name	Highways England Structure Key	Grid Reference	Description of Bridge	Description of Potential Roosting Features	Evidence of Roosting Bats Recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
Allerdene Bridge	8880	NZ 25477 58486	Metal deck overbridge. See **Photo 3** in **Appendix A**.	▪ Approximately 1 m long cavity is located between the concrete and steel deck structures on the southern and northern aspects of the western pier and the southern and northern ends of the eastern pier (see **Photo 4**). ▪ The cavities are at a height of 7 m and no artificial lighting is located on these areas. ▪ Due to the locations of the cavities, it is assumed that they spread through the width of the bridge. ▪ There is no immediate vegetation adjacent to the cavities but the bridge is located 5 m to areas of semi-improved grassland and scrub to the south-west and 5 m from an area of woodland to the south-east.	None	Moderate	Yes

Bridge Name	Highways England Structure Key	Grid Reference	Description of Bridge	Description of Potential Roosting Features	Evidence of Roosting Bats Recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
Eighton Lodge Slip Road underbridge	16441	NZ 26521 57587	Concrete deck overbridge. See **Photo 5** in **Appendix A**.	▪ Gaps between the deck and the bridge at the top of both piers. ▪ Gaps between the concrete beams on the underside of the bridge deck. ▪ These features are located throughout these areas and are at a height of 8 m and are directly above the Durham road. ▪ The bridge is situated 2 m from the surrounding woodland vegetation.	None	Moderate	Yes
Eighton Lodge north underbridge	16440	NZ 26684 57518	Concrete deck overbridge. See **Photo 6** in **Appendix A.**	▪ Gaps between the deck and the bridge at the top of both piers. ▪ Gaps between the concrete beams on the underside of the bridge deck (see **Photos 7 & 8**). ▪ These features are located throughout these areas and are at a height of 8 m and are directly above the Durham road with street lighting beneath.	None	Moderate	Yes

Bridge Name	Highways England Structure Key	Grid Reference	Description of Bridge	Description of Potential Roosting Features	Evidence of Roosting Bats Recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
				▪ The bridge is situated 5 m from the surrounding woodland vegetation.			
Eighton Lodge south Underbridge	8883	NZ 26796 57459	Concrete deck overbridge See **Photo 9** in **Appendix A.**	▪ Gaps between the deck and the bridge at the top of both piers. ▪ Gaps between the concrete beams on the underside of the bridge deck (see **Photo 10**). ▪ These features are located throughout these areas and are at a height of 8 m. ▪ On the north- east aspect of the bridge, gaps are located between the compression pads at 8 m in height. ▪ Underneath the bridge, on the western wall, 7 m high, there is also a hole at 3 cm in size. These features are located directly above the Durham road with street lighting beneath.	None	Moderate	Yes

Bridge Name	Highways England Structure Key	Grid Reference	Description of Bridge	Description of Potential Roosting Features	Evidence of Roosting Bats Recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
				▪ The bridge is situated 5 m from the surrounding woodland vegetation.			
North Dene Footbridge	8886	NZ 27535 57099	Footbridge See **Photo 11** in **Appendix A**.	▪ No features were seen on the bridge. ▪ The bridge consists of a steel structure with concrete and bricks (with the mortar in good condition) used as the structure for the ramp leading to the bridge.	None	Negligible	No
Longbank Bridleway underpass	26280	NZ 27095 57334	Public right of way underpass. See **Photo 12** in **Appendix A.**	▪ No features were seen on the bridge. ▪ The bridal path has no artificial lighting and is surrounded by vegetation which provides shelter. There is little disturbance from traffic on the bridle path, just intermittent pedestrian traffic.	None	Negligible	No

Bridge Name	Highways England Structure Key	Grid Reference	Description of Bridge	Description of Potential Roosting Features	Evidence of Roosting Bats Recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
Northside Overbridge	8887	NZ 28092 56757	Concrete deck overbridge. See **Photo 13** in **Appendix A.**	▪ Gaps between the deck and the bridge at the top of both piers. ▪ Gaps between the concrete beams on the underside of the bridge deck. ▪ These features are located throughout these areas and are at a height of 10 m and are located directly above the A1 and the bridge is located 10 m from the surrounding woodland vegetation.	None	Moderate	Yes

3.2.6. As several of the bridges recorded potential for supporting roosting bats, further survey effort will be required to determine presence/ likely absence. The results of these surveys will confirm the appropriate mitigation measures required to ensure the Scheme complies with legislation and planning policy (as outlined within Section 5.2 and 5.3). Recommendations for further survey effort are presented in Section 6 of this report.

3.3 BUILDING PRELIMINARY ROOST ASSESSMENT

OVERVIEW

3.3.1. Two buildings (each one comprising a semi-detached dwelling) were surveyed, both on Banesley Lane, Gateshead. The locations of these buildings are shown in **Figure 5**.

ASSESSMENT

3.3.2. There were no confirmed roosts recorded, however, the buildings were attributed to the following categories (in accordance with **Table 2-1**):

- Negligible (screened out) – one Building, B1 recorded;
- Low – no buildings recorded;
- Moderate – one Building, B2 recorded; and
- High – no buildings recorded.

3.3.3. Full details of the assessment are presented within **Table 3-2** below, with photos provided in **Appendix A**.

3.3.4. Two or three potential bat droppings were recorded high on the rear wall of Building B2. Further examination identified small gaps under the eaves and evidence of swallow/swift nests in close proximity to the potential droppings. Anecdotal evidence from the homeowner supported regular use by nesting birds. A detailed examination couldn't clarify whether the marks were bat droppings, bird droppings or defects in the render; this was due to the height of the markings on the exterior wall.

3.3.5. The inspection of Building B1 recorded no evidence of bat droppings.

3.3.6. Despite having 'moderate' potential, Building B2 can be scoped out of the need for further survey due to its distance from the Scheme (greater than 30 m) and the levels of disturbance it is already exposed to from the A1 road. This is further discussed in **Section 6** of this report.

Table 3-2 - Building preliminary roost assessment results

Building No (B#)	Grid Reference	Description of Building	Description of Potential Roosting Features	Evidence of Roosting Bats Recorded	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required
B1	NZ 24561 58548	Small two story, semi-detached, red-brick residential property with English bond brick work and likely cavity wall structure. Red clay tiled roof with lead flashing. Small single story garage extension with flat roof (no pitched edges). Small pitched porch and flat roof bay window. See **Photos 16** & **17** in **Appendix A**.	▪ None recorded. ▪ Roof tiles and flashing are in very good condition. ▪ No gaps in soffits, eaves or on the gable end.	No evidence recorded	Negligible	No
B2	NZ 2453 58548	Small, two story, semi-detached residential property with a garage	▪ Thin gap under length of eave at rear of property including missing roof	Potential droppings on rear wall of Building B2. However, the wet	Moderate	No

Building No (B#)	Grid Reference	Description of Building	Description of Potential Roosting Features	Evidence of Roosting Bats Recorded	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required
		extension. Both floors of the property are rendered and the 1st floor has mock Tudor facade. The main pitched roof consists of new red clay tiles with lead flashing. The garage roof is flat but with pitched edges consisting of red clay tiles and lead flashing. The garage roof is flat and consists of red clay tiles and lead flashing. 20th century building	timber support bricks that may provide access into the loft void (see **Photos 14** & **15**). ▪ Very slight gap under the pitch at the front of the property (above front room windows). ▪ Eastern gable end has some gaps but looks bricked up. ▪ Small thin gap on eastern gable end between eave and wall. ▪ Front has very small gaps.	material bonfire made visibility difficult and this could have been ash stuck to the wall. Occupant also commented on the poor render finish (could be confused for droppings).		

3.4 TREE PRELIMINARY ROOST ASSESSMENT

OVERVIEW

3.4.1. In total, five trees (Tree T1 to Tree T5) and the trees within two areas of woodland (Woodland 1 and Woodland 2) were inspected individually. All the trees within the woodland were classified to have negligible potential and so are not referred to individually, but as woodland blocks, for clarity within this report.

3.4.2. The trees and woodland areas are shown on **Figure 6**. Three trees were considered suitable to support roosting bats with 'Moderate' suitability (details included in **Appendix B**).

ASSESSMENT

3.4.3. Full details of the tree assessment are presented in **Table 3-3** below.

3.4.4. There were no confirmed roosts recorded, however, the trees were attributed to the following categories (in accordance with **Table 2-1**):

- Negligible – one tree (Tree T5) and all trees located within the Woodlands 1 and 2;
- Low – one tree (Tree T3) recorded;
- Moderate – three trees recorded (Tree T1, Tree T2 and Tree T4); and
- High – no trees recorded.

3.4.5. Further to this, Tree T1, Tree T2 and Tree T4 were scoped out of the need for further survey due to their distance from the Scheme (both in excess of 30 m) and the levels of disturbance from the A1 road which they are already exposed to. This exposure includes light and noise pollution from the A1 (current alignment). Due to Tree T3 having low potential, no further survey effort is required according to good practice guidance (Collins, 2016).

3.4.6. Tree T4 requires further survey effort of an endoscope survey by a bat licensed ecologist of the chest height cavity located on the tree should be carried out prior to works commencing in close proximity to the tree.

Table 3-3 - Tree preliminary roost assessment results

Tree No (T#)	Tree Species	Grid Reference	Description of Tree	Description of Potential Roosting Features	Evidence of roosting bats recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
T1	Unknown	NZ 25898 58204	An over mature dead tree of unknown species. The tree is dead and there is significant evidence of rot and potential ingress of water. Surrounding habitat includes scrub and immature woodland.	▪ Flaking bark; ▪ Rot holes; ▪ Woodpecker holes; and ▪ Evidence of damp rot has reduced the classification. See **Photo 18**.	None	Moderate	No
T2	Oak species *Quercus sp.*	NZ 26004 57936	A mature tree approximately 12 meters tall. Bird box is situated on the northern elevation. Situated in a semi-mature plantation woodland.	▪ Three woodpecker holes; ▪ Two rot holes; ▪ A slim hazard beam; ▪ There are splits at the top but these are likely to let in water. See **Photo 19**.	None	Moderate	No

Tree No (T#)	Tree Species	Grid Reference	Description of Tree	Description of Potential Roosting Features	Evidence of roosting bats recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
T3	Crack willow *Salix fragilis*	NZ 25090 58510	A mature tree situated on woodland edge near hedgerows. The 10 m tall tree contained features although they were heavily exposed to the elements.	▪ The trunk is completely hollow and open to the elements along its length. ▪ Holes in the trunk provide access to the cavity. See **Photo 20**.	None	Low	No
T4	Ash *Fraxinus excelsior*	NZ 25090 58452	A mature tree measuring approximately 15 meters tall was recorded along woodland edge and hedgerow habitats.	▪ A single large hole at chest height was recorded. Hole is obstructed by branches. See **Photo 21**.	None	Moderate	Yes
T5	Oak species	NZ 25058 58602	A single mature tree was recorded within a small copse in a splitter island.	▪ Thin cover of ivy provided no potential. ▪ No other features identified.	None	Negligible	No

Tree No (T#)	Tree Species	Grid Reference	Description of Tree	Description of Potential Roosting Features	Evidence of roosting bats recorded?	Overall Assessment of Suitability to Support Bat Roosts	Further Survey Effort Required?
Woodland 1	Mixed species plantation	NZ 25038 58609	An area of woodland within a splitter island of the roundabout with the Team Valley Sainsburys. Semi-mature, mixed species woodland.	▪ None recorded.	None	Negligible	No
Woodland 2	Mixed species plantation	NZ 24866 58497	An area of woodland within a splitter island of the roundabout with the Banesley Lane. Semi-mature, mixed species woodland.	▪ None recorded.	None	Negligible	No

4 IMPLICATIONS FOR DEVELOPMENT

4.1 OVERVIEW

4.1.1. In the absence of mitigation, the Scheme has potential to affect bats, through direct effects upon potential bat roosts associated with bridges, buildings and trees, within the Scheme. The legislation and planning policy relevant to bats and their roosts set out below is therefore relevant. Recommendations as to how the legislation and planning policy may be satisfied are set out in the Recommendations section.

4.2 LEGAL COMPLIANCE

4.2.1. Bats and their roosts are afforded a high level of protection under the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitat Regulations'), the legislation means that it is an offence to:

- Deliberately capture, injure or kill a wild bat;
- Deliberately disturb wild bats; 'disturbance of animals includes in particular any disturbance which is likely:
  - (a) to impair their ability —
    - (i) to survive, to breed or reproduce, or to rear or nurture their young; or
    - (ii) in the case of animals of a hibernating or migratory species, to hibernate or
    - migrate; or
  - (b) to affect significantly the local distribution or abundance of the species to which they belong.' and
- Damage or destroy a breeding site or resting place used by this species.

4.2.2. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of animals when using places of shelter, and obstruction of access to places of shelter.

4.2.3. Due to the high level of protection afforded to bats and their habitat, impacts to roosts (including loss, damage or obstruction) is governed by a strict licensing procedure administered by Natural England, which requires the development of suitable mitigation and compensation to avoid impacts to the Favourable Conservation Status (FCS) of the bat species.

4.2.4. Certain species of bats including noctule bat, brown long-eared *Plecotus auritus* bat and soprano pipistrelle bat are also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006) public bodies (including local planning authorities) have a duty to have regard for the conservation of SPI when carrying out their functions, including determining planning applications.

NATIONAL POLICY STATEMENT FOR NATIONAL NETWORKS

4.2.5. As a road scheme, the Scheme should abide by the National Policy Statement for National Networks (DT, 2014). This states that:

- *"Applicants should include appropriate mitigation measures as an integral part of their proposed development, including identifying where and how these will be secured. In particular, the appplicant should demonstrate that:*
  - *during construction, they will seek to ensure that activities will be confined to the minimum areas required for the works;*
  - *during construction and operation, best practice will be followed to ensure that risk of disturbance or damage to species or habitats is minimised (including as a consequence of transport access arrangements);*
  - *habitats will, where practicable, be restored after construction works have finished;*
  - *developments will be designed and landscaped to provide green corridors and minimise habitat fragmentation where reasonable; and*
  - *opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals, for example through techniques such as the 'greening' of existing network crossing points, the use of green bridges and the habitat improvement of the network verge."*

5 RECOMMENDATIONS

5.1 FURTHER SURVEY EFFORT

5.1.1. Following the completion of the PRA to determine bat roost suitability, the bridges, buildings, trees and woodland were categorised into the following classifications:

Table 5-1 - Further survey effort required for the bridges, buildings and trees

Name	Overall Potential	Further Survey Effort Required?	Recommendations
Smithy Lane Overbridge	Moderate	Yes	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey between May to September with at least one of the surveys between May and August.
Allerdene Bridge	Moderate	Yes	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey between May to September with at least one of the surveys between May and August.
Eighton Lodge Slip Road underbridge	Moderate	Yes	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey between May to September with at least one of the surveys between May and August.
Eighton Lodge north underbridge	Moderate	Yes	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey between May to September with at least one of the surveys between May and August.
Eighton Lodge south underbridge	Moderate	Yes	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey between May to September with at least one of the surveys between May and August.
Northside Overbridge	Moderate	Yes	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey between May to September with at

Name	Overall Potential	Further Survey Effort Required?	Recommendations
			least one of the surveys between May and August.
North Dene Footbridge	Negligible	No	-
Longbank Bridleway underpass	Negligible	No	-
Building 1	Negligible	No	-
Building 2	Moderate	No	-
Tree 1	Moderate	No	-
Tree 2	Moderate	No	-
Tree 3	Low	No	-
Tree 4	Moderate	Yes	An endoscope survey by a bat licenced ecologist (minimum of level 2 class licence) of the chest height cavity located on the tree should be carried out prior to works commencing in close proximity to the tree.
Tree 5	Negligible	No	-
Woodland 1	Negligible	No	-
Woodland 2	Negligible	No	-

BRIDGES

5.1.2. Those bridges classified as 'Negligible' are screened out from further survey effort, in accordance with good practice guidance (Collins, 2016), due to lacking suitable features to support roosting bats.

5.1.3. It is recommended that the six bridges classified as 'Moderate' in **Table 5-1** are subject to two separate survey visits each including a single dusk emergence and a separate single dawn re-entry survey. The surveys should be conducted between May and September in suitable weather conditions.

5.1.4. No further survey effort is required for Longbank Bridleway underpass in regard to assessment of roosting features. It is considered, however, that this bridge may be used by commuting bats as a crossing point under the A1. No further survey effort is required for North Dene Footbridge either due to its 'Negligible' suitability. But it is known there are bat roosts between 150- 300m south-west of the footbridge at the site of the EPSL and at Birtley Northside LWS. Therefore, it is possible that commuting bats may use the footbridge as a crossing point across the A1 also.

5.1.5. As a result, if the Scheme requires Longbank Bridleway underpass to be closed or moved between March and September, the period of time when bats may be active and therefore displaced, further survey effort may be required to determine the importance of the underpass and footbridge and inform the requirements of mitigation. The survey effort should consist of a minimum of six 60-minute surveys (either dusk or dawn) between June and August. Surveyors should be positioned at either end of the underbridge and footbridge to record bats flying through and across these crossing points.

5.1.6. Surveys should be conducted in accordance with the Bat Conservation Trust's (BCT) Good Practice Guidelines (Collins, 2016) and DEFRA Linear Infrastructure Guidelines (Berthinussen & Altringham, 2015) and be undertaken at least two weeks apart.

BUILDINGS

5.1.7. Building B1 is well-sealed and does not offer significant value for roosting bats. As such, no further survey effort is deemed necessary.

5.1.8. The external building inspection of Building B2 recorded PRFs and potential droppings were seen on the wall, resulting in the building being assigned 'Moderate' potential to support roosting bats.

5.1.9. Whilst Building B2 holds potential value to support a bat roost, it will not be directly impacted by the Scheme and therefore there will be no loss of roosting space associated with this building. In addition, the building will only be subject to nearby construction activities that are unlikely to constitute significant disturbance impacts over and above those already present. The building has been subject to localised environmental/ habitat change in previous years, including the removal of the tree screen between the property and the A1 carriageway and the installation of a sound wall. This means that any bats present are likely to have become habituated to the higher levels of disturbance created by the motorway, reducing the impact of nearby construction activities and the disturbance levels this may generate.

5.1.10. Both Building B1 and B2 are currently subject to high levels of ongoing disturbance due to proximity to the A1 carriageway, which is likely to reduce the value of the building for roosting bats. This high level disturbance would suggest a low suitability for high value roosts, such as maternity and hibernation roosts.

5.1.11. As there will be no direct impacts to Building B1 or Building B2 and the nearby construction activities are not considered to pose significant levels of disturbance that may change the

use of any potential roost, further survey effort is not recommended in relation to this Scheme. Indirect disturbance impacts, such as light, will be avoided or reduced through the implementation of appropriate mitigation.

TREES

5.1.12. All the trees located in woodlands 1 and 2 were identified as having no potential bat roosting features meaning all trees have negligible bat roost potential. As a result, no further bat survey is recommended for the trees within these small areas of woodland.

5.1.13. Despite being given 'Moderate' suitability to support roosting bats, Trees T1 and T2 are scoped out for further survey due to their distance from the Scheme (both in excess of 30 m) and the levels of disturbance they are already exposed to such as light and noise pollution from the A1 (current alignment).

5.1.14. Due to Tree T3 having 'Low' suitability, no further survey effort is required according to good practice guidance (Collins, 2016).

5.1.15. Tree T4 is classified as having 'Moderate' suitability for roosting bats and is within an area of land required for the Scheme. Subsequently, it is recommended that an endoscope survey of the cavity located on the tree trunk at chest height should be carried out prior to works commencing in close proximity to the tree.

5.1.16. Should the endoscope survey indicate the presence of roosting bats and the tree is to be impacted or lost as part of the Scheme, a European Protected Species mitigation licence may be required from Natural England to permit the works. As part of the licence application, a mitigation and compensation strategy would be developed and implemented; detailing actions to avoid or reduce the potential impacts to roosting bats and how any loss or damage of roosts will be adequately compensated for.

5.1.17. If the surveys suggest likely absence of a roost, precautionary working methods may still be required should low value for roosting remain. This may involve working under a toolbox talk or method statement, pre-commencement inspection and/or supervised soft/sectional felling.

5.2 EUROPEAN PROTECTED SPECIES LICENSING

5.2.1. Should a bridge, building or tree supporting a bat roost be directly impacted or lost as part of the proposal, an EPSL may be required from Natural England to permit the works. As part of the licence application, a mitigation and compensation strategy would be developed and implemented; detailing actions to avoid or reduce the potential impacts to roosting bats and how any loss or damage of roosts will be adequately compensated for.

5.2.2. The results of the open data search on MAGIC show that a resting area used by a common pipistrelle was located 150 m from the Scheme. This shows that populations of bats, for which necessary efforts to reduce and avoid impacts on are needed, are present in the local area. Therefore, an EPSL may be needed if bats roosts are confirmed in any of the features.

5.3 AVOIDANCE, MITIGATION AND COMPENSATION

5.3.1. The emergence/ re-entry surveys detailed for the bridges will record any bats accessing or egressing from the bridges, as well as the level of bat activity in the vicinity to give further indication of the likelihood of roost presence. Following the completion of the survey effort, appropriate recommendations for avoidance, mitigation and compensation can be determined.

5.3.2. Due to the bridges, buildings and trees falling within the Scheme footprint, mitigation is required as well as the additional survey effort detailed above, in order to reduce the disturbance impacts. It is recommended that a sensitive lighting scheme is designed, in appropriate locations, to be determined by the recommended survey, which seeks to retain the extant unlit foraging/commuting corridors.

5.3.3. Such a scheme would limit any isolation and fragmentation impacts and seek to maintain links between the bat roosting features and nearby foraging habitat within the Scheme and adjacent land. The Scheme should be designed to ensure that the suitable bat features are not exposed to any light trespass.

5.3.4. The lighting scheme should include lighting restrictions both during and post-construction, which could include the following (as recommended in BCT, 2014):

- Use the minimum amount of light needed for the task;
- Minimise the spread of light to at, or near, horizontal and ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required only;
- The use of variable lighting regimes (VLR) to limit the times that lights are on to provide some dark periods e.g. switch off or reduce the light between 23:00 and 03:00 (seasonally dependent)
- Avoid use of blue-white short wavelength lights and high UV content; and/or
- Create light barriers utilising hedgerow and tree planting.

5.3.5. For further information please refer to the Bats and Lighting guidance (Stone, 2013).

5.3.6. The Scheme requires the Longbank Bridleway underpass to be widened and so Precautionary Working Measures may be required to minimise potential impacts, during the construction period. The surveys crossing point surveys will be utilised to inform appropriate mitigation proposals.

5.4 MONITORING

5.4.1. The emergence/ re-entry surveys of Longbank Bridleway underpass and North Dene Footbridge may highlight the requirement of during and post-construction monitoring surveys (using the same methodology), which would be utilised to confirm the effectiveness of mitigation proposals.

REFERENCES

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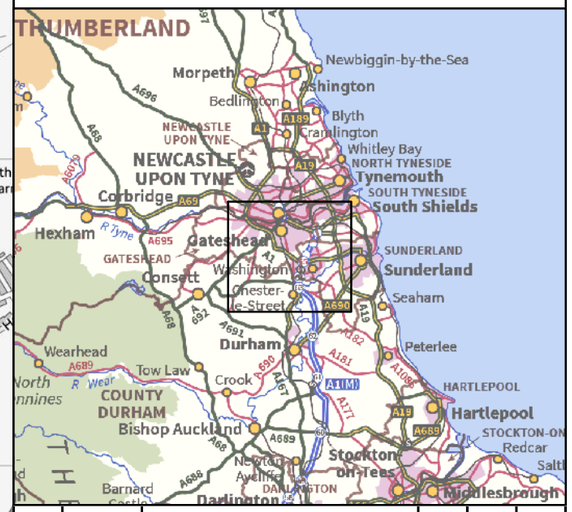
- WSP Parsons Brinckerhoff (2016b) *A1 Coalhouse to Birtley Extended Phase 1 Habitat Survey.* Leeds: WSP | PB.

N

Key

Scheme Footprint



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability

Status

PINS Reference Number: TR010031

Client: highways england

Project Title: A1 Birtley to Coal House Scheme

Drawing Title: Figure 1 Site Location Plan

Scale	Drawn	Checked	Approved	Authorised
1:20,000	GH	JR	KS	NJA
Original Size: A3	Date: Dec 2018	Date: Dec 2018	Date: Dec 2018	Date: Dec 2018

Drawing Number: HE HE551462 B2CH (Section | Type | ID)

Originator: WSP (Direction | Type)

Volume: 6.3 (Role | Number)

Revision: P03

PW Stage Code

Chowdene

A167

Hertford

Chowdene Bank

Allerdene

Trafford

Allerdene Railway Underbridge

Smithy Lane Overbridge

Smithy Lane

Lamesley

Longacre Wood

N

Key

- Scheme Footprint
- Birtley Northside Local Wildlife Site

Bat Roost Potential

- Moderate
- Negligible

0 25 50 75 100 m

Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability

Status

PINS Reference Number: TR010031

Client: highways england

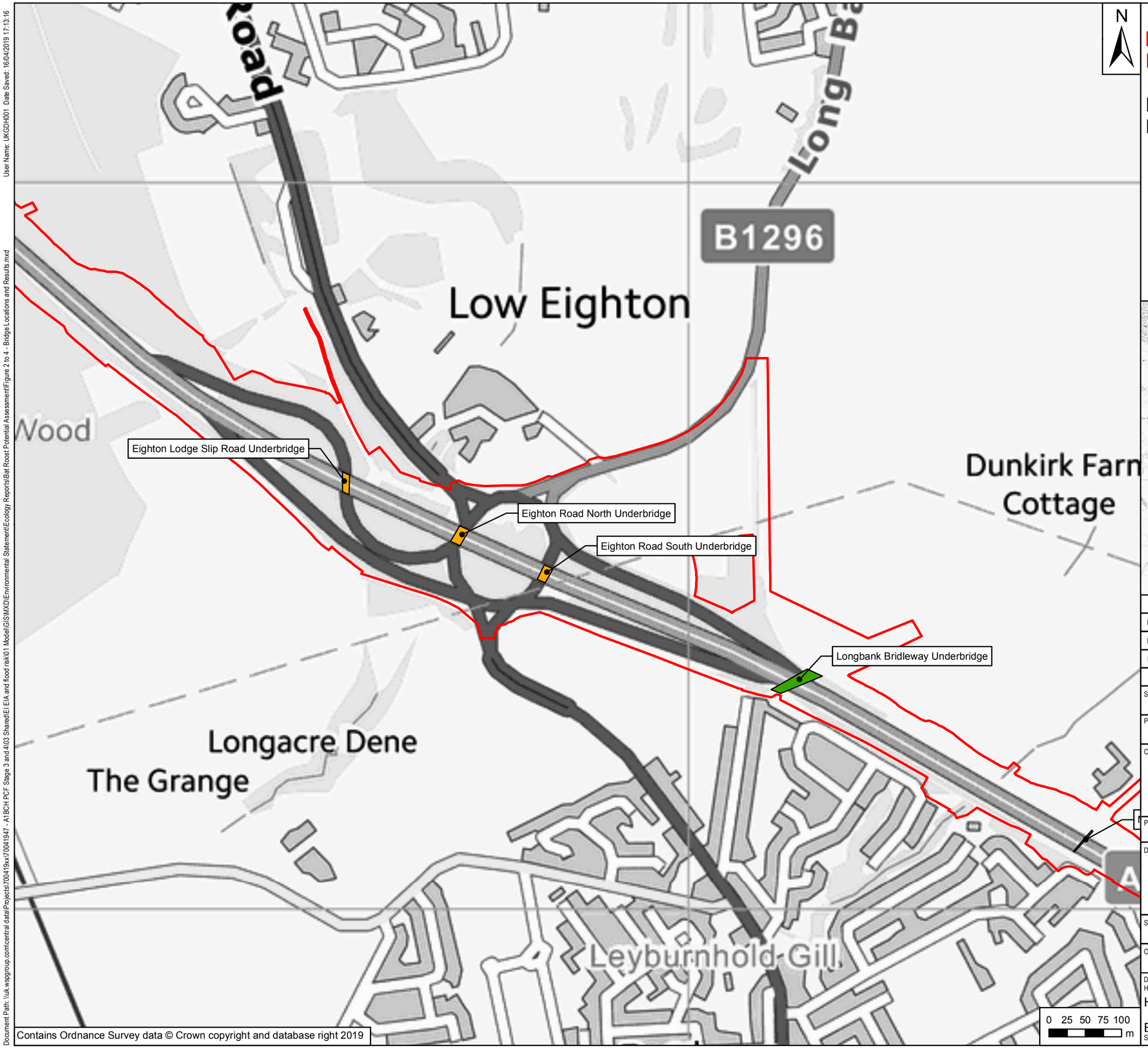
Project Title: A1 Birtley to Coal House Scheme

Drawing Title: Figure 2 Bridge Locations and Results

Scale	Drawn	Checked	Approved	Authorised
1:5,000	GH	JR	KS	NJA
Original Size	**Date**	**Date**	**Date**	**Date**
A3	Dec 2018	Dec 2018	Dec 2018	Dec 2018

Drawing Number HE PIN: HE551462 | Originator: WSP | Volume: 6.3 | Revision: P03

B2CH | Section | Type | ID | Direction | Type | Role | Number | PW Stage Code



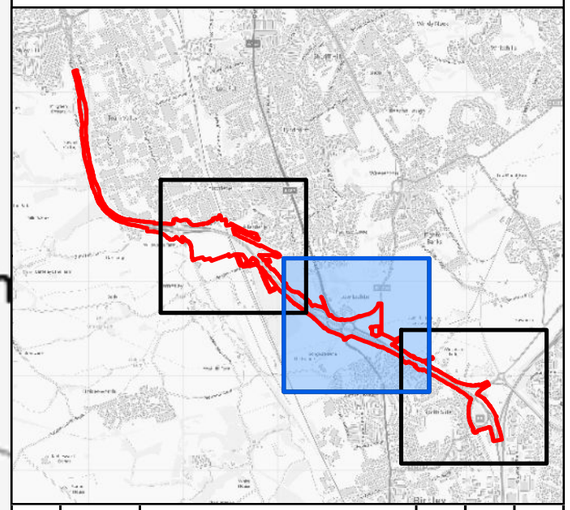
N

Key

- Scheme Footprint
- Birtley Northside Local Wildlife Site

Bat Roost Potential

- Moderate
- Negligible



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability

Status

PINS Reference Number: TR010031

Client: highways england

Project Title: A1 Birtley to Coal House Scheme

Drawing Title: Figure 3 Bridge Locations and Results

Scale	Drawn	Checked	Approved	Authorised
1:5,000	GH	JR	KS	NJA
Original Size	**Date**	**Date**	**Date**	**Date**
A3	Dec 2018	Dec 2018	Dec 2018	Dec 2018

Drawing Number HE PIN: HE551462 | Originator: WSP | Volume: 6.3 | Revision: P03

B2CH | Section | Type | ID | Direction | Type | Role | Number | PW Stage Code

ay Underbridge

Winchester Lodge

North Dene Footbridge

A1

North Side Overbridge

Blackfell R

North Side

65

Road

0 25 50 75 100 m

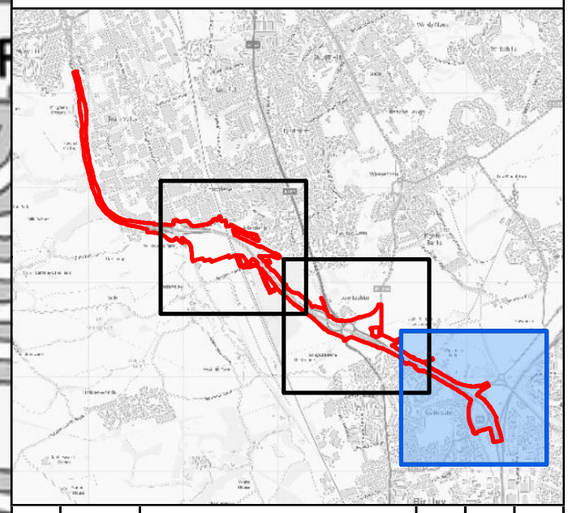
N

Key

- Scheme Footprint
- Birtley Northside Local Wildlife Site

Bat Roost Potential

- Moderate
- Negligible



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability

Status

PINS Reference Number
TR010031

Client
highways england

Project Title
A1 Birtley to Coal House Scheme

Drawing Title
Figure 4 Bridge Locations and Results

Scale	Drawn	Checked	Approved	Authorised
1:5,000	GH	JR	KS	NJA
Original Size	**Date**	**Date**	**Date**	**Date**
A3	Dec 2018	Dec 2018	Dec 2018	Dec 2018

Drawing Number
HE PIN: HE551462
Originator: WSP
Volume: 6.3
Section: B2CH
Type
ID
Direction
Type
Role
Number

Revision
P03

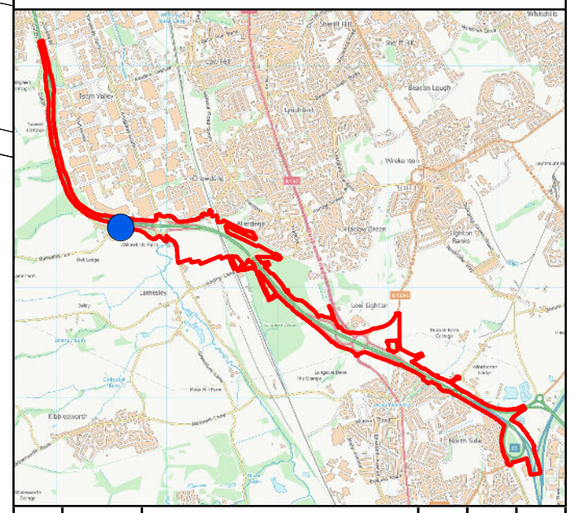
PW Stage Code

Key

- Scheme Footprint
- Building Location in Relation to Scheme Footprint
- Gaps Under Bricks
- Gap Under Eave
- Missing Timber
- Potential Bat Droppings

Bat Roost Potential

- Moderate
- Negligible



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability

Status

PINS Reference Number
TR010031

Client
highways england

Project Title
A1 Birtley to Coal House Scheme

Drawing Title
Figure 5 Building Locations and Results

Scale	Drawn	Checked	Approved	Authorised
1:250	GH	JR	KS	NJA
Original Size	**Date**	**Date**	**Date**	**Date**
A3	Dec 2018	Dec 2018	Dec 2018	Dec 2018

Drawing Number
HE PIN
HE551462

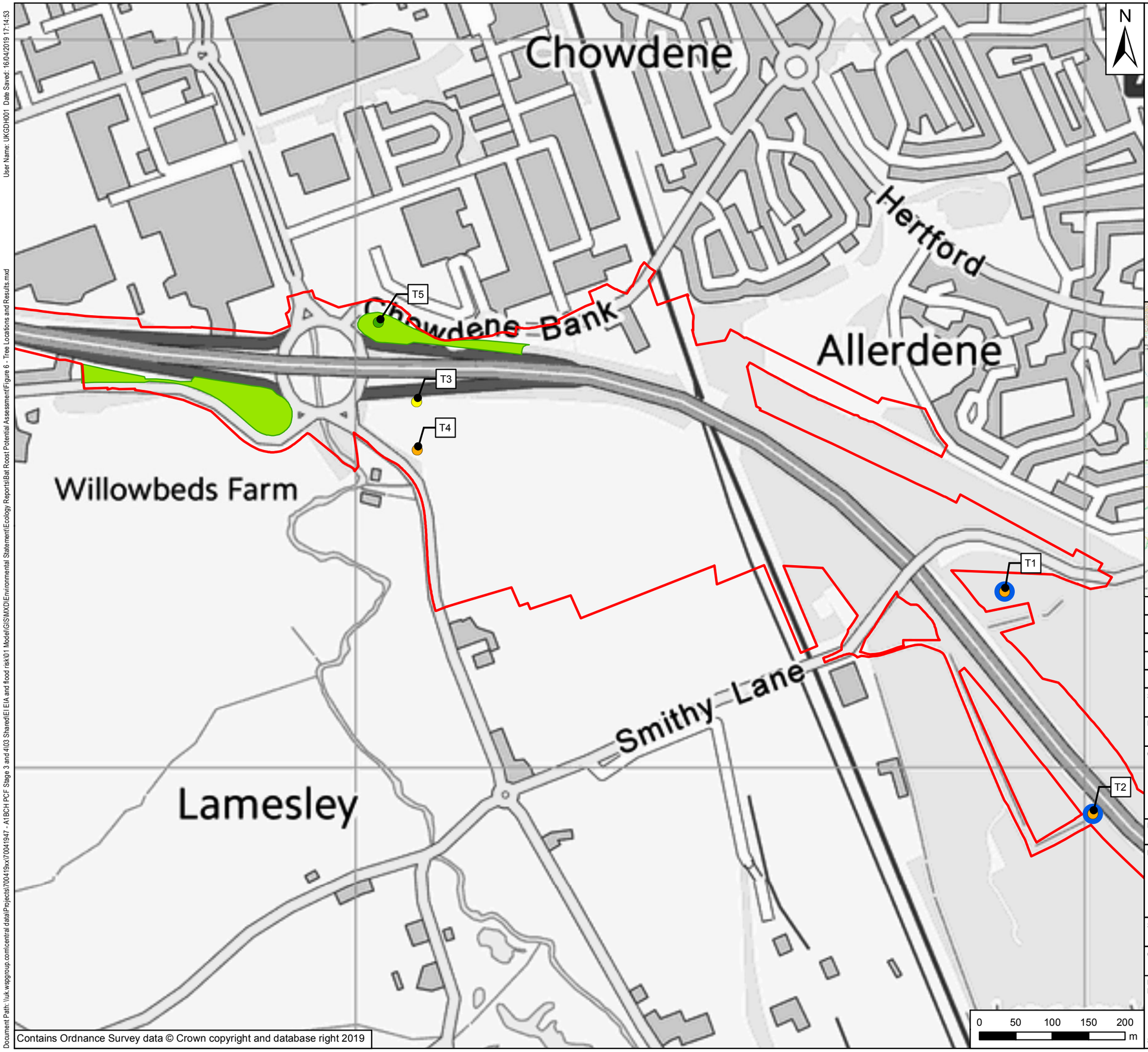
Originator
WSP

Volume
6.3

Revision
P03

B2CH
Section | Type | ID | Direction | Type | Role | Number

PW Stage Code



N

Key

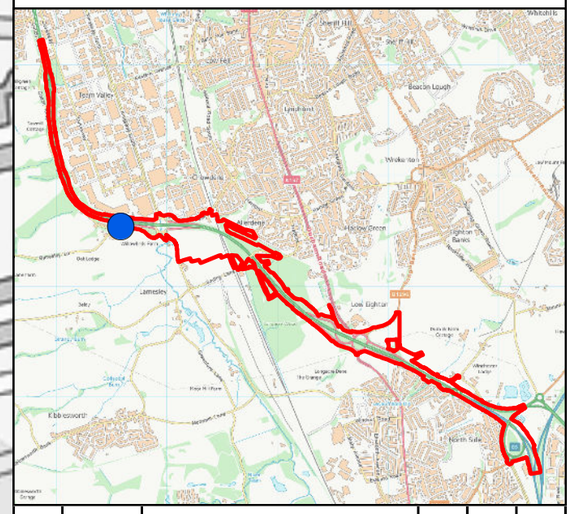
- Scheme Footprint

Trees with Bat Roost Potential

- Low
- Mod
- Neg
- Trees Scoped Out

Woodland with Bat Roost Potential

- Negligible



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability

Status

PINS Reference Number: TR010031

Client: highways england

Project Title: A1 Birtley to Coal House Scheme

Drawing Title: Figure 6 Tree Locations and Results

Scale	Drawn	Checked	Approved	Authorised
1:5,000	GH	JR	KS	NJA
Original Size	**Date**	**Date**	**Date**	**Date**
A3	Dec 2018	Dec 2018	Dec 2018	Dec 2018

Drawing Number: HE PIN HE551462 | Originator WSP | Volume 6.3 | Section B2CH | Type | ID | Direction | Type | Role | Number

Revision: P03

PW Stage Code

Appendix A

PHOTOGRAPHS

Photo 1- Layout of Smithy Lane Overbridge

Photo 2- Potential roosting feature of the gaps between abutments and bridge deck on Smithy Lane Overbridge, as well as the gaps between the concrete beams on the underside of the bridge deck

Photo 3- Layout of Allerdene Bridge

Photo 4- Potential roosting feature of the cavity between the concrete and steel deck structure on the southern end of the western pillar on Allerdene Bridge

Photo 5- Layout of Eighton Lodge Slip Road underbridge

Photo 6- Layout of Eighton Lodge north underbridge

Photo 7- Potential roosting feature of the gap between the abutment and bridge deck on the north-east side of Eighton Lodge north underbridge

Photo 8- Potential roosting feature of the gaps between the concrete beams on the underside of the deck of Eighton Lodge north underbridge

Photo 9- Layout of Eighton Lodge south underbridge

Photo 10- Potential roosting features of the gaps between the parallel concrete beams on the underside of Eighton Lodge south underbridge

Photo 11- Lay out of North Dene Footbridge

Photo 12- Lay out of Longbank Bridleway Underpass

Photo 13- Lay out of Northside Overbridge

Photo 14 – North facing elevation of Building B2

Photo 15 – North facing elevation of Building B2

Photo 16 – North facing elevation of Building B1, with evidence of a new roof and brickwork following a recent leak, as clarified by the homeowner.

Photo 17 – North-west gable end of Building B1

Photo 18- Evidence of holes in Tree T1

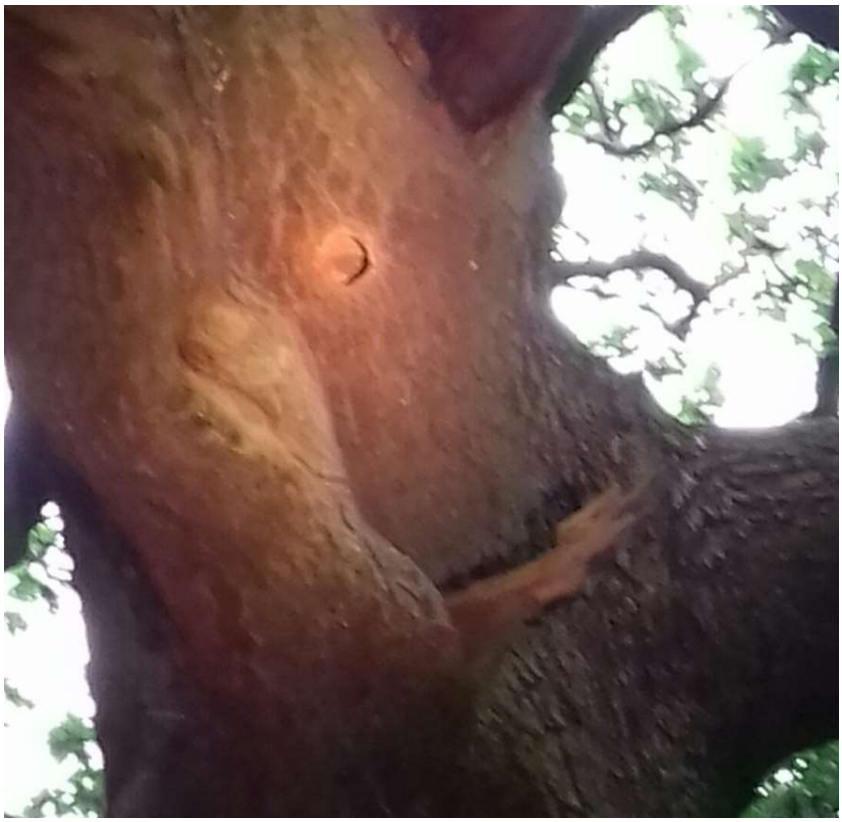


Photo 19 – Woodpecker hole on underside of trunk in Tree T2

Photo 20 – Large cavity/hollow in trunk of Tree T3, likely as a result of a tear out.

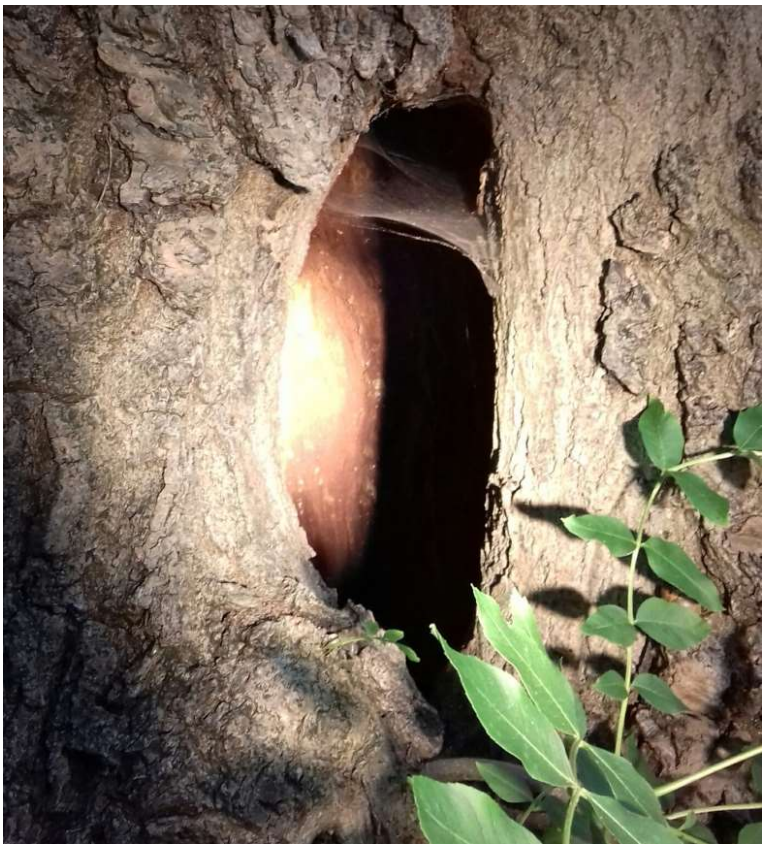


Photo 21 – A very advanced knot holes that has formed a large chest height rot hole in Tree T4

Appendix B

SITE ASSESSMENT NOTES

Longbank Bridleway underpass Preliminary Roost Assessment Notes

Bridge Name	Longbank Bridleway underpass	**Location**	NZ 27095 57334	**Surveyors**	Jack Fenwick & Gill Birtles	
Date of Survey	09/11/17					
Bridge Details						
Type	**Over**	**Span**	**Abutments**	**Construction**	**Height of arch/ bridge (m)**	**No. of arches or spans**
Footpath	Road	Concrete & steel	N/A	Tunnel	4	N/A
Habitats within 100 m	Broadleaved trees/ woodland, walls and buildings					
Additional Notes	No features.					

Northside Overbridge Preliminary Roost Assessment Notes

Bridge Name	Northside Overbridge	**Location**	NZ 28092 56757	**Surveyors**	Jack Fenwick & Gill Birtles	
Date of Survey	09/11/17					
Bridge Details						
Type	**Over**	**Span**	**Abutments**	**Construction**	**Height of arch/ bridge (m)**	**No. of arches or spans**
Road	Road	Concrete	Concrete	Beam	10	2
Habitats within 100 m	Broadleaved trees/ woodland and scrub.					
Additional Notes	Minor gaps in the bridge wing walls. Ledge under brick deck and between abutments.					

Smithy Lane Overbridge Preliminary Roost Assessment Notes

Bridge Name	Smithy Lane Overbridge	**Location**	NZ 25759 58276	**Surveyors**	Jack Fenwick & Gill Birtles
Date of Survey	09/11/17				

Bridge Details

Type	Over	Span	Abutments	Construction	Height of arch/ bridge (m)	No. of arches or spans
Road & footpath	Road	Concrete	Concrete	Beam	10	3
Habitats within 100 m	Broadleaved trees/ woodland.					
Additional Notes	Cracks found under abutment. Gaps between deck and piers. Potential gaps in underside of bridge deck, between concrete lines.					

Allerdene Bridge Preliminary Roost Assessment Notes

Bridge Name	Allerdene Railway Underbridge	**Location**	NZ 25477 58486	**Surveyors**	Jack Fenwick & Gill Birtles
Date of Survey	09/11/17				

Bridge Details

Type	Over	Span	Abutments	Construction	Height of arch/ bridge (m)	No. of arches or spans
Road & footpath	Railway	Concrete & steel	Concrete	Beam	7	3
Habitats within 100 m	Broadleaved trees/ woodland, scrub and semi- improved grassland.					
Additional Notes	Gap located between concrete and steel deck structures on both ends of the bridge.					

Eighton Lodge north underbridge Preliminary Roost Assessment Notes

Bridge Name	Eighton Lodge north underbridge	**Location**	NZ 26684 57518	**Surveyors**	Jack Fenwick & Gill Birtles
Date of Survey	09/11/17				

Bridge Details

Type	Over	Span	Abutments	Construction	Height of arch/ bridge (m)	No. of arches or spans
Road	Road	Concrete	Concrete	Beam	8	1
Habitats within 100 m	Broadleaved trees/ woodland, scrub and semi- improved grassland.					
Additional Notes	Very tight brick work on northern and southern facades and gaps between the deck and piers.					

Eighton Lodge south underbridge Preliminary Roost Assessment Notes

Bridge Name	Eighton Lodge south Underbridge	**Location**	NZ 26796 57459	**Surveyors**	Jack Fenwick & Gill Birtles
Date of Survey	09/11/17				

Bridge Details

Type	**Over**	**Span**	**Abutments**	**Construction**	**Height of arch/ bridge (m)**	**No. of arches or spans**
Road	Road	Concrete	Concrete	Beam	5	1
Habitats within 100 m	Broadleaved trees/ woodland, scrub and semi- improved grassland.					
Additional Notes	Small gap between compression pads on north side of bridge. Gaps between the deck and piers.					

Eighton Lodge Slip Road underbridge Preliminary Roost Assessment Notes

Bridge Name	Eighton Lodge Slip Road underbridge	**Location**	NZ 26521 57587	**Surveyors**	Jack Fenwick & Gill Birtles
Date of Survey	09/11/17				

Bridge Details

Type	Over	Span	Abutments	Construction	Height of arch/ bridge (m)	No. of arches or spans
Road	Road	Concrete	Concrete	Beam	8	1
Habitats within 100 m	Broadleaved trees/ woodland, scrub and semi- improved grassland.					
Additional Notes	Gaps between the deck and piers.					

North Dene Footbridge

Bridge Name	North Dene Footbridge	Location	NZ 27535 57099	Surveyors	Jack Fenwick & Gill Birtles	
Date of Survey	09/11/17					
Bridge Details						
Type	**Over**	**Span**	**Abutments**	**Construction**	**Height of arch/ bridge (m)**	**No. of arches or spans**
Footpath	Road	Steal	Steal	Cast	8	3
Habitats within 100 m	Scrub, semi- improved grassland and buildings.					
Additional Notes	No suitable features present.					

Building Preliminary Roost Assessment Notes

Site Name:	A1 Birtley to Coalhouse	Surveyors:	Jack Fenwick and Barney Leigh
Weather Description:	Mild, overcast day. No rain during survey.		
Notes/Limitations:	Occupant of Building 1 was having a bonfire which temporarily obscured the view of any features and may have deposited ash on the buildings.		
Building No.	**Description**		
1	Roof ridges are sealed tightly with lead flashing – no gaps. At the rear of the property there is a gap under the eaves next to what appears to be an old disused swift/swallow nest. Although there appears to be a gap between the tiles connecting the roof of the two properties. There is an exposed eave along the rear of the property which appears to be utilised by birds. Small gaps observed under the eaves at the rear of the property near evidence of birds. The gable end looked well finished but some small gaps were observed. Front eaves look intact but some small gaps were recorded. Heavily disturbed by the motorway. There are potentially 2-3 droppings on the rear of the property, although it could be ash, poor rendering. At the front of the property there are slight gaps above the front room window, top floor. On the gable end there is a thin gap between eave and wall. Heavily disturbed by the motorway. Moderate.		
2	Red brick property in good condition. Recently repaired roof was in good condition with neat flashing and neat tiles. Ridge looked sound. Soffits and eaves had no gaps or cracks. 3 bird boxes (2 rear and 1 gable). No value. Negligible		

Tree Preliminary Roost Assessment Notes

Site Name	A1 Birtley to Coalhouse	Surveyors	Jack Fenwick and Barney Leigh
Weather Description:	Mild, overcast day. No rain during survey.		
Notes/Limitations:	None		
Tree No.	**Description**		
1	Unknown species. Approximately 10m tall. Over Mature. Tree was situated in Scrub and Immature Woodland. Features include flaking bark, rot holes, woodpecker hole/rot hole. There was clear evidence of rot and the classification as therefore reduced to moderate.		
2	Oak species. Approximately 12m tall. Mature tree. Tree was situated in semi mature plantation woodland. Features include 3 woodpecker holes, 2 rot knots, 1 open slim hazard beam and an unused bird box. Splits at the top of the tree appear to let water in and any holes and cavities are likely damp. Moderate.		
3	Crack willow *Salix fragilis*. Approximately 10m tall. Mature tree, situated in woodland edge/hedgerow habitat. Features include a large hollow and open trunk exposed to elements and evidently wet. Low.		
4	Ash tree. Approximately 15m tall. Mature tree, situated in woodland edge/hedgerow habitat. The ash has a large hole at chest level blocked by branches. Moderate.		
5	Oak species. Approximately 20m tall. Mature tree situated in small copse in splitter island. Tree has thin ivy exhibiting no crawl spaces or decent crevices. Remainder of the tree is in good condition with no features. Negligible.		
Woodland 1	0.46 ha of broadleaved semi-natural woodland comprising of semi-mature alder *Alnus glutinosa*, ash *Fraxinus excelsoir*, field maple *Acer campestre*, oak species *Quercus* sp., willow species *Salix* sp. and horse chestnut *Aesculus hippocastanum*. Approximately 180 trees are present within this woodland, all of which have no bat roosting features and therefore all have negligible potential.		
Woodland 2	0.81 ha of broadleaved semi-natural woodland comprising of semi-mature alder, ash, field maple, oak species, willow species and horse chestnut. Approximately 135 trees are present within this		

	woodland, all of which have no bat roosting features and therefore all have negligible potential.

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