

A1 in Northumberland: Morpeth to Ellingham

Scheme Number: TR010041

6.7 Environmental Statement – Appendix 9.9 Bat Survey Report 2018

Part A

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Planning Act 2008

Infrastructure Planning (Applications: Prescribed
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Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
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A1 IN NORTHUMBERLAND: MORPETH TO FELTON

Appendix 9.9: Bat 2018 Survey Report

APPENDIX 9.9: BAT 2018 SURVEY REPORT

PROJECT NO. 70044136

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EXECUTIVE SUMMARY

Bat surveys were undertaken to inform the A1 in Northumberland: Morpeth to Felton (hereby referred to as ‘the Scheme’). The survey work detailed within this report compliments previous baseline surveys undertaken in 2016/17 (**Ref 1.1/1.2**).

The Scheme aims to increase capacity along an approximately 12.6 km section of the existing A1 between Morpeth and Felton in Northumberland. It includes approximately 6.5 km of on-line widening and approximately 6.1 km of new off-line highway. The Scheme also aims to improve journey times and safety along the route.

External Preliminary Roost Assessments (PRAs) were carried out on three buildings (Blackwood Outbuilding B112A, West Moor House B113A and Electricity substation B114A) and 24 trees/tree groups. Blackwood Outbuilding B112A, West Moor House B113A and the group of trees at Northgate Farm cottages (T232A) were assessed as being of ‘Moderate Roost Suitability’ (**Ref 1.3**).

In total, five buildings (High Highlaws Farm buildings B8A B10A and B13A, Blackwood Outbuilding B112A and West Moor House B113A), a single bridge (River Coquet Bridge B86A) and a single group of trees (T232A) were subject to bat dusk emergence/dawn re-entry surveys. These surveys recorded a single common pipistrelle emerging from High Highlaws Farm B8A and a probable emergence of a single soprano pipistrelle from the River Coquet Bridge. This record confirmed the presence of a soprano pipistrelle roost within the River Coquet Bridge as identified in 2017 (**Ref. 1.2**).

A single building, B101A, could not be surveyed as access was refused. To inform the ecological impact assessment of the Scheme, it is assumed that B101A supports roosting bats with a precautionary approach taken.

Seven potential commuting routes (CP16 to CP22) were identified across the off-line section of the Scheme for survey. In addition, two on-line potential commuting routes (CP14 and CP15) previously surveyed in 2017 (**Ref. 1.2**), were resurveyed using the DEFRA Local Scale methodology. In total, six out of the nine potential commuting routes identified met the threshold criteria to be identified as “Crossing Points”.

Mitigation and compensation to address the potential impacts of the Scheme shall be fully discussed within **Chapter 9: Biodiversity, Volume 2** of the Environmental Statement (ES) (**Application Document Reference: TR010041/APP/6.2**).

1. INTRODUCTION

1.1. SCHEME BACKGROUND

- 1.1.1. Bat surveys were carried out in 2018 to inform the A1 in Northumberland: Morpeth to Felton (hereby referred to as “the Scheme”).
- 1.1.2. The Scheme aims to increase capacity along an approximately 12.6 km section of the existing A1 between Morpeth and Felton in Northumberland. It includes 6.5 km of on-line widening and 6.1 km of new off-line highway. The Scheme also aims to improve journey times and safety along the route. The boundary of the Scheme is taken as the Order Limits during the construction phase, as shown in **Figure 1**.

1.2. ECOLOGICAL BACKGROUND

- 1.2.1. The Applicant commissioned an assessment of bat roosting suitability and bat activity in relation to the Scheme in 2016/17 (**Ref. 1.1/1.2**). This included an assessment of trees¹ and buildings² within 100 m of the Scheme for their bat roost suitability.
- 1.2.2. Due to access constraints, an assessment of bat roost suitability could not be undertaken for 24 trees/woodland blocks and four buildings within the Survey Area in 2016/17. In addition, three buildings at High Highlaws Farm were externally and internally inspected for bat roost suitability in 2016 (**Ref. 1.1**), which confirmed a roost³ within one building (B8A) and suitability associated with the other two buildings (B10A and B13A; low and moderate roost suitability, respectively). However, access was not permitted for the completion of emergence/re-entry surveys to characterise the bat roost.
- 1.2.3. The DEFRA Local Scale surveys undertaken in 2017 (**Ref. 1.2**) identified potential commuting routes and crossing points along the existing A1 carriageway only. The data collected for these potential commuting routes was reviewed and two of these locations (CP14 and CP15) were considered to meet the criteria⁴ for further survey under the DEFRA guidance (**Ref 1.4**).
- 1.2.4. To address the access constraints and additional survey requirements, the Applicant commissioned the necessary survey work to complete the baseline survey effort and inform the impact assessment of the Scheme.

1.3. BRIEF AND OBJECTIVES

- 1.3.1. The Applicant commissioned bat surveys of the Scheme in March 2018. The brief was to:

¹ Ground level roost potential survey, climb and inspect and emergence/re-entry surveys.

² External and internal roost potential survey and emergence/re-entry surveys.

³ Bat droppings recorded within the building, however, DNA analysis not undertaken to identify species.

⁴ Any site where more than ten bats are recorded using a flight path (one-five for rare species, depending upon rarity).

- a. Carry out an external inspection of built structures and a ground level inspection of those trees/woodland blocks previously not surveyed along the Scheme, to identify the potential or otherwise for bat roosts to be present.
 - b. Carry out dusk emergence and/or dawn re-entry surveys of those trees and structures with potential to support bat roosts and previously not surveyed, to establish the presence or likely absence of bat roosts.
 - c. Carry out DEFRA Local Scale surveys to identify the height and regularity that bats are crossing at key locations across the proposed off-line route and at CP14 and CP15.
 - d. Use the data collected from these surveys to assess the impacts of the Scheme on bats in the area, and provide suitable recommendations to avoid or minimise these impacts.
- 1.3.2. The results of these surveys are presented within this report, and the impact assessment and recommendations for mitigation are presented within **Chapter 9: Biodiversity, Volume 2** of the Environmental Statement (ES) (**Application Document Reference: TR010041/APP/6.2**).

2. METHODS

2.1. OVERVIEW

2.1.1. During 2018, the following bat surveys were undertaken:

- a. External building and ground-level tree inspections of three buildings and 24 individual trees/woodland blocks
- b. Bat dusk emergence and dawn re-entry surveys were carried out on six built structures (five buildings and one bridge) and on a single group of trees
- c. DEFRA Local Scale surveys at nine potential commuting route locations. Seven of these were along the proposed off-line route, and two were located along the existing A1 carriageway.

2.1.2. All surveys were carried out in accordance with good practice guidance from The Bat Conservation Trust (**Ref. 1.3**) and DEFRA (**Ref. 1.4**).

2.2. PRELIMINARY ROOST ASSESSMENT – BUILDINGS AND TREES

2.2.1. The Preliminary Roost Assessments (PRAs), undertaken in June and July 2018, included a survey of three buildings (Blackwood Outbuilding B112A, West Moor House B113A, and Electricity Substation B114A) and trees for their suitability to support a bat roost. Buildings already assessed in 2017 (High Highlaws B8A, B10A and B13A), as well as the River Coquet Bridge B86A, were not included in the PRAs conducted in 2018. Building B101A was proposed for assessment. However, access was refused (refer to **Section 2.7** – Notes and Limitations for further details). The surveys were led by an experienced bat worker who holds a Class 2 survey licence (2015-16155-CLS-CLS).

2.2.2. The building inspections comprised a visual inspection of the exterior of the building only with trees inspected from ground-level. Binoculars and a high-powered torch (1 million candle power) were used to search for Potential Roost Features (PRF) that may provide roosting opportunities for bats. Where suitable features were noted, their location and a brief description of their character was recorded. The survey findings are presented in **Figure 2** for built structures and **Figure 3** for trees. 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).

2.2.3. Buildings and trees were categorised in accordance with the descriptions in **Table 2-1** below. Based on the features present and the location of the building/tree, the potential for different types of bat roost to be present was also considered. For the purpose of the PRAs, potential roost types were identified as follows (**Ref. 1.3**):

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

Table 2-1 - Roost Potential Categorisation

Category	Description
Confirmed	Building/tree with features confirmed to be used by roosting bats either by historic records (verified appropriately) or evidence recorded during survey.
High	Building/tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Moderate	Building/tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
Low	<p>A building with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats.</p> <p>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.</p>
Negligible	Building/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.

2.3. BAT DUSK EMERGENCE/DAWN RE-ENTRY SURVEYS

2.3.1. Six built structures and a group of broadleaved trees identified as having Potential Roost Features (PRFs) were subject to further survey to identify the presence/likely absence of a roost and characterise any roosts recorded. These structures and trees were:

- a. B8A, High Highlaws Farm – confirmed roost (**Ref. 1.1**)
- b. B10A, High Highlaws Farm – low roost suitability (**Ref. 1.1**)
- c. B13A, High Highlaws Farm – moderate roost suitability (**Ref. 1.1**)
- d. B101A, West Moor Cottage – low roost suitability (**Ref. 1.1**)
- e. B112A, Blackwood Outbuilding
- f. B113A, West Moor House
- g. Trees at Northgate Farm Cottages (T232A - split into Group 1 and Group 2 for survey)

2.3.2. The level of survey effort employed was proportional to the PRFs identified. The number and timing of survey visits is shown in **Table 2-2** below. Surveyors were positioned to fully

cover all PRFs associated with the surveyed structures, including the River Coquet Bridge, and tree group T232A. The surveyor locations are shown in **Figure 4**.

Table 2-2 - Survey Effort for Bats and Buildings/Trees

	Low Roost Suitability	Moderate Roost Suitability	High Roost Suitability/Confirmed Roost
Buildings	One survey visit between May and August	Two separate survey visits (one dusk and a separate dawn), with at least one survey between May and August	Three separate survey visits (at least one dusk and a separate dawn), with at least two surveys between May and August
Trees	No further surveys required		

- 2.3.3. The River Coquet Bridge, which supported a soprano pipistrelle roost⁵ in 2017, was subject to a single verification survey to confirm that there were no significant changes since the 2017 assessment. This was primarily to inform ongoing pre-DCO submission ground investigation and bridge structural investigation works.
- 2.3.4. The dusk emergence surveys began 15 minutes before sunset and continued until 90-120 minutes after sunset. The dawn re-entry surveys began 90-120 minutes before sunrise and finished 15 minutes after sunrise.
- 2.3.5. The surveyors primarily used Duet (Batbox) detectors, with Roland recorders or an accompanying Song Meter SM2 (© Wildlife Acoustics, Inc.) detector to listen to and record echolocation calls of bats observed. Echo Meter Touch 2 (© Wildlife Acoustics, Inc.) and Anabat (© Titley Scientific) detectors were also used on occasion. During the survey, surveyors mapped the flight-lines used by any bats observed and noted any features used by the bats to exit/enter the buildings. Incidental records of bat activity in the vicinity of the surveyor locations were also collected. This methodology follows good practice guidance (**Ref. 1.3**).

2.4. DEFRA LOCAL SCALE SURVEYS

- 2.4.1. Seven potential commuting routes (CP16 to CP22) were identified along the proposed off-line route of the Scheme, and were subject to DEFRA Local Scale surveys. A further two locations surveyed in 2017 (CP14 and CP15) were repeated using the DEFRA methods to obtain a complete and comparable data set that could be replicated using the DEFRA

⁵ Peak count of two individuals, as recorded by in 2017 (**Ref. 1.2**).

methods⁶. CP14 and CP15 were associated with the existing A1 carriageway (on-line) and both locations were subject to a full set of six surveys.

- 2.4.2. At off-line survey locations (CP16 to CP22), surveyors were positioned along linear features (hedgerows) on either side of the proposed route alignment. To determine “use” at an off-line location, any flight paths recorded within 5 m of the linear feature, whether along or bisecting this feature, were counted. At the two on-line locations (CP14 and CP15), surveyors were positioned on either side of the road. Surveyor positions and survey locations are shown in **Figure 5**. To determine “use” at an on-line location, any flight paths recorded over or under⁷ the road were counted.
- 2.4.3. A minimum of two surveys were carried out at each off-line location to assess if bats “used” the feature. At any survey location where more than ten bats were recorded using the feature, survey effort was increased to a total of six surveys. Locations where activity exceeded this threshold are classified as “Crossing Points”.
- 2.4.4. Dusk surveys began at sunset and continued until 60 minutes after sunset. Dawn surveys began 60 minutes before sunrise and finished at sunrise. Surveyors used full spectrum bat detectors (Echo Meter Touch detectors and iPads) to listen to and record echolocation calls of bats observed. During the survey, surveyors mapped the flight-lines used by any bats observed. Incidental records of bat activity in the vicinity of the surveyor locations were also collected.
- 2.4.5. This methodology is in accordance with the DEFRA Guidelines (**Ref. 1.5**).

2.5. DATA ANALYSIS

BAT DUSK EMERGENCE/ DAWN RE-ENTRY SURVEYS

- 2.5.1. The recordings of bat echolocation calls collected during the surveys were analysed using specialist computer software AnalookW (© Titley Scientific) and BatSound® (Pettersson Elektronik AB). The analysis enables confirmation of species or species group based on call parameters. The relative activity of different species of bat was assessed by collating the total number of discrete sound files recorded. A single file was counted as a single pass, unless it contained multiple species, in this instance the discrete sound file was counted as a single pass per species.
- 2.5.2. It should be recognised that a series of separate sound files may represent a series of different bats commuting within the range of an automated detector, or a smaller number of bats repeatedly triggering the detector (e.g. bats making repeated foraging passes within the range of a detector).

⁶ The remaining Crossing Points surveyed in 2017 (CP1 to CP13) would not meet the criteria for further survey under the DEFRA guidance⁶ and therefore surveys were not repeated.

⁷ CP14 had an underpass.

2.5.3. Where possible, bat calls are identified to species level. However, species of the genus *Myotis* are grouped together in most cases as their calls are similar in structure and have overlapping call parameters, making species identification problematic (**Ref. 1.6**). For *Pipistrellus* species the following criteria based on measurements of peak frequency are used to classify calls:

- a. Common pipistrelle *Pipistrellus pipistrellus* ≥ 42 and <49 KHz
- b. Soprano pipistrelle *Pipistrellus pygmaeus* ≥ 51 KHz
- c. Nathusius' pipistrelle *Pipistrellus nathusii* <39 KHz
- d. Common/soprano pipistrelle ≥ 49 and <51 KHz
- e. Common/Nathusius' pipistrelle ≥ 39 and <42 KHz

2.5.4. In addition, the following categories are used for calls which cannot be identified with confidence due to the overlap in call characteristics between species or species groups:

- a. *Myotis/Plecotus* sp.
- b. *Nyctalus* sp. (either Leisler's bat *Nyctalus leisleri* or noctule *Nyctalus noctula*)
- c. Serotine *Eptesicus serotinus*/Leisler's bat
- d. Serotine/*Plecotus* sp

DEFRA LOCAL SCALE SURVEYS

2.5.5. Bat recordings were auto-analysed utilising BatClassify (GPL, Version 3) to classify all bat calls to species level, where possible. The threshold utilised for correct identification within BatClassify was >0.9 , anything below this threshold was manually checked using Kaleidoscope (©Wildlife Acoustics, Inc.). Any bats identified as *Myotis*, either by BatClassify or through manually checking with Kaleidoscope, were categorised as "*Myotis* sp.", due to the overlapping call parameters of these species making identification at the species level problematic (**Ref. 1.6**).

2.5.6. Data sheets were assessed for each surveyor and each survey to remove duplicate crossing events, e.g. bats recorded crossing at the same time, height, distance and direction by more than one surveyor. These events were then assigned a species by comparing times between the data sheets and sound recordings.

2.5.7. Data was then assessed to deduce whether the bats were recorded crossing the existing feature within 5m, and if so was it at a "safe" or "unsafe" height. The definition of safe and unsafe is adapted from the DEFRA guidance, where:

- a. A "safe" pass is at a height of over 5 m above ground level or at any height underneath a feature using an underpass
- b. An "unsafe" pass is at a height of 5 m or lower above ground level

2.5.8. The data was then assessed to gain the total number of different species of bats utilising the feature and safe/unsafe passage.

2.5.9. Further assessment utilising statistical analysis will be undertaken following the construction and post-construction monitoring surveys.

2.6. DATES OF SURVEY

- 2.6.1. The external building inspections were completed on 12th June 2018 and the ground-level tree assessments on the 2nd July 2018 by an experienced bat surveyor (Natural England Class 2 survey licence: 2015-16155-CLS-CLS).
- 2.6.2. The timing of survey visits and weather conditions are shown in **Appendix A**.

2.7. NOTES AND LIMITATIONS

- 2.7.1. Due to dense vegetation, only the southeast corner of Blackwood Outbuilding could be visually assessed during the Preliminary Roost Assessments (PRAs). However, the density of vegetation would obstruct access to the building for bats and therefore this constraint is not considered to have had an impact on the survey conclusions or its recommendations.
- 2.7.2. The owner of West Moor House requested that only dusk emergence surveys were undertaken to establish the presence/likely absence of a bat roost. As such, one dawn re-entry survey could not be undertaken in accordance with the proposed methodology. The surveys that were undertaken were carried out during the appropriate timeframe and weather conditions and are therefore considered valid.
- 2.7.3. A bright floodlight on the southwest corner of B13A at High Highlaws Farm partially dazzled the view of the surveyor on this side of the building and the surveyor on the southeast corner of B8A. However, due to the level of bat activity recorded and the absence of bat activity that would suggest the presence of a roost, this limitation is not considered to have affected the survey conclusions.
- 2.7.4. The bat that was observed potentially emerging from the River Coquet Bridge was not seen emerging directly from the bridge but was recorded flying from underneath the bridge and foraging before sunset. Therefore, it is assumed that it emerged from the structure and did not commute to the area.
- 2.7.5. A PRA and dusk emergence/dawn re-entry survey was proposed for West Moor Cottage (building B101A, **Figure 2**). However, access to complete surveys was refused. In lieu of survey effort, an assumption of roost presence was developed based on baseline data collected surrounding the building and the limited information collected in 2016 (**Ref. 1.1**). Natural England has confirmed agreement with the assumptions made and their suitability to inform the impact assessment. Full details are presented within this document, including the information presented to Natural England (**Appendix D**).

3. RESULTS

3.1. OVERVIEW

- 3.1.1. Of the three buildings assessed during the PRAs, two buildings were found to have external PRFs which indicated moderate roost suitability, namely: Blackwood Outbuilding B112A and West Moor House B113A. Of the 24 individual trees/woodland blocks assessed, the woodland block T232A was found to have trees with moderate suitability for a bat roost. Details of the features observed with suitability to support roosting bats are presented below in **Section 3.2**. An overview of all buildings and trees assessed is presented in **Table 3-1**, and a full breakdown of PRFs for is presented in **Appendix B**.
- 3.1.2. Of the five buildings, one bridge and multiple trees surveyed during the dusk emergence/dawn re-entry surveys, roosting activity was recorded within High Highlaws Farm building (B8A) and within the top of the southern pier of the River Coquet Bridge (B86A). Details regarding the roosting locations and bat activity recorded during the surveys are presented below in **Section 3.3**. An overview of roosting activity and suitability classifications for all buildings and surveyed trees is presented in **Table 3-2**.
- 3.1.3. Of the nine locations subject to a DEFRA Local Scale survey, six Crossing Points were identified. Details regarding flight passes and species composition at each Crossing Point are presented in **Section 3.4**. A summary of the data recorded at each Crossing Point is presented in **Table 3-3**.

3.2. PRELIMINARY ROOST ASSESSMENT – BUILDINGS AND TREES

- 3.2.1. All buildings and trees surveyed in the PRAs were attributed to the following categories (in accordance with **Table 2-1**):

Table 3-1 - Preliminary Roost Assessment Results Summary

Bat Roost Suitability	Trees	Buildings
Negligible (scoped out)	N/A	Electricity substation B114A
Low	Groups 222A and 233A, trees 223A, 224A, 225A, 226A, 227A, 228A, 229A, 230A, 231A, 234A, 235A, 236A, 237A, 238A, 239A, 240A, 241A, 242A, 243A, 244A, 245A	N/A
Moderate	Group 232A	Blackwood Outbuilding B112A, West Moor House B113A

Bat Roost Suitability	Trees	Buildings
High	N/A	N/A

Building B101A

- 3.2.2. During the bat roost potential survey conducted in 2016 (**Ref. 1.1**), access was not permitted to building B101A for the completion of an internal or external survey to determine the potential for roosting bats. An external assessment was undertaken from the neighbouring road to the north, which recorded the following:

“Single-storey, stone-walled dwelling with a two-pitched interlocking tile roof. The dwelling was approximately 15 m long and 9 m wide. The windows were uPVC. A flat-roofed conservatory was attached to the western side of the dwelling, and a small felt-roofed porch was attached to the eastern side. Soffit boxes were present, and lead flashing was located around the chimneys.”

- 3.2.3. With regards to the presence of PRF, the survey confirmed:

“None were observed, but features may have been present on the southern aspect of the building that could not be viewed.”

- 3.2.4. Overall, B101A was considered to have low roost suitability for bats. Following refusal of access in 2018, the building was externally viewed from the public road to the north during a ‘drive-by’ survey and during emergence/re-entry surveys of an adjacent building to the south. The survey identified no changes to the above description and supported the low roost suitability classification.

3.3. BAT DUSK EMERGENCE / DAWN RE-ENTRY SURVEY

- 3.3.1. A single common pipistrelle was recorded emerging from High Highlaws Farm (B8A) during a dusk emergence survey, confirming the presence of a roost. During the dusk emergence survey of the River Coquet Bridge, a probable emergence was observed of a soprano pipistrelle, supporting the likely presence of a roost within the bridge, as confirmed by the 2017 surveys (**Ref. 1.2**).
- 3.3.2. No bats were recorded emerging from or accessing the other buildings or trees surveyed and therefore it was concluded that bat roosts are likely to be absent.
- 3.3.3. An overview of the two roosts identified from the dusk emergence/dawn re-entry surveys is presented below in **Table 3-2**.

Table 3-2 - Overview of Dusk Emergence/ Dawn Re-entry Survey Findings

Structure Reference	No. of surveys	No. of roosts	No. of bats emerged/ re-entered	Roosting species	Roost Location(s)
High Highlaws Farm B8A	3	1	1	Common pipistrelle	Within High Highlaws Farm building (B8A). Bat exited through open doorway on the north-western side of the building.
River Coquet Bridge B86A	1	1	1	Soprano pipistrelle	Probable emergence from top of southern pier.

HIGH HIGHLAWS FARM B8A

- 3.3.4. During the dusk emergence survey in June 2018, a single common pipistrelle bat was recorded emerging at approximately 22:15 hours (28 minutes following sunset) from an open door on the western side of the building.
- 3.3.5. Further bat activity was recorded during the night with common pipistrelle, soprano pipistrelle and noctule recorded throughout the survey period.
- 3.3.6. No bats were observed accessing the building during the dawn re-entry survey.

RIVER COQUET BRIDGE

- 3.3.7. During the dusk emergence survey in June 2018, a soprano pipistrelle was recorded potentially emerging at approximately 21:33 hours (8 minutes before sunset) from between the south pier and the south abutment.
- 3.3.8. Once the bat emerged, it foraged around the southern end of the bridge regularly for 10 minutes. No further activity of re-entry was observed or heard during the dawn re-entry survey on this bridge.
- 3.3.9. The bat was not seen emerging directly from the bridge but was recording flying from underneath the bridge and foraging before sunset. Therefore, it is assumed that it emerged from the structure and did not commute to the area.

- 3.3.10. Throughout the rest of the survey, a soprano pipistrelle was seen foraging underneath the bridge at regular intervals.

BAT ACTIVITY DURING DUSK EMERGENCE/ DAWN RE-ENTRY SURVEYS

- 3.3.11. Common and soprano pipistrelle were recorded frequently during all of the surveys, both foraging and commuting near to the surveyed structures as well as performing social calls and associated behaviours. *Myotis* species were recorded at two of the surveyed buildings, at High Highlaws B13A and Blackwood Outbuilding B112A. Noctule was recorded frequently around the three structures at High Highlaws Farm (B8A, B10A and B13A).

3.4. DEFRA LOCAL SCALE SURVEYS

- 3.4.1. The two preliminary surveys conducted at potential commuting route locations CP16 and CP19 did not record activity that exceeded the minimum threshold of ten bats using a linear feature, as outlined in the DEFRA guidance. As such, these locations are not classified as Crossing Points and were scoped out from further assessment.
- 3.4.2. Six surveys were conducted at CP15 due to the data collected in 2017 meeting the DEFRA threshold. However, during the surveys conducted in 2018, recorded activity did not meet this threshold, so CP15 is also not classified as a Crossing Point and was scoped out of further assessment.
- 3.4.3. There was a total of 57 unsafe flight paths observed at the online Crossing Point (CP14). At the off-line Crossing Points (CP17, CP18, CP20, CP21, CP22), a minimum of 21 unsafe flight paths were observed at CP18, and a maximum of 82 unsafe flight paths were observed at CP20. Altogether, a total of 275 unsafe flight paths were observed using linear features at off-line Crossing Points along the Scheme.
- 3.4.4. Species recorded during the surveys include common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat (*Plecotus auritus*) and *Myotis* species. Common pipistrelle and soprano pipistrelle were observed at every location. *Myotis* sp. were observed at CP14, CP17 and CP20. Noctules were observed at CP17 and CP20. Brown long-eared bats were observed at CP14 only.
- 3.4.5. CP14 was the only location with an underpass present, allowing for bats to cross safely underneath the road. CP14 also had the lowest proportion of unsafe passes within 5 m of a linear feature (43.41% of passes were deemed unsafe), which could be attributed to the underpass being present at this location.
- 3.4.6. Despite the high level of activity at CP15, only three flight paths were recorded as explicit crossings. Although CP14 was also located along the existing road, it experienced a much higher number of explicit crossings from one side of the feature to the other, in part due to the presence of the underpass at this Crossing Point.
- 3.4.7. **Table 3-3** provides a summary of the findings at each Crossing Point.

Table 3-3 - Summary of Results of DEFRA Local Scale Surveys

Survey Location Reference	Total Safe Passes	Total Unsafe Passes	Species recorded as Unsafe Passes (Number of Passes)
CP14	72	57	Common pipistrelle (7), Soprano pipistrelle (33), <i>Myotis</i> sp. (14), Brown long-eared bat (2), unknown sp. (1)
CP17	2	67	Common pipistrelle (37), Soprano pipistrelle (22), Noctule (4), <i>Myotis</i> sp. (4)
CP18	8	21	Common pipistrelle (15), Soprano pipistrelle (6)
CP20	19	82	Common pipistrelle (52), Soprano pipistrelle (29), <i>Myotis</i> sp. (1)
CP21	5	44	Common pipistrelle (16), Soprano pipistrelle (28)
CP22	11	61	Common pipistrelle (40), Soprano pipistrelle (21)

4. IMPLICATIONS FOR THE SCHEME

4.1. OVERVIEW

- 4.1.1. In the absence of mitigation, the Scheme has potential to affect bats, through direct and indirect (disturbance) effects upon confirmed bat roosts, and foraging and commuting bats also. 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 **Section 5**.

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 'Habitats Regulations') (**Ref. 1.7**), the legislation means that it is an offence to:
- a. Deliberately capture, injure or kill a wild bat
 - b. 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
 - a. 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) (**Ref. 1.8**) 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, mitigation for this species is governed by a strict licensing procedure administered by Natural England (normally, planning permission must be obtained before a licence can be sought). Licencing is subject to three tests, as defined under the Habitats Regulations, these must also be applied by the planning authority before granting permission for activities affecting bats. For permission to be granted the following criteria must be satisfied:
- a. The proposal is necessary 'to preserve 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'.
 - b. 'There is no satisfactory alternative'.
 - c. The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.
- 4.2.4. Certain species of bats including noctule, brown long-eared bat and soprano pipistrelle 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 (**Ref. 1.9**). 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.

4.3. PLANNING POLICY COMPLIANCE

- 4.3.1. At the national level, the Scheme is governed by the National Policy Statement for National Networks (NPS NN) (2014) (**Ref. 1.10**). The NPS NN (paragraph 5.25) states that, “as a general principle, ... development should avoid significant harm to biodiversity ... conservation interests, including through mitigation and consideration of reasonable alternatives... Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought”. In addition, the National Planning Policy Framework (2019) (NPPF) (**Ref. 1.11**) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including bats; the ODPM circular 06/2005 (**Ref. 1.12**) (referenced within the NPS NN) also provides supplementary guidance, including confirmation that ‘*the presence of a protected species is a material consideration when a planning authority is considering a development proposal*’.
- 4.3.2. The NPPF (paragraph 170) sets out, amongst other points, how at an overview level ‘*planning policies and decisions should contribute to and enhance the natural and local environment by:*
- a.** ...recognising ... the wider benefits from natural capital and ecosystem services; and
 - b.** minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...’
- 4.3.3. A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF, and includes the following:
- a.** *‘if significant harm resulting from a development cannot be avoided...adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; and*
 - b.** *opportunities to incorporate biodiversity improvements in and around developments should be encouraged ...’*
- 4.3.4. In addition, the legislative provision described above, planning policy at the local level is informed by the following:
- a.** Northumberland Consolidated Planning Policy Framework October 2018 (**Ref. 1.13**)
 - b.** Northumberland Local Plan – Draft Plan for Regulation 18 Consultation (**Ref. 1.14**)
- 4.3.5. Certain species of bats are also priority species in the UK Biodiversity Action Plan (UKBAP), are listed as Species of Principal Importance in Section 41 of the NERC Act (2006) (**Ref. 1.9**), and are also listed in the Northumberland BAP⁸. These species include soprano and

⁸ https://www.nwt.org.uk/sites/default/files/2018-10/Nland_Biodiversity_Action_Plan.pdf

common pipistrelle which were both observed emerging from structures during the dusk emergence/dawn re-entry surveys, and using Crossing Points to travel unsafely over the A1 at multiple locations.

- 4.3.6. Mitigation, compensation and enhancement measures are recommended in Section 5 to enable the Proposed Development to be compliant with the above legislation and planning policy.
- 4.3.7. The following local policies from the Northumberland Draft Local Plan are applicable to the Scheme.

STP 3 Sustainable Development

- 4.3.8. Development proposals are expected to deliver across the range of the economic, social and environmental factors and adhere to a set of guiding principles surrounding contribution to the environmental assets and mitigation of anticipated impacts.

STP 6 Green Infrastructure (Strategic policy)

- 4.3.9. Development proposals should seek to protect, improve and extend Northumberland's green infrastructure, by securing net-gains for biodiversity through the protection, creation and enhancement of coherent ecological networks.

STP 7 Design Principles

- 4.3.10. Proposals will be supported where design respects and enhances the natural and built environment and incorporates green infrastructure and opportunities to support wildlife and contribute to net gains for biodiversity.

STP 8 Strategic Approach to the Green Belt

- 4.3.11. The Green Belt will be protected to safeguard the countryside from encroachment and preserve the setting and special character of Morpeth.

ENV 1 Approaches to Assessing the Impact of Development on the Natural, Historic and Built Environment

- 4.3.12. The character and significance of natural, historic and built environments will be conserved, protected and enhances through a set of guiding principles.

ENV 2 Biodiversity and Geodiversity

- 4.3.13. Development proposals affecting biodiversity will minimise their impact and net gains for biodiversity will be secured by avoiding significant harm through location/design, and adequately mitigating adverse effects when significant harm cannot be avoided.
- 4.3.14. The council expects the ecosystem approach to be applied in development through the conservation, enhancement and creation of priority habitats, and the protection and enhancement of all ecological networks.

5. RECOMMENDATIONS

5.1. AVOIDANCE AND MITIGATION MEASURES

BAT ROOSTS

- 5.1.1. The bat roosts in High Highlaws B8A and the River Coquet Bridge would be retained within the Scheme. However, due to the proximity of construction, both would be subject to temporary disturbance during the construction period.
- 5.1.2. A full impact assessment is presented within **Chapter 9: Biodiversity, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) along with appropriate mitigation and compensation measures.

Building B101A

- 5.1.3. Building B84A, adjacent to the south of B101A, supports day roosts of a single common pipistrelle, a single soprano pipistrelle and a single brown long-eared bat (**Ref. 1.2**). The building recorded multiple PRF (**Ref. 1.1**) and has a greater suitability for roosting bats in comparison to B101A.
- 5.1.4. For the purposes of undertaking an impact assessment as part of the Scheme, it is proposed that a precautionary approach is taken and the same confirmed roosting status B84A is also assumed for B101A. It is therefore assumed that building B101A supports day roosts of low numbers of common pipistrelle, soprano pipistrelle and brown long-eared bats. There was no evidence to suggest that either building supports a maternity roost, given individual bats were recorded during surveys conducted within peak maternity season. In addition, B84A did not contain PRF considered suitable for a hibernation roost and the same is considered for B101A. This was determined due to a lack of PRF recorded from the external vantage points, inhabitation of the building (therefore internally heated) and the condition of the building.
- 5.1.5. A letter was provided to Natural England in September 2018, detailing the proposed precautionary approach, potential impacts and proposed mitigation (**Appendix D**). The approach was accepted by Natural England during consultation and the proposed mitigation shall be incorporated into the Scheme design and detailed in **Chapter 9: Biodiversity of Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**) as appropriate.

FORAGING AND COMMUTING HABITAT

- 5.1.6. Habitats of value to foraging and commuting bats (such as woodlands, hedgerows, grassland and trees) should be retained and incorporated into the Landscape Mitigation Masterplan for the Scheme as far as possible.
- 5.1.7. Where the Scheme severs commuting routes, as identified by the baseline surveys, appropriate mitigation should be developed and detailed within the ES.

SENSITIVE LIGHTING

- 5.1.8. Lighting both during the construction and operational phases of the Scheme could have an adverse effect on bat activity along the Scheme.
- 5.1.9. It is recommended that the lighting design for the Scheme seeks to address:
- a. Light levels necessary for the relevant task/function, light intensity, number of light sources or column height.
 - b. Avoidance of light spill onto retained and newly created areas of vegetation likely to be used by foraging and commuting bats.
 - c. Types of light sources to lower the range of species affected by lighting.
 - d. Use light sources that emit minimal ultra-violet light to avoid attracting night-flying invertebrate species which in turn may attract bats to the light.
- Full recommendations in relation to sensitive lighting will be presented in detail within the ES.
- 5.1.10. Where possible, consideration should also be given to varying the lighting levels in particularly ecologically valuable areas. For example, it may be possible to reduce lighting levels or perhaps even switch installations off after certain times e.g. between 00:00 and sunrise in the vicinity of tree lines of proposed landscape planting. This use of “adaptive lighting” can tailor the installation to suit human health and safety as well as wildlife needs (**Ref. 1.15**).
- 5.1.11. Where the Scheme severs commuting routes, as identified by the baseline surveys, appropriate mitigation shall be developed and detailed within the ES.

5.2. ECOLOGICAL ENHANCEMENT MEASURES

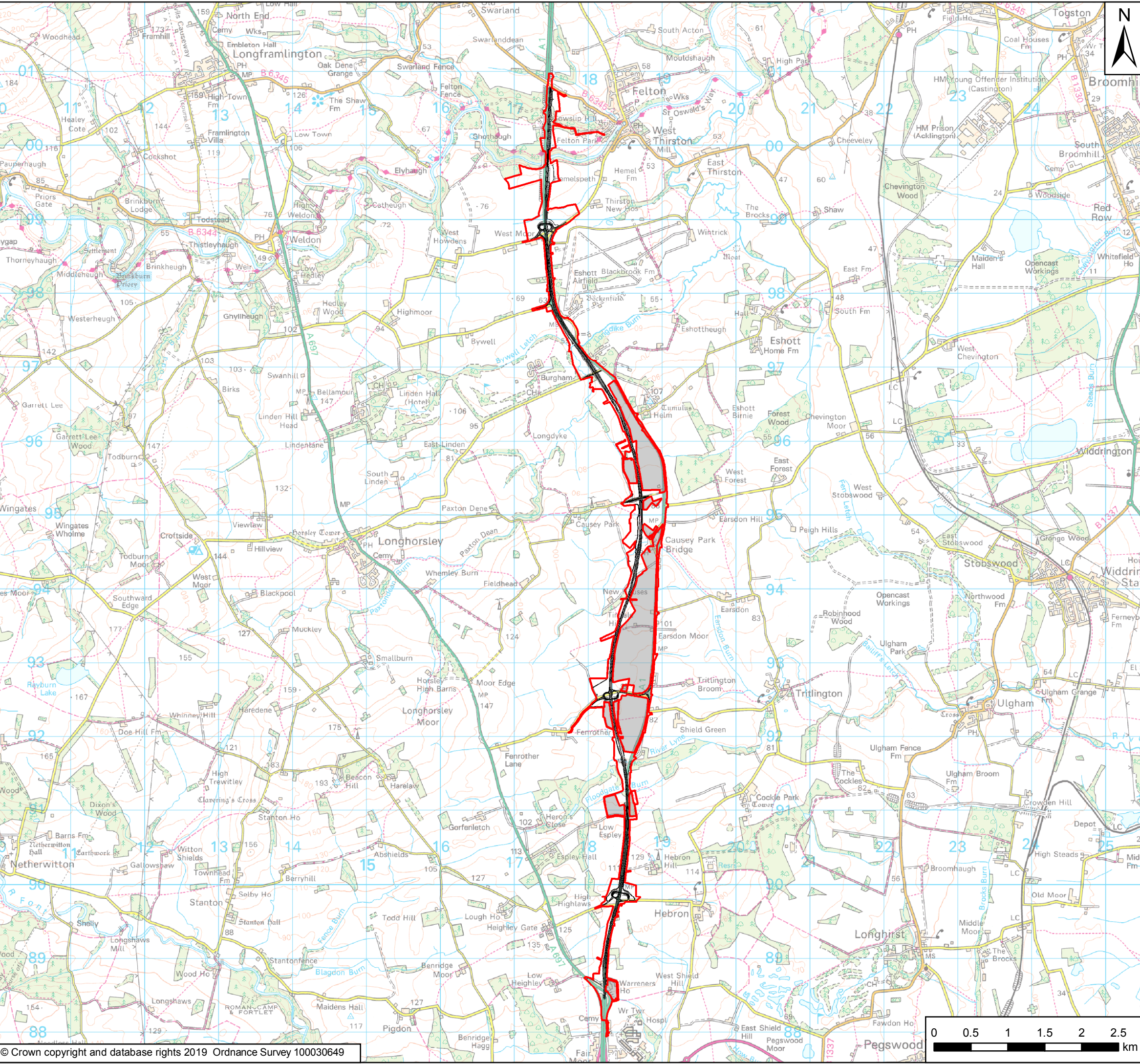
- 5.2.1. The NPS NN and NPPF 2019 promotes the inclusion of ecological enhancement; accordingly, it is recommended that consideration is given to the following enhancement measures:
- a. Inclusion of nectar-rich plant species in soft landscaping areas away from the road that are attractive to night-flying insects to enhance foraging opportunities for bats.
 - b. Creation of linear vegetation (tree-lines and hedgerows) within the landscaping scheme to provide additional commuting corridors along the Scheme for bats.
 - c. Provision of standing water-bodies to provide an additional foraging resource for bats using the site, which may benefit *Myotis* and *Nyctalus* bats in particular.
 - d. Installation of bat bricks or bat tubes (above those required for mitigation and compensation of the known roosts) into the fabric of new buildings/structures and/or installation of additional bat boxes to suitable retained trees to increase the roosting opportunities on Scheme for bats.

6. CONCLUSIONS

- 6.1.1. The dusk emergence / dawn re-entry surveys recorded a single common pipistrelle bat emerging from High Highlaws Farm B8A, confirming the presence of a roost. A single soprano pipistrelle was also potentially observed emerging from the top of the southern pier of the River Coquet Bridge, in line with the bat roost identified in 2017. This would suggest no significant change in roost structure or number of bats from the 2017 surveys. It is assumed that building B101A supports day roosts of low numbers of common pipistrelle, soprano pipistrelle and brown long-eared bats.
- 6.1.2. Following the identification of nine potential commuting routes, the DEFRA Local Scale surveys identified “Crossing Points” at one location along the existing Scheme (CP14) and at five locations along the proposed off-line route (CP17, CP18, CP20, CP21, CP22). The bat activity at each “Crossing Point” included bats flying at both safe and unsafe heights.
- 6.1.3. A full impact assessment shall be undertaken and presented within **Chapter 9: Biodiversity, Volume 2** of the ES (**Application Document Reference: TR010041/APP/6.2**), which shall also include appropriate mitigation and compensation to address likely significant effects of the Scheme during construction and operation.

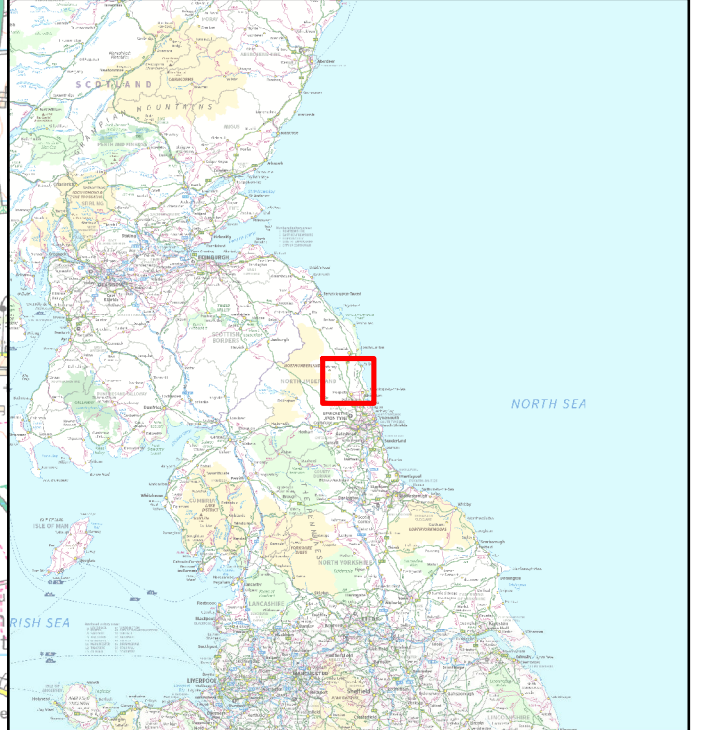
7. REFERENCES

- Ref. 1.1** - Jacobs (2018a). *A1 in Northumberland Bat Roost Potential Survey Report 2017*. Version 2.1, March 2018
- Ref. 1.2** - Jacobs (2018b). *A1 in Northumberland B2104700/OD/338 Bat Activity Survey Report*. Version 1.1. March 2018
- Ref. 1.3** - Collins, J (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.
- Ref. 1.4** - Department for Environment, Food & Rural Affairs (2017). *DEFRA Linear Infrastructure Guidelines: Appendix G. Local effects of transport infrastructure & mitigation: Best practice survey protocol and data analysis*.
- Ref. 1.5** - Bernithussen, A. & Altringham, J. (2015). *WC1060 Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure*. Final report 2015. University of Leeds, UK.
- Ref. 1.6** - Russ, J (2013). *British Bat Calls a Guide to Species Identification*. Pelagic Publishing.
- Ref. 1.7** - HMSO (2017). *The Conservation of Habitats and Species Regulations (as amended)* (the Habitat Regulations)
- Ref. 1.8** - Her Majesty's Stationary Office (HMSO) (1981). *Wildlife and Countryside Act (as amended by the Countryside and Rights of Way Act 2000)*
- Ref. 1.9** - HMSO (2006). *Natural Environment and Rural Communities Act*.
- Ref. 1.10** - Department for Transport (2014). *National Policy Statement for National Networks*. Department for Transport, London.
- Ref. 1.11** - Department for Communities and Local Government (2019). *National Planning Policy Framework*. Department for Communities and Local Government, London.
- Ref. 1.12** - HMSO (2005). *Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System*. Office of the Deputy Prime Minister (ODPM) Circular 06/2005 HMSO, Norwich.
- Ref. 1.13** - Northumberland County Council (2018). *Northumberland Consolidated Planning Policy Framework*.
- Ref. 1.14** - Northumberland County Council (2018). *Northumberland Local Plan. Draft Plan for Regulation 18 consultation*.
- Ref. 1.15** - Bat Conservation Trust (2018). *Bats and artificial lighting in the UK: Bats and the Build Environment series*.



Key

- Order Limits
- Areas Excluded from Order Limits
- General Arrangement



Rev	Date	Description	By	Chk'd	App'd
P02	12/07/19	Second Issue	GH	JF	NM
P01	28/03/18	First Issue	JSdS	JF	SP



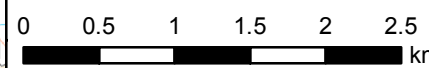
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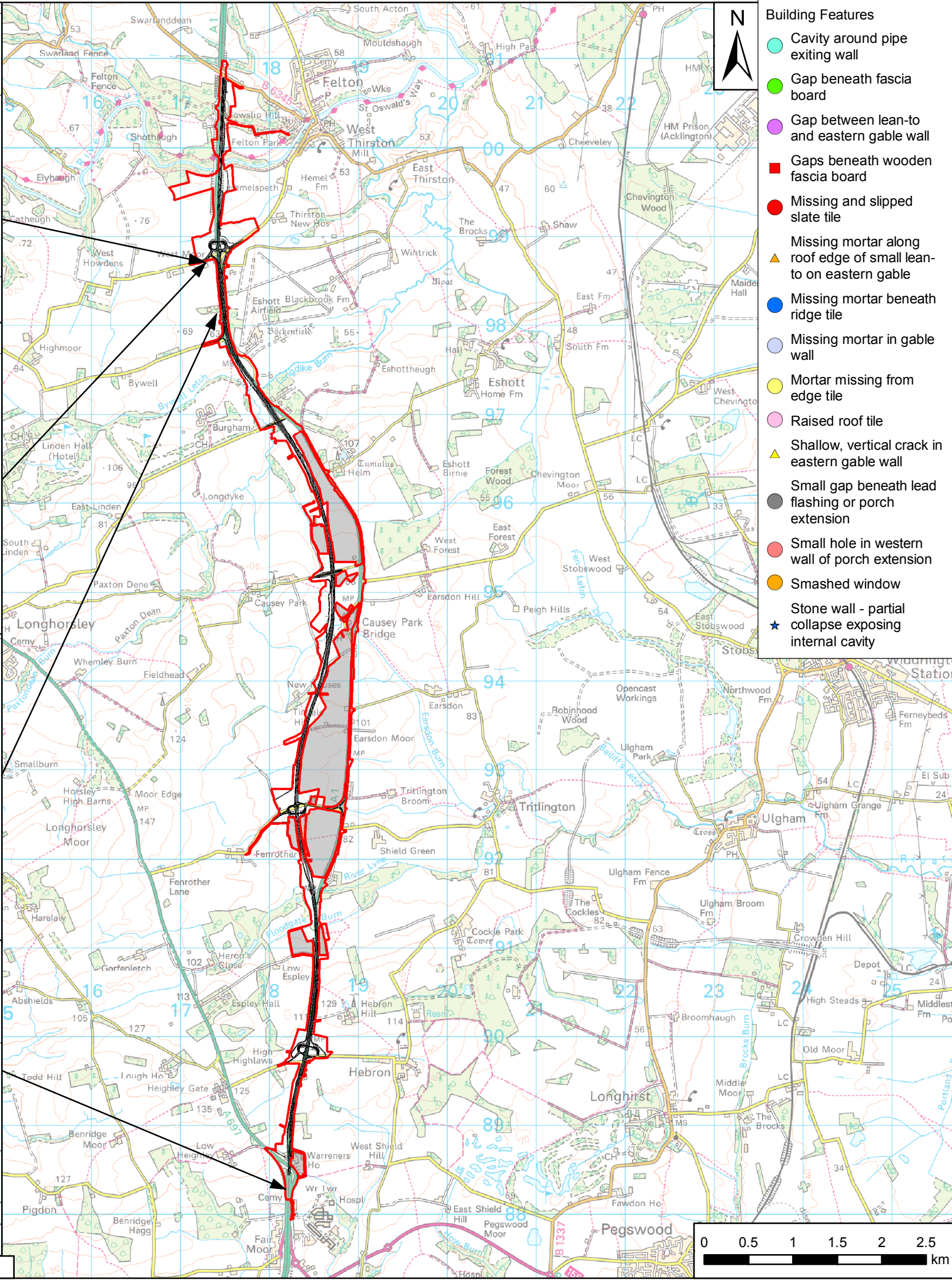
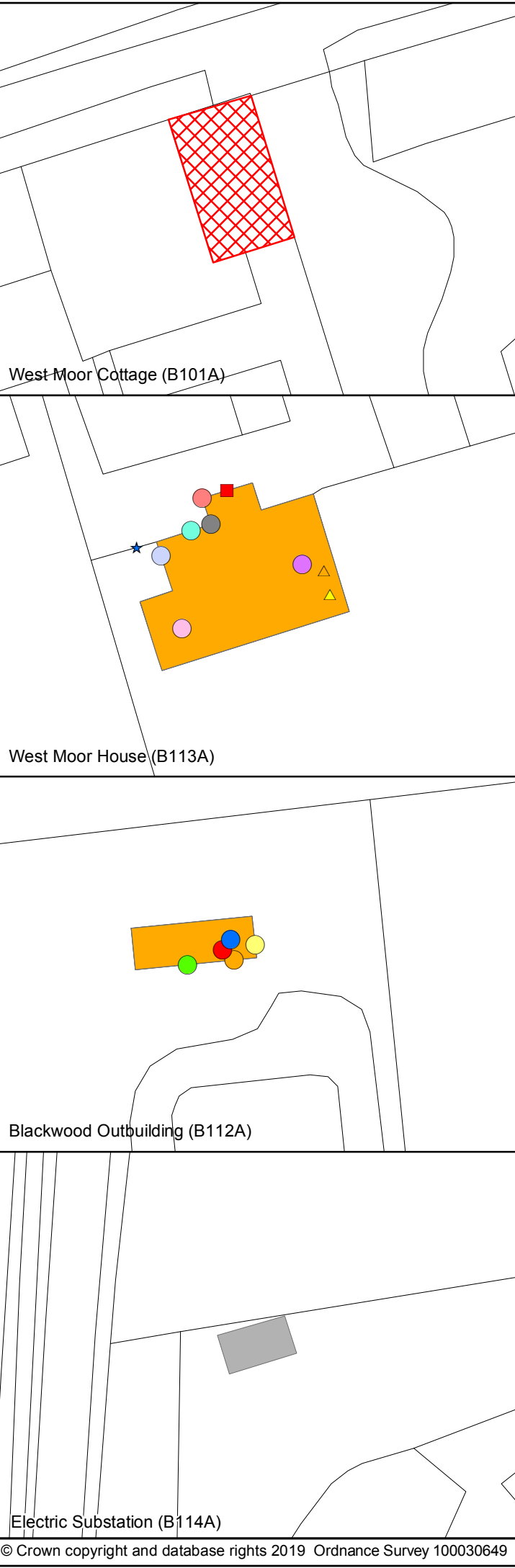
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Original Size	Date	Date	Date	Date
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Drawing Status: **For Information** Suitability: **S1**

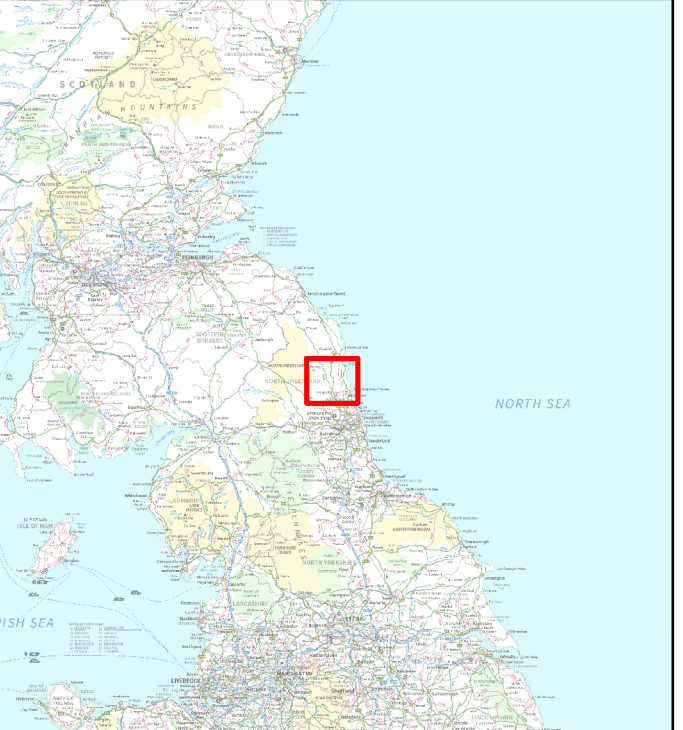
Drawing Number Project	HE551459	Originator	WSP	Volume	6.3	Project Ref. No.	70044136
M2F Location		Type		Role		Revision	P02





- Building Features**
- Cavity around pipe exiting wall
 - Gap beneath fascia board
 - Gap between lean-to and eastern gable wall
 - Gaps beneath wooden fascia board
 - Missing and slipped slate tile
 - ▲ Missing mortar along roof edge of small lean-to on eastern gable
 - Missing mortar beneath ridge tile
 - Missing mortar in gable wall
 - Mortar missing from edge tile
 - Raised roof tile
 - ▲ Shallow, vertical crack in eastern gable wall
 - Small gap beneath lead flashing or porch extension
 - Small hole in western wall of porch extension
 - Smashed window
 - ★ Stone wall - partial collapse exposing internal cavity

- Key**
- Order Limits
 - Areas Excluded from Order Limits
 - General Arrangement
- Building and Feature Suitability**
- Confirmed Roost
 - High Roost Suitability
 - Moderate Roost Suitability
 - Low Roost Suitability
 - Negligible Roost Suitability
 - Not Surveyed



Rev	Date	Description	By	Chk'd	App'd
P02	12/07/19	Second Issue	GH	JF	NM
P01	28/03/18	First Issue	JSdS	JF	SP



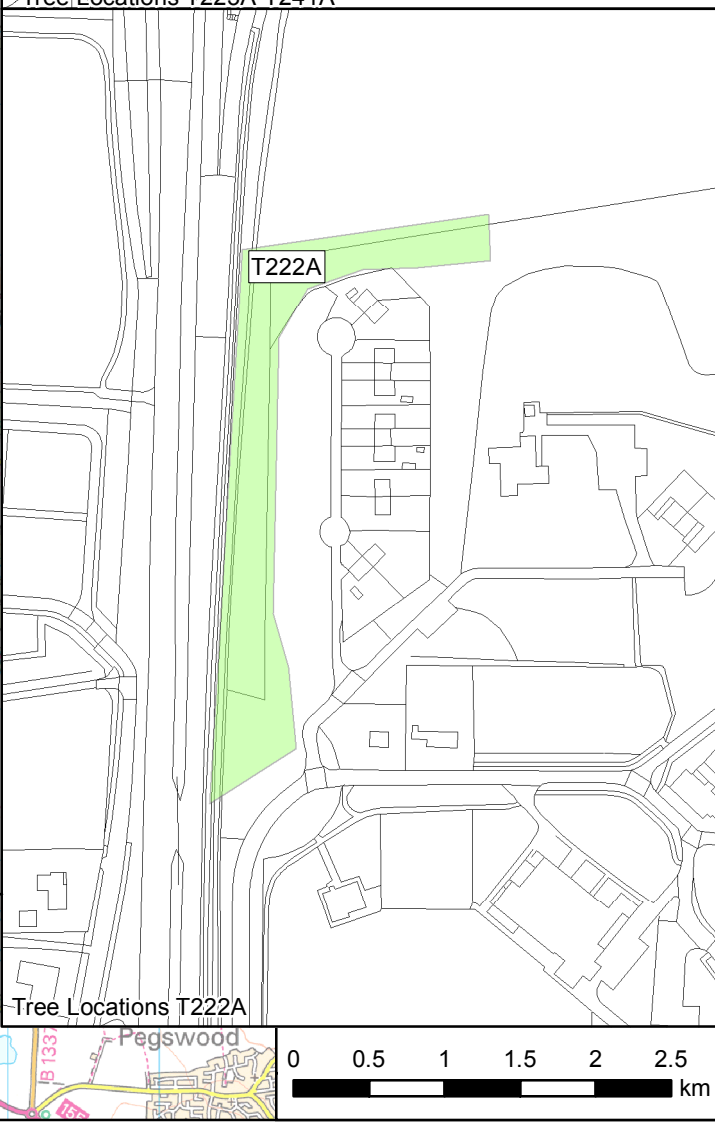
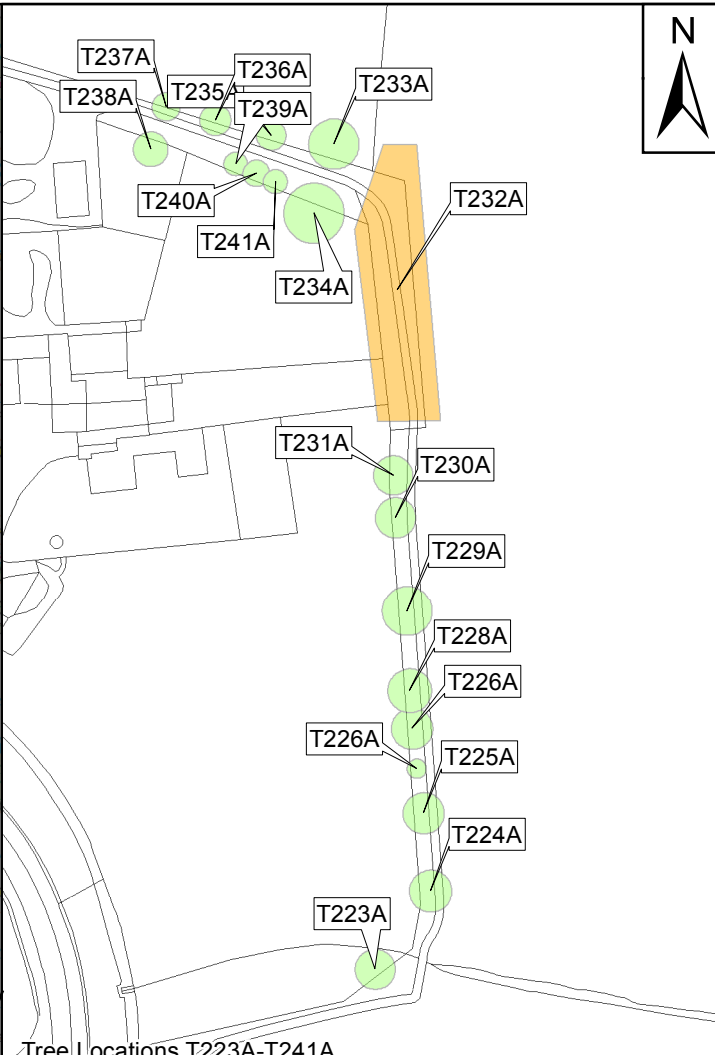
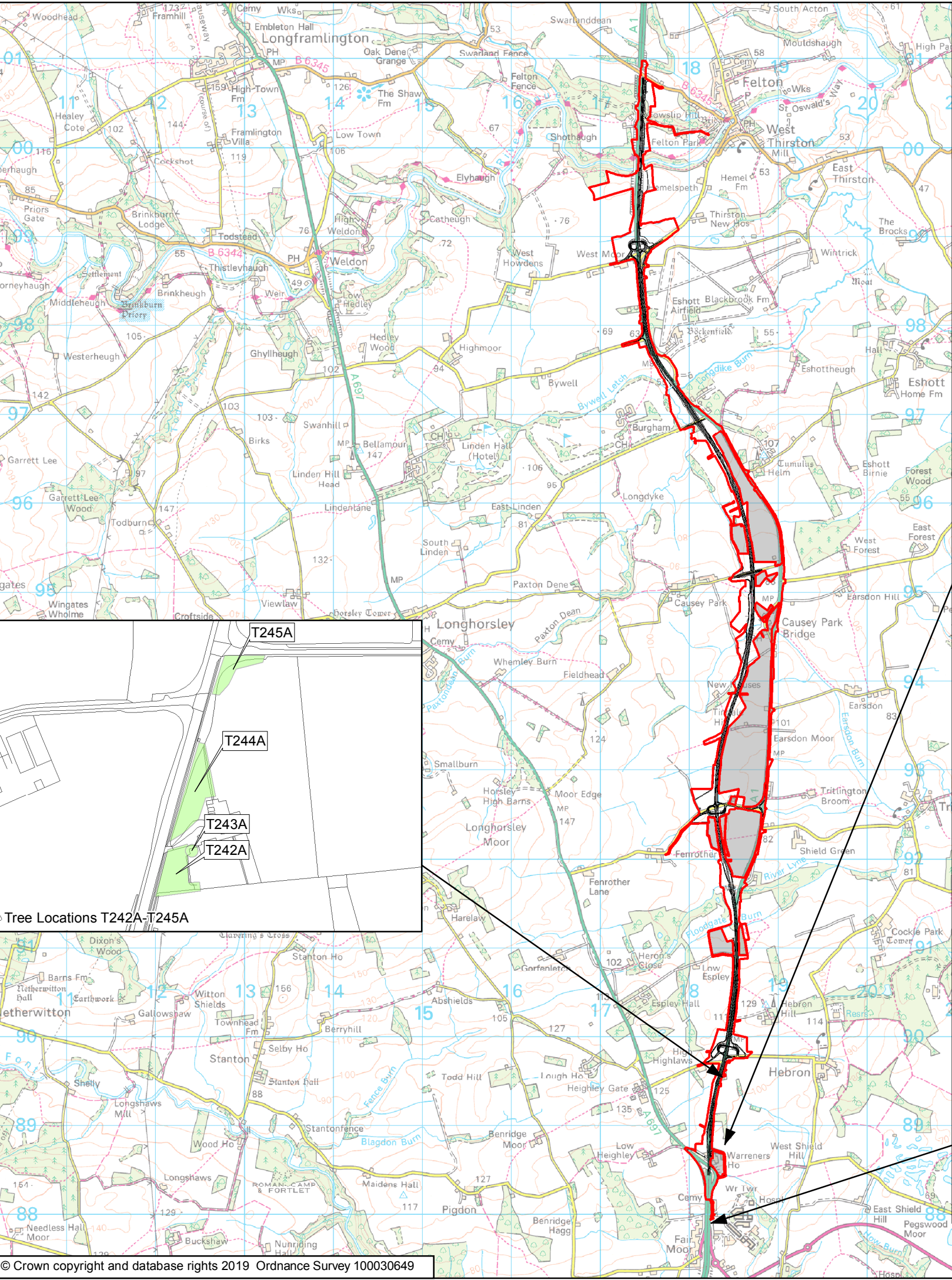
Project Title: A1 in Northumberland: Morpeth to Felton

Drawing Title: Figure 2 - Preliminary Bat Roost Assessment (Buildings)

Scale	Drawn	Checked	Approved	Authorised
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Original Size	Date	Date	Date	Date
A3	16/01/2019	16/01/2019	16/01/2019	16/01/2019

Drawing Status: For Information Suitability: S1

Drawing Number	Originator	Volume	Project Ref. No.
HE551459	WSP	6.3	70044136
Location	Type	Role	Number
M2F			P02

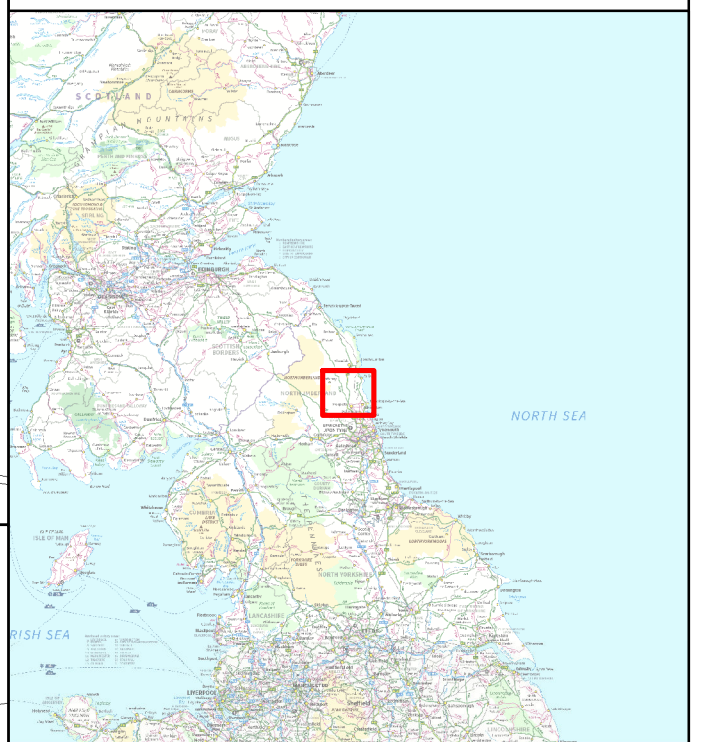


Key

- Order Limits
- Areas Excluded from Order Limits
- General Arrangement

Tree Bat Roost Suitability

- High Roost Suitability
- Moderate Roost Suitability
- Low Roost Suitability
- Negligible Roost Suitability



Rev	Date	Description	By	Chk'd	App'd
P02	12/07/19	Second Issue	GH	JF	NM
P01	28/03/18	First Issue	JSdS	JF	SP

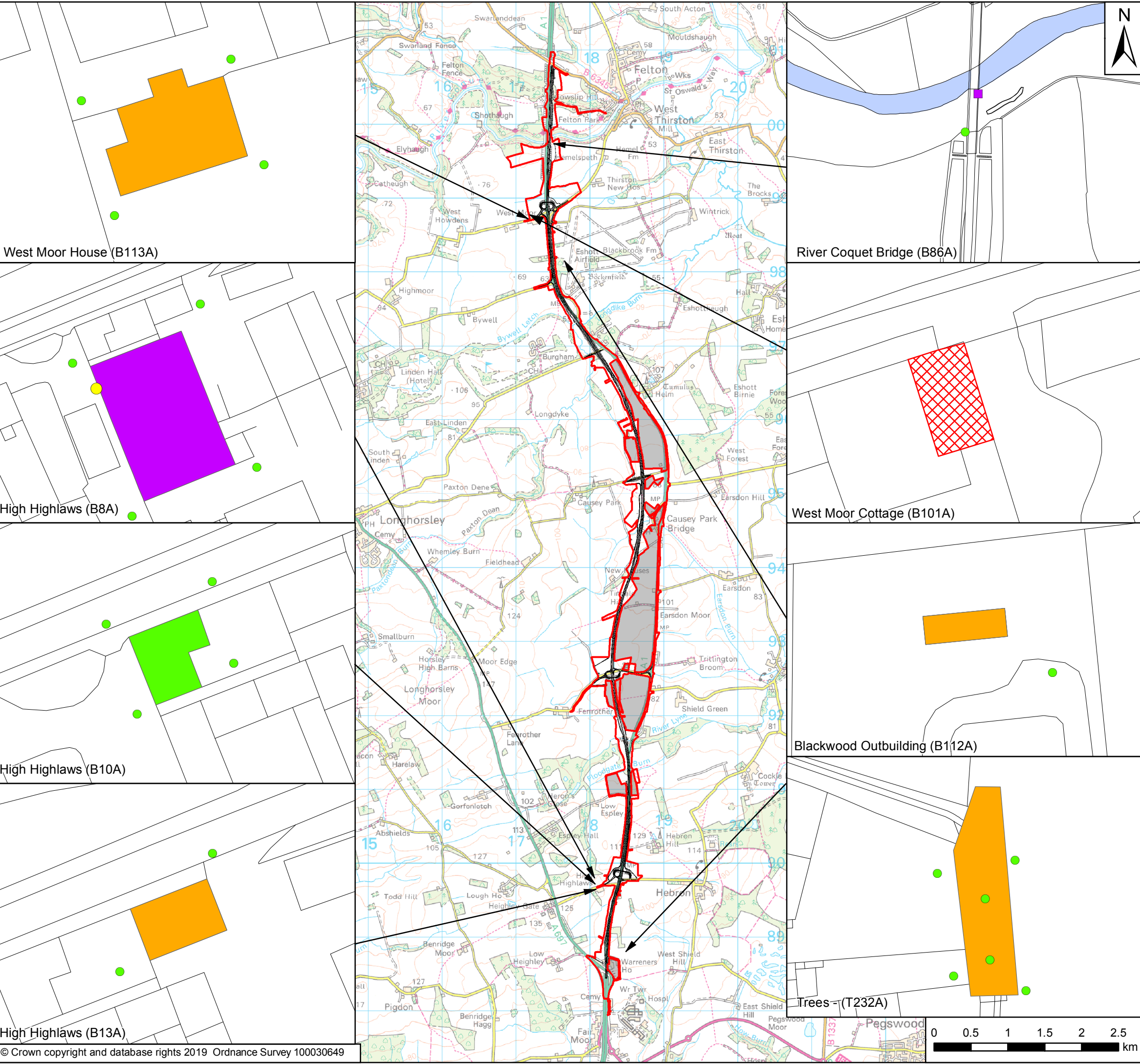
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Project Title: A1 in Northumberland: Morpeth to Felton

Drawing Title: Figure 3 - Preliminary Bat Roost Assessment (trees)

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1:50,000	JSdS	JF	SP	DM
Original Size	Date	Date	Date	Date
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Drawing Status			Suitability
For Information			S1
Drawing Number	Project	Originator	Volume
HE551459		WSP	6.3
Project Ref. No.			Revision
70044136			P02
M2F	Location	Type	Role
			Number

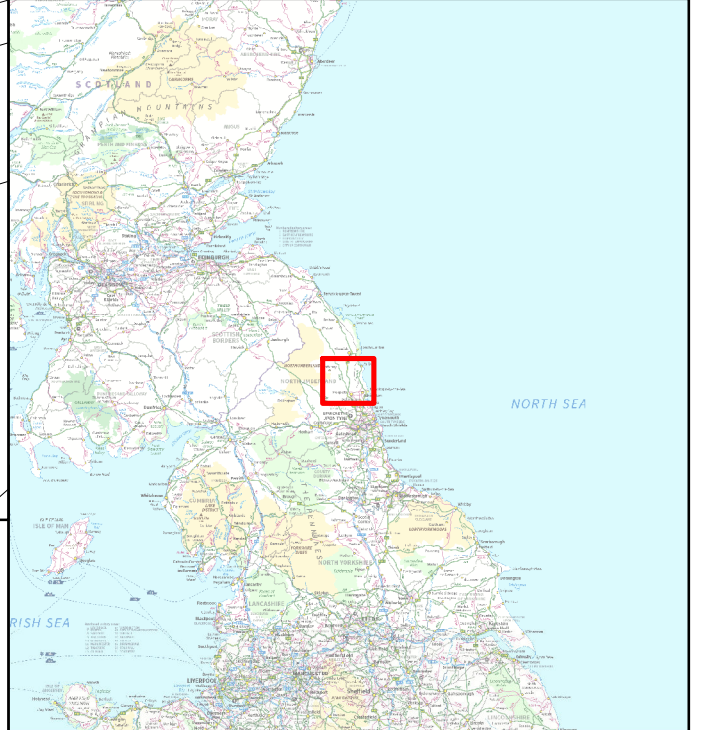


Key

- Order Limits
- Areas Excluded from Order Limits
- General Arrangement
- Bat Emergence
- Surveyor Position
- + Bat roost (River Coquet Bridge (B86A))

Building / Tree Roost Suitability

- Confirmed Roost
- High Roost Suitability
- Moderate Roost Suitability
- Low Roost Suitability
- Negligible Roost Suitability
- Not Surveyed



Rev	Date	Description	By	Chk'd	App'd
P02	12/07/19	Second Issue	GH	JF	NM
P01	28/03/18	First Issue	JSdS	JF	SP



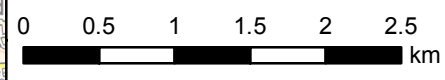
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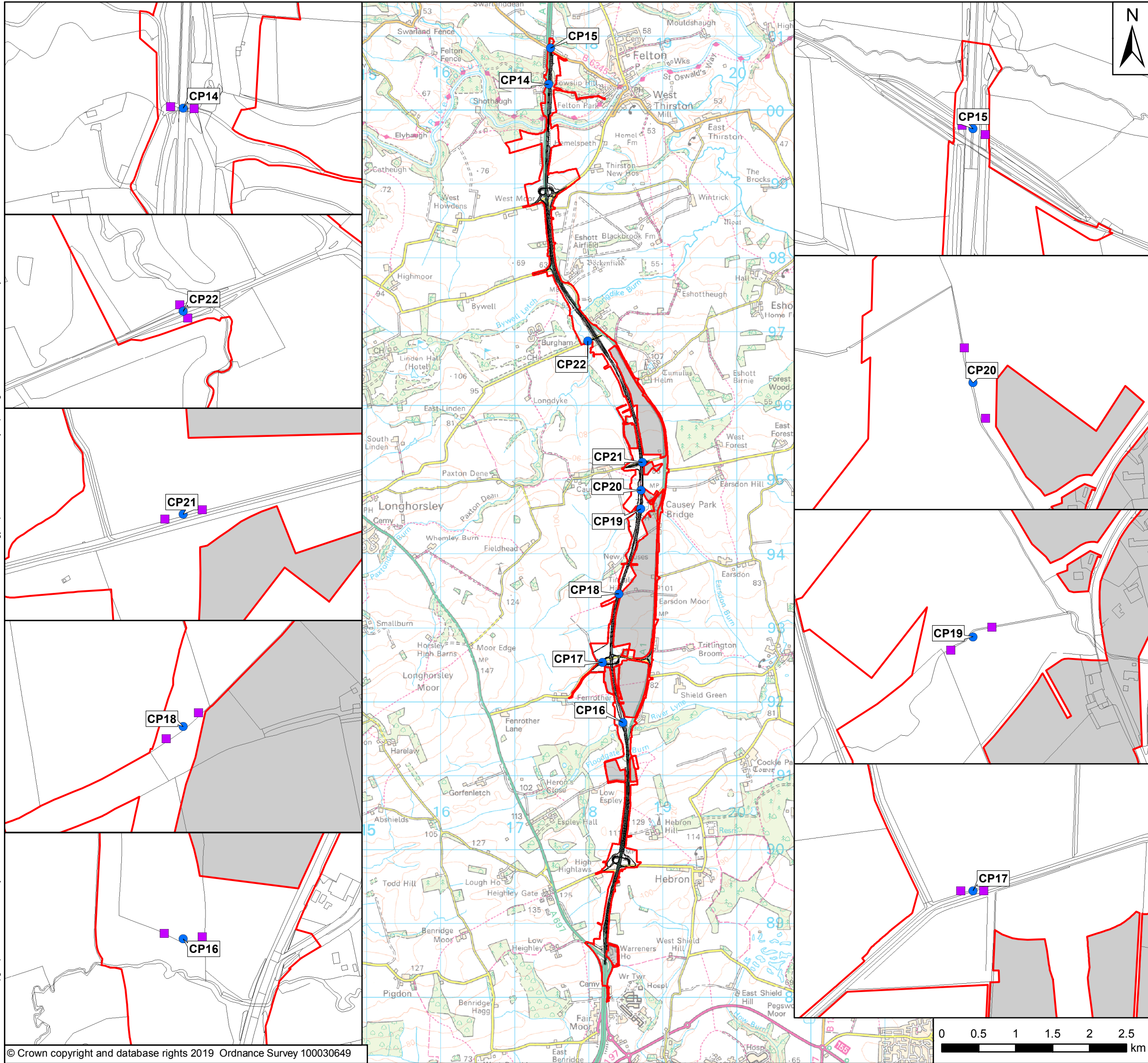
Drawing Title: Figure 4 - Bat Dusk Emergence/Dawn Re-entry Surveys - Surveyor Locations

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Original Size	Date	Date	Date	Date
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Drawing Status: For Information Suitability: S1

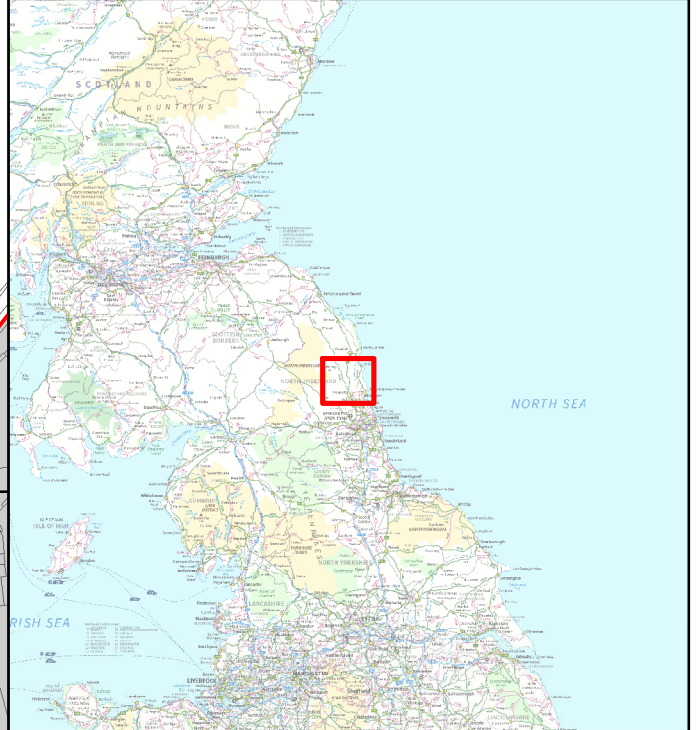
Drawing Number: HE551459	Project: M2F Location	Originator: WSP	Volume: 6.3	Project Ref. No: 70044136
				Revision: P02





Key

- Order Limits
- Areas Excluded from Order Limits
- General Arrangement
- Survey Location
- Surveyor Location



Rev	Date	Description	By	Chk'd	App'd
P02	12/07/19	Second Issue	GH	JF	NM
P01	28/03/18	First Issue	JSdS	JF	SP

Client

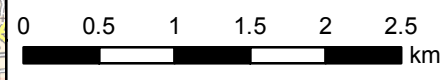
Project Title: A1 in Northumberland: Morpeth to Felton

Drawing Title: Figure 5 - DEFRA Local Scale Surveys

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1:50,000	JSdS	JF	SP	DM
Original Size	Date	Date	Date	Date
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Drawing Status: For Information Suitability: S1

Drawing Number	Originator	Volume	Project Ref. No.
HE551459	WSP	6.3	70044136
Revision			
P02			



Appendix A

SURVEY TIMINGS AND WEATHER
INFORMATION

DUSK EMERGENCE/ DAWN RE-ENTRY SURVEYS

Dusk Emergence/Dawn Re-entry Survey Timings

Building/ Tree Reference	Survey Date	Type of Survey	Number of Surveyors	Survey Start Time	Dusk / Dawn Time	Survey End Time
High Highlaws Farm B8A	12/06/18	Dusk Emergence	4	21:30	21:47	23:20
	03/07/18	Dawn Re-entry	4	02:31	04:32	04:36
	24/07/18	Dawn Re-entry	4	3:02	5:00	5:15
High Highlaws Farm B13A	20/06/18	Dawn Re-entry	2	02:17	04:26	04:41
	03/07/18	Dusk Emergence	2	21:30	21:49	23:22
High Highlaws Farm B10A	02/07/18	Dusk Emergence	4	21:34	21:49	23:25
Blackwood Outbuilding B112A	03/07/18	Dusk Emergence	1	21:29	21:48	23:18
	31/07/18	Dawn Re-entry	1	03:10	05:10	05:25
West Moor House B113A	31/07/18	Dusk Emergence	4	21:00	21:14	23:00
	14/08/18	Dusk Emergence	4	20:30	20:45	22:16
River Coquet Bridge B86A	05/06/18	Dusk Emergence	1	21:07	21:41	23:00
Trees at Northgate Farm Cottages T232A Group 1	09/08/18	Dawn Re-entry	2	03:29	05:29	05:44
	09/08/18	Dusk Emergence	2	20:39	20:54	22:54
	14/08/18	Dusk Emergence	2	20:28	20:43	22:43

Building/ Tree Reference	Survey Date	Type of Survey	Number of Surveyors	Survey Start Time	Dusk / Dawn Time	Survey End Time
Trees at Northgate Farm Cottages T232A Group 2	15/08/18	Dawn Re-entry	3	04:40	05:40	05:55
	15/08/18	Dusk Emergence	3	20:25	20:40	22:40
	23/08/18	Dusk Emergence	3	20:06	20:21	22:21

Dusk Emergence/Dawn Re-entry Survey Weather Conditions

Building/ Tree Reference	Survey Date	Start Temp. (°C)	End Temp. (°C)	Wind (start/end) (Beaufort)	Rain (start/end)	Cloud Cover (start/end) (Oktas)
High Highlaws B8A	12/06/18	13.0	12.0	0 / 2	None / Very fine	8 / 8
	03/07/18	12.0	12.0	1 / 2	None / None	8 / 8
	24/07/18	18.0	17.0	0 / 0	None/None	3 / 8
High Highlaws B13A	20/06/18	15.0	15.0	4 / 3	None / Light Drizzle	7 / 8
	03/07/18	14.0	12.0	4 / 2	None / None	0 / 0
High Highlaws Farm B10A	02/07/18	14.0	13.0	2 / 1	None / None	7 / 8
Blackwood Outbuilding B112A	03/07/18	13.0	13.0	1 / 0	None / None	0 / 0
	31/07/18	11.0	10.0	2 / 2	None / None	3 / 3
	31/07/18	19.0	17.0	2 / 3	None / None	2 / 2

Building/ Tree Reference	Survey Date	Start Temp. (°C)	End Temp. (°C)	Wind (start/end) (Beaufort)	Rain (start/end)	Cloud Cover (start/end) (Oktas)
West Moor House B113A	14/08/18	17.0	17.0	2 / 1	None / None	8 / 8
River Coquet Bridge B86A	05/06/18	10.0	10.0	3 / 3	None / None	7 / 7
Trees at Northgate Farm Cottages T232A Group 1	09/08/18	10.0	10.0	1 / 1	None / None	7 / 4
	09/08/18	17.0	12.0	2 / 2	None / None	1 / 4
	14/08/18	17.0	17.0	2 / 2	Light / None	7 / 4
Trees at Northgate Farm Cottages T232A Group 2	15/08/18	17.0	17.0	3 / 3	None / None	4 / 6
	15/08/18	17.0	16.0	4 / 2	None / None	8 / 5
	23/08/18	13.0	10.0	2 / 2	None / None	1 / 1

DEFRA LOCAL SCALE SURVEYS

DEFRA Local Scale Survey Timings

Survey Location Reference.	Survey Date	Type of Survey	Number of Surveyors	Survey Start Time	Dusk/ Dawn Time	/Survey End Time
CP14	31/07/2018	Dusk	2	21:12	21:12	22:12
	03/08/2018	Dawn	2	04:17	05:17	05:17
	06/08/2018	Dusk	2	21:00	21:00	22:00
	08/08/2018	Dusk	2	20:56	20:56	21:56

Survey Location Reference.	Survey Date	Type of Survey	Number of Surveyors	Survey Start Time	Dusk/Dawn Time	/Survey End Time
	10/08/2018	Dawn	2	04:31	05:31	05:31
	14/08/2018	Dawn	2	04:38	05:38	05:38
CP15	01/08/2018	Dawn	2	04:13	05:13	05:13
	02/08/2018	Dusk	2	21:10	21:10	22:10
	07/08/2018	Dawn	2	04:25	05:25	05:25
	08/08/2018	Dusk	2	20:56	20:56	21:56
	10/08/2018	Dawn	2	04:31	05:31	05:31
	13/08/2018	Dusk	2	20:45	20:45	21:45
CP16	31/07/2018	Dusk	2	21:12	21:12	22:12
	03/08/2018	Dawn	2	04:17	05:17	05:17
CP17	01/08/2018	Dawn	2	04:13	05:13	05:13
	06/08/2018	Dusk	2	21:00	21:00	22:00
	21/08/2018	Dusk	2	20:26	20:26	21:26
	29/08/2018	Dawn	2	05:06	06:06	06:06
	05/09/2018	Dawn	2	05:19	06:19	06:19
	10/09/2018	Dusk	2	19:36	19:36	20:36
CP18	07/08/2018	Dawn	2	04:25	05:25	05:25
	13/08/2018	Dusk	2	20:45	20:45	21:45
	30/08/2018	Dusk	2	20:04	20:04	21:04
	05/09/2018	Dusk	2	19:49	19:49	20:49
	11/09/2018	Dawn	2	05:31	06:31	06:31
	13/09/2018	Dusk	2	19:30	19:30	20:30
CP19	02/08/2018	Dawn	2	04:15	05:15	05:15

Survey Location Reference.	Survey Date	Type of Survey	Number of Surveyors	Survey Start Time	Dusk/ Dawn Time	/Survey End Time
	07/08/2018	Dusk	2	20:58	20:58	21:58
CP20	02/08/2018	Dusk	2	21:10	21:10	22:10
	07/08/2018	Dusk	2	20:58	20:58	21:58
	22/08/2018	Dawn	2	04:53	05:53	05:53
	28/08/2018	Dusk	2	20:09	20:09	21:09
	11/09/2018	Dusk	2	19:34	19:34	20:34
	14/09/2018	Dawn	2	05:36	06:36	06:36
CP21	08/08/2018	Dawn	2	04:27	05:27	05:27
	14/08/2018	Dawn	2	04:38	05:38	05:38
	23/08/2018	Dawn	2	04:55	05:55	05:55
	30/08/2018	Dawn	2	05:08	06:08	06:08
	04/09/2018	Dusk	2	19:52	19:52	20:52
	11/09/2018	Dawn	2	05:31	05:31	06:31
CP22	02/08/2018	Dawn	2	04:15	05:15	05:15
	08/08/2018	Dawn	2	04:27	05:27	05:27
	22/08/2018	Dusk	2	20:24	20:24	21:24
	29/08/18	Dusk	2	20:08	21:08	21:08
	06/09/2018	Dawn	2	05:21	06:21	06:21
	10/09/2018	Dusk	2	19:39	19:39	20:39

DEFRA Local Scale Survey Weather Conditions

Survey Location Reference.	Survey Date	Start Temp. (°C)	End Temp. (°C)	Wind (start/end) (Beaufort)	Rain (start/end)	Cloud Cover (start/end) (Oktas)
CP14	31/07/2018	17.0	16.0	2 / 2	None / None	1 / 3
	03/08/2018	17.0	17.0	3 / 3	None / Light	8 / 8
	06/08/2018	17.0	17.0	2 / 2	None / None	3 / 5
	08/08/2018	15.0	15.0	2 / 2	None / None	2 / 2
	10/08/2018	10.0	11.0	6 / 3	None / None	8 / 8
	14/08/2018	16.0	16.0	1 / 1	None / None	8 / 4
CP15	01/08/2018	15.0	12.5	0 / 1	None / None	1 / 3
	02/08/2018	20.0	19.0	1 / 1	None / None	6 / 7
	07/08/2018	15.0	14.0	3 / 3	None / None	8 / 8
	08/08/2018	17.0	16.0	3 / 5	None / None	2 / 4
	10/08/2018	10.0	10.0	2 / 2	None / None	7 / 8
	13/08/2018	17.0	16.0	1 / 1	None / None	7 / 3
CP16	31/07/2018	17.0	15.0	NR	None / None	2 / 2
	03/08/2018	17.0	17.0	0 / 0	Light / None	6 / 8

Survey Location Reference.	Survey Date	Start Temp. (°C)	End Temp. (°C)	Wind (start/end) (Beaufort)	Rain (start/end)	Cloud Cover (start/end) (Oktas)
CP17	01/08/2018	13.0	13.0	1 / 1	None / None	1 / 3
	06/08/2018	18.0	17.0	3 / 1	None / None	5 / 8
	21/08/2018	19.0	17.0	2 / 2	None / None	1 / 8
	29/08/2018	14.0	14.0	1 / 1	None / None	7 / 7
	05/09/2018	10.0	8.0	6 / 4	None / None	1 / 1
	10/09/2018	13.0	12.0	2 / 2	Light / Light	1 / 8
CP18	07/08/2018	15.0	15.0	5 / 6	None / None	8 / 8
	13/08/2018	16.0	16.0	5 / 4	None / None	8 / 8
	30/08/2018	15.0	15.0	2 / 2	None / None	7 / 7
	05/09/2018	14.0	13.0	4 / 4	None / None	1 / 2
	11/09/2018	12.0	11.0	4 / 4	None / None	8 / 7
	13/09/2018	13.0	13.0	3 / 3	None / None	4 / 5
CP19	02/08/2018	14.0	13.0	1 / 1	None / None	8 / 4
	07/08/2018	15.0	14.0	2 / 2	None / None	4 / 4
CP20	02/08/2018	19.0	18.0	2 / 2	None / None	7 / 8

Survey Location Reference.	Survey Date	Start Temp. (°C)	End Temp. (°C)	Wind (start/end) (Beaufort)	Rain (start/end)	Cloud Cover (start/end) (Oktas)
	07/08/2018	16.0	16.0	2 / 2	None / None	2 / 5
	22/08/2018	17.0	17.0	2 / 2	None / None	3 / 5
	28/08/2018	14.0	14.0	1 / 1	None / None	1 / 5
	11/09/2018	15.0	15.0	2 / 2	None / None	7 / 7
	14/09/2018	11.0	11.0	2 / 2	None / Light	8 / 8
CP21	08/08/2018	11.0	11.0	1 / 2	None / None	3 / 1
	14/08/2018	14.0	14.0	0 / 1	None / None	8 / 6
	23/08/2018	9.0	9.0	2 / 2	None / None	7 / 7
	30/08/2018	8.0	8.0	2 / 2	None / None	2 / 4
	04/09/2018	13.0	12.0	1 / 1	None / None	5 / 7
	11/09/2018	11.0	11.0	2 / 2	None / None	8 / 6
CP22	02/08/2018	15.0	15.0	2 / 1	None / None	8 / 6
	08/08/2018	11.0	12.0	2 / 2	None / None	0 / 0
	22/08/2018	16.0	14.0	2 / 1	None / None	1 / 3
	29/08/2018	16.0	12.0	2 / 2	None / None	1 / 0

Survey Location Reference.	Survey Date	Start Temp. (°C)	End Temp. (°C)	Wind (start/end) (Beaufort)	Rain (start/end)	Cloud Cover (start/end) (Oktas)
	06/09/2018	11.0	9.0	2 / 2	None / None	1 / 0
	10/09/2018	12.0	12.0	3 / 3	Light / Light	8 / 8

Appendix B

PRELIMINARY ROOST ASSESSMENT
RESULTS

Preliminary Roost Assessment Results

Building/ Tree Name and Reference	Grid Reference	Description	External Features with Potential to Support Roosting Bats	Evidence of roosting bats recorded?	Overall Assessment of Potential to Support Bat Roosts	Potential for different roost types ⁹		
						M	S	H
Blackwood Outbuilding – B112A	NZ 1743 9820	A small, single-storey outbuilding structure to the east of Blackwood Hall. The building is likely brick construction, although white render to the external walls prevented confirmation of this. The building supports a pitched, slate roof with concrete ridge tiles and is surrounded immediately by trees and scrub to the north and west, heavily shading the building and obstructing access on these two elevations, both to bats and the surveyors (addressed as limitation). The building is vacant and understood to have been for some time.	Missing and slipped slate tiles on the south-facing pitch of the roof. Missing mortar beneath ridge tiles providing access into a shallow gap beneath the tiles themselves. No evidence to suggest a significant depth to the void created or access into the internal void. Mortar missing from the edge tiles on the eastern gable end, providing access into a shallow void beneath the tiles. Possible roofing membrane present. Gap between fascia board on the southern elevation, approximately 1 m in length and unobstructed by cobwebs. Smashed window on southern elevation providing access into internal room. Internal room considered of low value due to high levels of natural light ingress.	None	Moderate	N	Y	Y
West Moor House – B113A	NZ 1731 9868	An inhabited, two-storey residential dwelling of stone construction with a clay flat-tile roof. A single-storey (porch) extension is located on the northern elevation, of the same material construction as the main building. A conservatory of timber construction and a flat, felt roof is located on the western elevation. The building is surrounded by residential garden and woodland to the south and east, with other buildings located to the north and, under construction, west. Anecdotally (discussion with the resident) the loft is lined with a roofing membrane and the roof was re-roofed approximately ten years ago.	A small gap as a result of lost mortar on the western gable end, close to the northwest corner. Stone wall extending west from the northwest corner, approximately 2 m in height. Partially collapsed at the meeting point with the building, exposing internal cavity. Slightly raised roofing tiles creating shallow gaps beneath, suitable for single bats. Approximately 10 locations across the roof. Shallow, vertical crack in the eastern gable wall adjacent to ground floor window. Approximately 1.5 m above ground level. Small lean-to on eastern gable housing utility meters, approximately 1.5 m in height. Gaps along roof edge where mortar is missing from edge tiles.	None	Moderate	N	Y	Y

⁹ M = Maternity (breeding roost); S = Summer / transitional (to include transitional, satellite, night and day roosts); and H = Hibernation.

Building/ Tree Name and Reference	Grid Reference	Description	External Features with Potential to Support Roosting Bats	Evidence of roosting bats recorded?	Overall Assessment of Potential to Support Bat Roosts	Potential for different roost types ⁹		
						M	S	H
			<p>Gap between small lean-to on eastern gable and wall of main building. Likely to be subject to water ingress and therefore limited possibility for roosting bats.</p> <p>Gaps beneath wooden fascia of porch extension on northern elevation. Only provides access under fascia board, no access into building or wall structure.</p> <p>Small hole in western wall of porch extension (approximately 3 cm diameter) but with depth (unconfirmed).</p> <p>Small gap beneath lead flashing where the porch extension meets the main building (western side). Shallow void beneath.</p> <p>Small cavity around a pipe exiting the northern elevation wall, to the west of the porch extension.</p>					
Electricity substation – B114A	NZ 1824 8816	Small brick building with a flat, felt roof, located within a woodland copse (T222A). Wooden fascia boards present although heavily cobwebbed.	No value for bats recorded	None	Negligible	N	N	N
Tree 222A	NZ 1823 8805	Area of mixed plantation woodland at West View, running parallel and adjacent to the A1. The woodland is dominated by beech <i>Fagus sylvatica</i> with abundant pine <i>Pinus</i> sp. The woodland also comprised occasional sycamore <i>Acer pseudoplatanus</i> and rare abundance of rowan <i>Sorbus aucuparia</i> , silver birch <i>Betula pendula</i> and cherry <i>Prunus</i> sp.	Trees of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 223A	NZ 1837 8843	Semi-mature ash <i>Fraxinus excelsior</i>	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 224A	NZ 1839 8846	Mature sycamore, approximately 15 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 225A	NZ 1839 8848	Mature sycamore, approximately 15 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 226A	NZ 1839 8849	Semi-mature ash, approximately 8 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N

Building/ Tree Name and Reference	Grid Reference	Description	External Features with Potential to Support Roosting Bats	Evidence of roosting bats recorded?	Overall Assessment of Potential to Support Bat Roosts	Potential for different roost types ⁹		
						M	S	H
Tree 227A	NZ 1839 8851	Mature sycamore, approximately 15 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 228A	NZ 1838 8852	Mature sycamore, approximately 15 m in height. Minor flaking bark, however, no depth to offer value to roosting bats.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 229A	NZ 1838 8854	Mature sycamore, approximately 15 m in height, with three leading trunks. Minor flaking bark, however, no depth to offer value to roosting bats.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 230A	NZ 1838 8857	Mature sycamore, approximately 12 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 231A	NZ 1838 8859	Mature sycamore, approximately 10 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 232A	NZ 1838 8864	Woodland block comprising two parallel lines of trees and a central corridor/ path wide enough for vehicular access. Dominant in sycamore, with occasional oak Quercus sp., ash and pine.	Dense ivy on many of the trees, which may conceal features of potential to roosting bats.	None	Moderate	N	Y	N
			Knothole (3 m height, northern aspect) on a mature ash, although obstructed by branches. Approximately NZ 1838 8867.	None	Moderate	N	Y	N
			Knothole (12 m height, southern aspect) on mature tree (possibly elm). Approximately NZ 1838 8866.	None	Moderate	N	Y	N
Tree 233A	NZ 18366 88688	Group of three sycamore trees, ranging between 10 and 15 m in height. Few shallow voids on one tree where branches have snapped off, although these represent superficial wounds with no value for roosting bats.	Trees of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 234A	NZ 1836 8867	Mature sycamore, approximately 20 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 235A	NZ 1834 8869	Mature tree (unconfirmed species), approximately 20 m in height. Broken off branch (12 m height, western aspect), however, no void created.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 236A	NZ 1832 8870	Mature ash, approximately 15 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 237A	NZ 1830 8871	Mature ash, approximately 12 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 238A	NZ 1830 8869	Mature oak, approximately 12 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N

Building/ Tree Name and Reference	Grid Reference	Description	External Features with Potential to Support Roosting Bats	Evidence of roosting bats recorded?	Overall Assessment of Potential to Support Bat Roosts	Potential for different roost types ⁹		
						M	S	H
Tree 239A	NZ 1833 8868	Mature sycamore, approximately 20 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 240A	NZ 1833 8868	Mature sycamore, approximately 20 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 241A	NZ 1834 8868	Mature sycamore, approximately 20 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 242A	NZ 1836 8952	Woodland block in pine, with occasional elder and rare abundance of cherry, maple sp. and rhododendron.	Trees of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 243A	NZ 1837 8954	Mature beech, approximately 25 m in height.	Tree of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 244A	NZ 1838 8961	Woodland block dominated by pine with occasional beech and rare abundance of elder. Hawthorn hedge runs along the western margin (parallel with A1) and a leylandii hedge along the southeast boundary.	Trees of suitable maturity, however, no PRF recorded.	None	Low	N	N	N
Tree 245A	NZ 1842 8975	Area of scattered broadleaved trees, dominant in cherry (possibly a former orchard). Also contained an abundance of hawthorn, frequent beech and less abundance conifers and rowan.	Trees of suitable maturity, however, no PRF recorded.	None	Low	N	N	N

Appendix C

DEFRA LOCAL SCALE SURVEY
RESULTS

DEFRA Local Scale Survey Results

Survey Location Reference	Species	Number of observed passes within 5 m of linear feature ¹⁰	Number of unsafe passes (5 m or below) ¹¹
CP14 (6 visits)	Common pipistrelle	10 (7.75%)	7 (70.00%)
	Soprano pipistrelle	85 (65.89%)	33 (38.82%)
	Myotis sp.	30 (23.26%)	14 (46.67%)
	Brown long-eared bat	3 (2.33%)	2 (66.67%)
	Unknown sp. ¹²	1 (0.78%)	1 (100.00%)
	Total	129	57 (44.19%)
CP15 (6 visits)	Common pipistrelle	1 (33.33%)	1 (100.00%)
	Soprano pipistrelle	2 (66.67%)	2 (100.00%)
	Total	3	3 (100.00%)
CP16 (2 visits)	Soprano pipistrelle	12 (100.00%)	12 (100.00%)
	Total	12	12 (100.00%)
CP17 (6 visits)	Common pipistrelle	37 (53.62%)	37 (100.00%)
	Soprano pipistrelle	22 (31.88%)	22 (100.00%)
	Noctule	6 (8.70%)	4 (66.67%)
	Myotis sp.	4 (5.80%)	4 (100.00%)
	Total	69	67 (97.10%)
CP18 (6 visits)	Common pipistrelle	22 (75.86%)	15 (68.18%)
	Soprano pipistrelle	7 (24.14%)	6 (85.71%)

¹⁰ Brackets showing percentage of total observed passes using linear feature by particular species

¹¹ Brackets showing percentage of total observed passes using linear feature deemed “unsafe”

¹² Bat was observed crossing but recorder did not detect – unable to identify to species level

Survey Location Reference	Species	Number of observed passes within 5 m of linear feature¹⁰	Number of unsafe passes (5 m or below)¹¹
	Total	29	21 (72.41%)
CP19 (2 visits)	Common pipistrelle	4 (40.00%)	4 (100%)
	Soprano pipistrelle	6 (60.00%)	4 (66.67%)
	Total	10	8 (80.00%)
CP20 (6 visits)	Common pipistrelle	66 (65.35%)	52 (78.79%)
	Soprano pipistrelle	33 (32.67%)	29 (87.88%)
	Noctule	1 (0.99%)	0 (0.00%)
	Myotis sp.	1 (0.99%)	1 (100.00%)
	Total	101	82 (81.19%)
CP21 (6 visits)	Common pipistrelle	16 (32.65%)	16 (100.00%)
	Soprano pipistrelle	33 (67.35%)	28 (84.85%)
	Total	49	44 (89.80%)
CP22 (6 visits)	Common pipistrelle	42 (58.33%)	40 (95.24%)
	Soprano pipistrelle	30 (41.67%)	21 (70.00%)
	Total	72	61 (84.72%)

Appendix D

BUILDING B101A ASSUMPTION OF
ROOSTING LETTER TO NATURAL
ENGLAND



MEMO

TO	██████████ Natural England ██████████ Natural England ██████████ Natural England	FROM	██████████ WSP
DATE	25 September 2018	CONFIDENTIALITY	Confidential
SUBJECT	A1 in Northumberland, Morpeth to Felton Scheme – Assumption of Bat Roost Presence in Building B101A		

INTRODUCTION

During the 20th March 2018 consultation meeting regarding the A1 Morpeth to Felton scheme (hereafter referred to as ‘the Scheme’), the reliance on assumed presence of roosting bats to inform mitigation design was discussed (attendees included ██████████ (WSP), ██████████ (WSP), ██████████ (Natural England) and ██████████ (Natural England). The discussion included the agreement that, if access could not be obtained for the completion of emergence/re-entry surveys of specific building(s), an assumption of roost presence could be made.

Despite repeated attempts to agree access, permission has not been granted to a single building (referenced as B101A¹, Figure 1). As such, the below outlines the proposed assumption to inform the impact assessment and mitigation proposals for your review and comment.

BACKGROUND & SURVEY EFFORT

During the bat roost potential survey conducted in 2016 by Jacobs², access was not permitted to building B101A for the completion of an internal or external survey to determine the potential for roosting bats. An external assessment was undertaken by Jacobs from the neighbouring road to the north, which recorded the following:

“Single-storey, stone-walled dwelling with a two-pitched interlocking tile roof. The dwelling was approximately 15 m long and 9 m wide. The windows were uPVC. A flat-roofed conservatory was attached to the western side of the dwelling, and a small felt-roofed porch was attached to the eastern side. Soffit boxes were present, and lead flashing was located around the chimneys.”

With regards to the presence of Potential Roost Features (PRF), the survey confirmed:

“None were observed, but features may have been present on the southern aspect of the building that could not be viewed.”

Overall, B101A was considered to have Low Roost Suitability for bats and would, under best practice guidelines³, require a single emergence or re-entry survey to confirm presence/ likely absence of a roost.

Access was not permitted in 2017 to Jacobs for the emergence/ re-entry survey⁴. WSP attempted to arrange access in 2018, which was again denied by the tenant of B101A. As such, it has not been possible to undertake the single

¹ Jacobs (2018). *A1 in Northumberland, Bat Roost Potential Survey Report 2017*, Version 2.1, March 2018.

² Jacobs (2018). *A1 in Northumberland, Bat Roost Potential Survey Report 2017*, Version 2.1, March 2018.

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

⁴ Jacobs (2018). *A1 in Northumberland, Bat Activity Survey Report*, Version 1.1, March 2018.



emergence or re-entry survey. An external view of B101A achieved during emergence/ re-entry surveys of an adjacent building in 2018 by WSP identified no changes to the above description and supports the Low Roost Suitability status.

Jacobs also document that the building was being renovated and possibly in the process of conversion. A review of the MAGIC mapping tool (accessed 25th September 2018) did not identify the presence of a European Protected Species (EPS) Licence in relation to the building or surrounding buildings⁵.

ASSUMPTION PROPOSAL

The adjacent building to the south (referenced as B84A, Figure 1) supports greater value for bats with multiple PRFs. The building was subject to a Preliminary Roost Assessment (PRA) in 2017 and three emergence/ re-entry surveys, in 2017 (July, August and September). The surveys identified common species roosting within the building; including a single common pipistrelle *Pipistrellus pipistrellus*, a single soprano pipistrelle *Pipistrellus pygmaeus* and a single brown long-eared bat *Plecotus auritus*.

For the purposes of undertaking an impact assessment as part of the Scheme, it is proposed that a precautionary approach is taken and the same confirmed roosting status B84A is also assumed for B101A. It would be assumed that buildings B84A and B101A support day roosts of low numbers of common pipistrelle, soprano pipistrelle and brown long-eared bats. There is no evidence to suggest that either building supports a maternity roost, given individual bats were recorded during surveys conducted within peak maternity season. In addition, B84A did not contain PRF considered suitable for a hibernation roost and the same is considered for B101A (due to lack of PRF recorded from the external vantage points, the building is inhabited and therefore internally heated and the type and condition of the building).

IMPACT ASSESSMENT

CONSTRUCTION

Buildings B84A and B101A are located directly adjacent to a proposed slip road connecting to a new junction (West Moor Junction, hereafter referred to as the 'Junction') approximately 100 m to the northeast (Figure 1). It is considered that during the construction phase, there will be a temporary increase in disturbance due to increased noise and vibration levels. This may result in a potential temporary functional loss of the roosts through desertion during the construction period. Initial intrusive ground works (including any piling) have been scheduled between late September 2020 (28th) and January 2021. These works are considered to incur the greatest disturbance impacts and their timing avoids the summer period when bats are known to occupy the roost. The buildings are also not considered to have value for hibernation roosting.

The embankments and road construction are then scheduled to commence in January 2021, with completion in August 2021. The construction of the overbridge section of the junction, approximately 200 m to the northeast of the buildings, is scheduled for completion by June 2021. It is likely that most of the works expected to incur significant disturbance (ground preparations and initial construction) would be completed prior to first occupation of the roosts (late Spring/ early Summer). Due to the current scheduled timeframes for development in proximity to Buildings B84A and B101A, the potential impact is considered minor adverse but temporary during a single season (2021).

Construction has the potential to increase light spill onto the buildings and habitats of value to bats in the vicinity (such as hedgerows, tree lines and woodland blocks), both for foraging and commuting.

Mitigation is proposed below to reduce and avoid the potential impacts of increased light spillage and the potential damage of a resting place (particularly in relation to the brown long-eared bats in B84A and B101A (assumed)). As the buildings will remain as part of the development and therefore the roosting space retained (although potential temporary desertion acknowledged), compensatory roosting is not considered necessary in relation to impacts during the construction period.

⁵ Acknowledged that the EPS Database on MAGIC has not been updated since 2016.

OPERATION

The buildings are currently located approximately 110 m from the busy A1 and, upon completion, the distance between the buildings and the A1 carriageway will remain approximately the same. Therefore, the bats are likely to be habituated to traffic disturbance levels (particularly noise) from the A1 carriageway long-term. A new slip road is proposed to the east (approximately 70 m). Studies have shown that noise levels decrease significantly with distance from a road, with 89% of the change occurring within the first 50 m (Berthinussen and Altringham, 2012⁶). The A1 carriageway and new slip road would also be screened from the building by the existing woodland to the immediate east. The woodland is tall and dense, creating a screen to impacts of lighting and noise from passing vehicles. Overall, no permanent significant impacts during the operational phase are considered and therefore compensatory roosting is not proposed.

PROPOSED MITIGATION

TIMING

Intrusive works are currently scheduled during the autumn/ winter period (September 2020 and January 2021), with general construction of the Junction to commence during winter (January 2021), prior to bats occupying the roosts. In addition to the scheduled timing, works could be undertaken during daylight hours to reduce the impact of construction works on the foraging and commuting behaviour of bats.

LIGHTING

It is understood that there will be no permanent lighting of the road network upon completion. Any temporary lighting during construction should be designed to avoid direct lighting of either building and habitats of value to foraging and commuting bats in the vicinity (such as hedgerows, trees and woodland). A lighting strategy would be implemented in accordance with the following advice:

- Avoidance of light spillage using direction and/ or baffled lighting;
- Avoidance of blue-white short wavelength lights and high UV content;
- Creation of light barriers utilising physical screening;
- Reduce the spacing and height of units to decrease the density of lighting units and reduce the spread of the light to minimise the illuminated area; and
- Avoid lighting above a 90° to 100° angle to avoid the upward spread of light above the horizontal plane.

The lighting strategy would be developed in accordance with guidance promoted by the Bat Conservation Trust and Natural England (Stone, 2013⁷).

Currently, it is known that the site compound to the northeast of the buildings on the other side of the existing A1 (approximately 400 m) will be lit 24 hours a day. Temporary stock piled soil mounds are proposed to create screening during the construction phase, helping to mitigate light spill within the wider area. Stock piles will be restricted to a maximum height of 2 m. The compound will also be screened from B84A and B101A by the existing woodland block between the buildings and the existing A1. The impacts of light spillage from the site compound are likely to be negligible due to distance and natural/ artificial screening. The lighting within the site compound would also be subject to the same lighting strategy recommendations as outlined above.

LANDSCAPE DESIGN

The landscape plan is designed to encourage bats to move away from the road network, particularly the new junction, to decrease the likelihood of traffic collision. This is currently achieved by the creation of new linear features (hedgerows

⁶ Berthinussen, A. and Altringham, J. (2012). *The effect of a major road on bat activity and biodiversity*, Journal of Applied Ecology, 49, 82-89

⁷ Stone, E. L. (2013). *Bats and Lighting. Overview of current advice and mitigation*.

and tree lines), which could be used to guide the bats to suitable crossing points (designed within the scheme), for example the River Coquet valley to the north. Landscaping also currently includes woodland screening around the junction, to screen the buildings from the road network, reducing disturbance levels from traffic.

CONCLUSION


The buildings support roosts of low numbers of common species. The Scheme will not result in the damage or destruction of a breeding or resting place and as such, will not result in the capture, injury or killing of a bat. The proximity of the works to the buildings B84A and B101A that contain the bat roosts means that there will be no obstruction of access to the resting or sheltering places.

Whilst there is a possibility of temporary functional loss of the roosts, the availability of the roosting space will remain long-term as the Scheme does not result in the loss of either building. The mitigation above has also been designed to reduce the disturbance impacts of the Scheme. As such, the Scheme is not considered to incur an effect on the Favourable Conservation Status (FCS) of any of the three roosting species and therefore compensation is not proposed.

The mitigation outlined is considered suitable to reduce the impact of the scheme during the construction phase.

Your comment and response to the above would be much appreciated.

Yours Faithfully,


Senior Ecologist

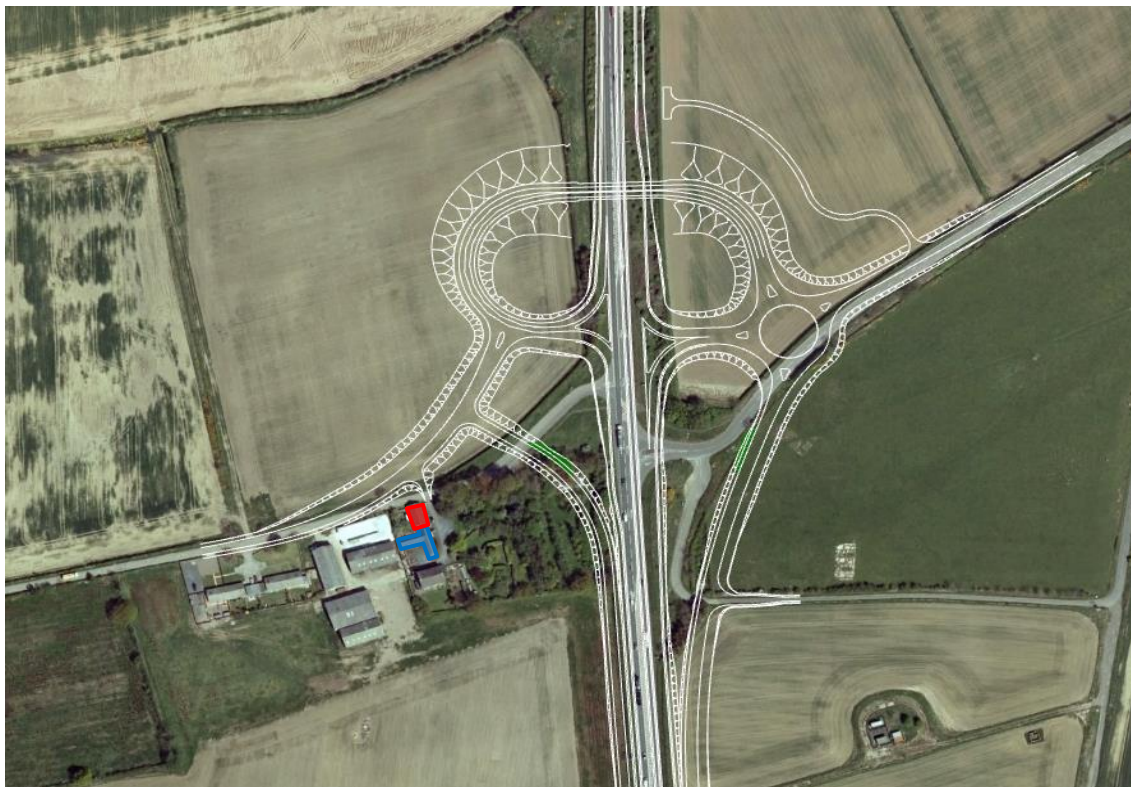


Figure 1. Location of buildings B101A (red) and B84A (blue) in proximity to the proposed West Moor Junction to the northeast.

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