

H2Teesside Project

Environmental Statement

Volume III – Appendices

Appendix 12C: Bat Survey Report

Document Reference: 6.4.20

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a) and 5(2)(l)



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12C.0 BAT SURVEY REPORT

12C.1 Introduction

Background

12C.1.1 This report details the approach and findings of the bat surveys undertaken within the Proposed Development Site and has been prepared by AECOM on behalf of H2 Teesside Ltd (hereafter referred to as The Applicant). Baseline data presented in this Appendix has been used to inform the assessment within Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2).

12C.1.2 The aim of the Proposed Development is to deliver up to 30% of the UK's 2030 target for hydrogen production as a part of the current clean energy goals. The survey areas considered in this report as a part of the Proposed Development Site are hereafter referred to as Survey Areas A, B and C.

12C.1.3 This technical appendix is supported by the following figures (Annex 1):

- Figure 12-C-1: The Proposed Development and Survey Areas;
- Figure 12-C-2: Survey Area A Transect Route and Static Deployment Location;
- Figure 12-C-3: Survey Area B Transect Route and Static Deployment Location;
- Figure 12-C-4: Survey Area C Transect Route and Static Deployment Location; and
- Figure 12-C-5: Desk Study Results.

12C.1.4 This report makes reference to the relevant wildlife legislation and planning policy, summarised in Annex 2 and is consistent with the requirements of *British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development*.

The Proposed Development

12C.1.5 The Proposed Development comprises the construction, operation (including maintenance where relevant) and decommissioning of 1.2-Gigawatt Thermal (GWth) Lower Heating Value (LHV) Carbon, Capture and Storage (CCS) enabled Hydrogen Production Facility (the 'Hydrogen Production Facility') located in Teesside, along with the pipeline infrastructure required to supply hydrogen (H₂) to off-takers (customers) and the necessary utility connections. Carbon captured by the Proposed Development will be transported by pipeline to the separately consented Northern Endurance Partnership infrastructure on the adjacent Net Zero Teesside site for high-pressure compression and offshore transport and underground storage. A description of the Proposed Development and Terms of Reference are provided in Chapter 4: Proposed Development (ES Volume I, EN070009/APP/6.2). Proposed Development's purpose is the conversion of methane, from the North Sea storage sites, into hydrogen (with carbon dioxide byproduct captured and stored), for the increased provision of hydrogen supplies as the UK aims to expand its hydrogen energy targets and decarbonise heavy industry and transport.

Scope of the Report

12C.1.6 The aims of the survey work undertaken, and the subsequent report presented are to:

- outline the legislation, planning policy and guidance relevant to bats;
- determine suitability of habitats within the Proposed Development Site to support bats; and
- report on the presence / likely absence of bats within the Proposed Development Site.

12C.2 Method

12C.2.1 The survey methods, including desk-based and field-based collection of data, have been undertaken with reference to current good practice guidelines (Natural England 2022; Collins, 2016; Collins, 2023). As detailed in the Extended Phase 1 Habitat Survey Report (refer to Appendix 12A: Phase 1 Habitat and Botanical Survey Report), the Main Site is considered of low suitability for roosting, foraging and commuting bats due to the presence of industrial lighting, low tree cover and a lack of linear features for commuting. Habitats within the connection corridors are also generally open and exposed, although areas of woodland, hedgerows, watercourses and waterbodies provide suitable habitat for foraging and commuting bats.

12C.2.2 Three areas within the Proposed Development Site were sampled to determine the assemblage of bat species using habitats within the Proposed Development Site and to allow a comparison of relative bat activity across the Proposed Development Site. The locations comprised of habitats adjacent to the Main Site (the Main Site could not be surveyed due to health and safety constraints), habitats within the Brinefields (which included grassland and waterbodies which had potential for use by foraging bats), and woodland habitat at Cowpen Bewley. The locations of the Survey Areas are shown in Annex 1 Figure 12-C-1. Habitats within each of the survey areas are described in Table 12C-1 below.

Table 12C-1: Summary of Habitats Within Survey Areas

SURVEY AREA	LOCATION AND HABITAT DESCRIPTION
A	<p>An area of dune grassland adjacent to the Proposed Development Site and area required for the Main Site. The areas adjacent to the dune grassland within the Proposed Development Site comprises of bare ground, semi-improved grassland, short ephemeral vegetation and areas of hardstanding.</p> <p>This Survey Area is located adjacent to the Proposed Development Site where there is likely to be permanent habitat loss.</p>

SURVEY AREA	LOCATION AND HABITAT DESCRIPTION
B	<p>An area of poor semi-improved grassland, semi-improved neutral grassland and secondary broadleaved woodland. The Survey Area also comprised of many bodies of standing water and small watercourses which make up the floodplain grazing marsh priority habitat.</p> <p>This Survey Area is located within a connection corridor where there is likely to be temporary habitat loss.</p>
C	<p>A broadleaved woodland plantation with clearings and glades and standing bodies of water.</p> <p>This Survey Area is located within a connection corridor where there is likely to be temporary habitat loss.</p>

12C.2.3 Survey Areas A, B and C were all surveyed once per season throughout 2023. Additionally, a SM4BAT-FS Ultrasonic Bat Detector (hereafter referred to as the static detector) was deployed in each of the Survey Areas, per season, for data collection on a minimum of five consecutive nights with reference to industry guidelines when the surveys were planned and carried out (Collins, 2016).

Desk Study

12C.2.4 A desk study was carried out as part of the Extended Phase 1 Habitat Survey in August 2022 and information received from both Environmental Records Information Centre North East (ERIC NE) and Industry Nature Conservation Association (INCA) were analysed prior to the undertaking of the bat activity transect and static monitoring surveys (refer to Appendix 12A: Phase 1 Habitat and Botanical Survey Report). The data from the desk study was used to inform the scoping of further requirements for protected species surveys.

12C.2.5 Data received from the ERIC NE in August 2022 included records of bat species and their roosts within 2 km of the Proposed Development Site (Annex 1, Figure 12-C-5) within the last ten years.

12C.2.6 Bat surveys were completed to inform the Net Zero Teesside Project (to the east of the Proposed Development Site), and previous reports were reviewed to inform the Ecological Baseline (Environmental Statement Appendix 12D: Bat Survey Report (bp, 2021) Surveys completed to inform the Net Zero Teesside project included bat emergence surveys, bat activity surveys (walked transects) and bat activity surveys (static monitoring) undertaken within the Redcar Steelworks and Coatham Sands areas in 2018 and 2020, respectively.

12C.2.7 All desk study data sources used to support this Appendix are summarised in Table 12C-2 and records from ERIC NE and INCA are mapped in Annex 1, Figure 12-C-5.

Table 12C-2: Desk Study Data Sources

INFORMATION SOURCE	DATE ACCESSED	RECORDS
Environmental Records and Information Centre (ERIC) North-East	August 2022	Notable species, roosts, and breeding site locations for several species, including bats, with 2 km of the Proposed Development Site within the last ten years.
Industry Nature Conservation Association (INCA)	July 2022	Records of notable species, roosts, and breeding site locations for several species, including bats across the Teesside industrial area.
Multi-Agency Geographic Information for the Countryside (MAGIC) website (DEFRA, 2023)	November 2022	European protected species licences within 2 km of the Proposed Development Site
Net Zero Teesside (NZT) Environmental Statement Appendix 12E: Bat Survey Report (2021)	October 2023	Findings from NZT bat surveys (2020)

Preliminary Roost Assessment of Trees and Structures

12C.2.8 Daytime preliminary roost assessments of trees, buildings and structures were conducted during the Phase 1 habitat surveys (refer to Appendix 12A: Phase 1 Habitat and Botanical Survey Report). Buildings and structures within the Main Site are expected to be demolished (under a separate consent) prior to commencement of works associated with the Proposed Development. Therefore, these demolition works do not form part of the Proposed Development and will not be assessed as part of the Environmental Impact Assessment (EIA).

12C.2.9 It is assumed that all other buildings and structures will be retained, therefore they have not been subject to detailed bat roost assessment surveys.

12C.2.10 Trees have been assessed for their suitability to support roosting bats and the results are summarised in this report. The following levels of suitability were assigned with reference to Table 4.1 in the Bat Surveys for Professional Ecologists Good Practice Guidelines (Collins, 2016):

- Negligible – “Negligible habitat features on site likely to be used by roosting bats and negligible habitat features on site likely to be used by commuting or foraging bats”;
- Low – “a structure (building) with one or more potential roost sites that could be used by individual bats opportunistically or 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 and habitat that could be used by small numbers of commuting or foraging bats i.e., suitable but isolated habitat”;

- Moderate – *“a structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitats but unlikely to support a roost of higher conservation status” and “a continuous habitat connected to the wider landscape that could be used by bats for commuting or foraging such as lines of trees and scrub, grassland or watercourses”;* and
- High – *“a structure or tree with one or more potential roost sites that are obviously suitable for use by large numbers of bats on a more regular basis and potentially for longer periods of time” and “continuous high quality habitat that is well connected to the wider landscape and likely to be used by regularly commuting and foraging bats such as rivers, valleys, streams, hedgerows, lines of trees and woodland edges”.*

Bat Activity Surveys

12C.2.11 Bat activity walking transects, and static monitoring surveys were undertaken within Areas A to C in Tables 2.2 to 2.4 summarise the survey dates, times and weather conditions.

12C.2.12 The surveys commenced at sunset approximately and continued for approximately 2 hours after sunset. The surveys were conducted during suitable weather conditions, i.e., dry, light wind, and temperature over 10 °C.

Table 12C-3: Survey Area A Activity Transect Survey Details

SEASON	DATE	SUNSET TIME	SURVEY START AND END	WEATHER CONDITIONS
Spring	14 June 2023	21:42	21:39-23:13	Cloud cover: 0, Wind: 0, Rain: 0 and Temperature 16 °C
Summer	8 August 2023	20:52	20:44-22:21	Cloud cover: 0, Wind: 2, Rain: 0 and Temperature 17 °C
Autumn	14 September 2023	19:25	19:10-20:55	Cloud cover: 2, Wind: 0, Rain: 0 and Temperature 17 °C

Table 12C-4: Survey Area B Activity Transect Survey Details

SEASON	DATE	SUNSET TIME	SURVEY START AND END	WEATHER CONDITIONS
Spring	1 June 2023	21:29	21:29 and 23:05	Cloud cover: 5, Wind: 2, Rain: 0 and Temperature: 11 °C
Summer	10 August 2023	20:48	20:33 and 22:49	Cloud cover: 0, Wind: 0, Rain: 0 and Temperature: 22 °C

SEASON	DATE	SUNSET TIME	SURVEY START AND END	WEATHER CONDITIONS
Autumn	12 September 2023	20:44	20:29 and 22:24	Cloud cover: 0, Wind: 0, Rain: 0 and Temperature 14 °C

Table 12C-5: Survey Area C Activity Transect Survey Details

SEASON	DATE	SUNSET TIME	SURVEY START AND END	WEATHER CONDITIONS
Spring	30 May 2023	21:27	21:27 and 23:18	Cloud cover: 5, Wind: 1, Rain: 0 and Temperature 12 °C
Summer	7 August 2023	20:54	20:48 and 22:18	Cloud cover: 0, Wind: 2, Rain: 0 and Temperature 17 °C
Autumn	13 September 2023	19:27	19:18 and 20:15	Cloud cover: 0, Wind: 0, Rain: 0 and Temperature: 15 °C

Static Detector Monitoring Survey

12C.2.13 Three static detectors were deployed in May, June, August and September 2023, one static detector per Survey Area. The static detectors were deployed in Survey Area A, B and C with the locations mapped in Annex 1, Figures 2 to 4. They were set up to constantly record bat activity from 30 minutes before sunset to 30 minutes after sunrise, for a minimum period of five consecutive nights. Tables 2.6, 2.7 and 2.8 show the survey months, the survey periods, number of nights of data collected and air temperature ranges for each of the Survey Areas.

Table 12C-6: Survey Area A Static Deployment Survey Period and Temperature Data

SURVEY SEASON	SURVEY PERIOD	NUMBER OF NIGHTS OF DATA	AIR TEMPERATURE RANGE
Spring	14 June to 20 June 2023	6	9 – 25 °C
Summer	8 August to 14 August 2023	6	9 – 26 °C
Autumn	14 September to 19 September 2023	5	10 – 20 °C

Table 12C-7: Survey Area B Static Deployment Survey Period and Temperature Data

SURVEY SEASON	SURVEY PERIOD	NUMBER OF NIGHTS OF DATA	AIR TEMPERATURE RANGE
Spring	1 June to 7 June 2023	6	4 – 17 °C

SURVEY SEASON	SURVEY PERIOD	NUMBER OF NIGHTS OF DATA	AIR TEMPERATURE RANGE
Summer	10 August to 15 August 2023	5	13 – 26 °C
Autumn	12 September to 19 September 2023	7	8 – 20 °C

Table 12C-8: Survey Area C Static Deployment Survey Period and Temperature Data

SURVEY SEASON	SURVEY PERIOD	NUMBER OF NIGHTS OF DATA	AIR TEMPERATURE RANGE
Spring	30 May to 7 June 2023	8	4 – 17 °C
Summer	7 August to 14 August 2023	7	7 – 26 °C
Autumn	13 September to 19 September 2023	6	6 – 20 °C

Static Monitoring Bat Sound Analysis and Bat Activity Indexes

12C.2.14 Bat calls were analysed using Analook W (version 4.5) to determine the number of bat passes and the species recorded during each period of monitoring. The static data was collected and analysed to determine the total number of bat passes for each species or species group (depending on the level of identification possible from the recordings made) and used to derive a metric; the Bat Activity Index (BAI) for the relative bat activity at each Survey Area. This analysis provides an indication of:

- seasonal variation in species activity and composition at each Survey Area;
- relative levels of bat activity across the Survey Area; and
- potential roosting sites, important foraging areas and commuting routes.

12C.2.15 BAI values for the Survey Areas are calculated by averaging the number of bat passes per hour over the number of nights per detector. This data was used to calculate the BAI for each location and gives a relative indication of bat abundance and activity at the Survey Areas per season.

12C.2.16 The term bat 'pass' is defined as a single static detector file made up of bat echolocation pulses of a single species, therefore a single bat pass may comprise recordings of one or more bats. It is not possible to separate the pulses out to identify the number of bats involved, so the number of bat passes recorded on static detectors cannot be reliably correlated to actual bat abundance. However, it does provide an indication of the level of bat activity at a site over a longer period than is recorded during bat activity transect surveys. No guidance is available on what constitutes low, moderate or high bat activity based on number of passes. As such a relative scale classifying passes per hour is used in this report, where:

-
- very low activity is less than 2 passes per hour (at each Survey Area);
 - low activity is 2 to 25 passes per hour;
 - moderate activity is 26 to 99 passes per hour; and
 - high activity is over 100 passes per hour.

12C.2.17 The BAI for each Survey Area has been calculated to give a level of activity for each of the three Survey Areas per season. This provides an individual activity level based on the Survey Area itself. All three sites can then be compared to give an indication of relative bat activity within the Proposed Development Site.

12C.3 Limitations

12C.3.1 Bat activity surveys were not completed within the Main Site as access was not permitted due to demolition works. Therefore, the three bat activity transects, and static monitoring surveys were undertaken on land to the north of the Proposed Development Site along a private access road that runs parallel with the dune grassland habitat known locally as Coatham Sands or South Gare Beach.

12C.3.2 The autumn activity transect survey in Survey Area C was finished almost 50 minutes early because of a health and safety risk. However, 50 minutes of the survey was completed and data from static monitoring surveys was still obtained throughout the survey seasons, giving information on the assemblage of bats present.

12C.3.3 A secure digital (SD) card installed inside of the static detector in Survey Area B for the spring static monitoring survey failed during the survey and therefore no data was collected for the duration of the survey period. The spring bat transect activity survey recorded low levels of bat activity, as did the summer and autumn surveys of this area. Therefore, the absence of this data is unlikely to change the overall assessment. The minimum number of nights required when undertaking static monitoring surveys is five consecutive nights. However, some of the Survey Areas were left in situ for a longer period and this was because of land access arrangements and/or other survey commitments to the Proposed Development. Therefore, the BAI analysis was done to the first five nights only for survey periods where data collection was more than five nights.

12C.3.4 It is acknowledged that the Bat Surveys for Professional Ecologists Good Practice Guidelines were revised, and a 4th edition published by the Bat Conservation Trust in September 2023. However, the surveys described in this report were scoped in 2022 and early 2023 and therefore were undertaken in accordance with the 3rd edition guidelines; they are considered robust in context with the framework of published guidance at the time they were undertaken.

12C.4 Results

Desk Study

12C.4.1 The desk study results from ERIC NE are mapped in Annex 1, Figure 12-C-5. The following bat species have been recorded within 2 km of the Proposed Development Site:

- Common pipistrelle (*Pipistrellus pipistrellus*);
- Soprano pipistrelle (*Pipistrellus pygmaeus*);
- Noctule Bat (*Nyctalus noctule*); and
- Daubenton's Bat (*Myotis daubentonii*).

12C.4.2 The following bat roost records were received from ERIC NE:

- a soprano pipistrelle roost near Kirkleatham;
- a common pipistrelle roost near Wilton Woods and the village of Billingham; and
- an unknown bat species roost near Grangetown.

12C.4.3 The following granted European Protected Species Mitigation Licences within 2 km of the Proposed Development Site:

- two common pipistrelle licences in Dormanstown, Redcar and Cleveland.

12C.4.4 The NZT bat report (bp, 2021) recorded only common pipistrelle in 2018 at the Power, Capture and Compression Site (approximate National Grid Reference (NGR) NZ 57058 25153) and three widespread bat species during the bat activity surveys in 2020 at Coatham Sands: common pipistrelle, soprano pipistrelle and noctule.

Preliminary Roost Assessment of Trees

12C.4.5 Preliminary roost assessments of trees were undertaken at Cowpen Bewley Woodland Park, at a broadleaved screening plantation adjacent to the A1185, at a line of trees adjacent to Seaton Carew Road and at the broadleaved woodland at the Brine fields.

12C.4.6 Three trees (Annex 6, Plate 12-1) were identified as having low suitability (Table 4.1 Collins, 2016) within the Proposed Development Site and are in a cluster at NGR NZ 47893 25047. The three trees were the largest trees within the Cowpen Bewley Woodland Park area within the Proposed Development Site. Only the eastern sides of the trees were accessible but with restricted view for assessment because of dense scrub. The trees were given a precautionary low suitability because of their age and size but with no features seen from the ground.

12C.4.7 All other trees within the Proposed Development Site at Cowpen Bewley Woodland Park were all assessed as having negligible suitability (Annex 6, Plate 12-2) for roosting bats.

12C.4.8 A line of trees (approximate NGR NZ 50637 23953) were assessed along Seaton Carew road within the Proposed Development Site (Annex 6, Plate 12-3 and Plate

12-4) three trees were assessed as having low suitability because the features present were assessed as only being able to support a few individual bats and that the features do not provide enough space, shelter or protection overall for a roost of high conservation status or as a long-term roost (Annex 6, Plates 12-5, 12-6 and 12-7). The three low suitability trees were:

- two white poplar (*Populus alba*) trees located at approximate NGR NZ 50627 23976 and NZ 50627 23957; and
- one willow species (*Salix sp.*) located at approximate NGR NZ 50627 23940.

12C.4.9 The other trees in the line of trees were all assessed as negligible suitability.

12C.4.10 Trees at the broadleaved woodland northeast of the Brine fields (approximate NGR NZ 51450 24994) (Annex 6, Plate 12-8) within the Proposed Development Site were all assessed as having negligible suitability to support roosting bats.

Field surveys

Bat Activity Transect Surveys – Survey Area A

12C.4.11 Figure 12-C-2 figure within Annex 1 shows the transect route walked, with summaries below. Tables 12-C-12 to 12-C-14 within Annex 3 show the survey forms from the transect surveys.

Spring Transect Activity Survey- 14 June 2023

12C.4.12 Common pipistrelle and soprano pipistrelle were the only species recorded during the spring activity survey and the first bat pass recorded was at 23:00 by a common pipistrelle.

12C.4.13 There was a total of five bat passes over the approximate three-hour survey period with an overall average of 1.66 bat passes, which gives a BAI of very low levels of activity.

Summer Transect Activity Survey- 8 August 2023

12C.4.14 Common pipistrelle was the only species recorded during the summer activity survey, foraging around a group of scattered trees and was first recorded at 22:03

12C.4.15 There was a total of four bat passes over the approximate three-hour survey period with an overall average of 1.3 bat passes, which gives a BAI of very low levels of activity.

Autumn Transect Activity Survey- 14 September 2023

12C.4.16 Common pipistrelle and noctule bat were recorded during the autumn activity survey with the common pipistrelle being the most frequently recorded species and the first recorded at 20:11.

12C.4.17 There was a total of 27 bat passes over the approximate three-hour survey period with an overall average of 9 bat passes, which gives a BAI of low levels of activity.

Static Monitoring Survey – Survey Area A

- 12C.4.18 The static monitoring survey results at Survey Area A in 2023 are presented in Annex 4, Table 12-C-21 and the raw data from the static detectors is tabulated in Annex 5, Table 12-C-24.
- 12C.4.19 The static detector deployed at Survey Area A in June (spring), August (summer) and September (autumn) 2023 recorded at least four species of bat: common pipistrelle, *Myotis sp.*, noctule and Nathusius' pipistrelle (*Pipistrellus nathusii*) bat.
- 12C.4.20 Common pipistrelle was the most frequently recorded species recorded in all three seasons with a low number of passes from the other three species.
- 12C.4.21 The average amount of bat passes in the spring was 2.85 and, in the summer 4.32. This gives both seasons a BAI of low levels of activity. The autumn average amount of bat passes was 1.33, giving the autumn a BAI of very low levels of activity. Overall, the average bat passes across all the three seasons was 2.83 giving an overall BAI of low levels of activity.

Bat Activity Transect Surveys – Survey Area B

- 12C.4.22 Figure 12-C-3 within Annex 1, shows the transect route walked, with summaries below. Tables 12-C-15 to 12-C-17 6 within Annex 3 show the survey forms from the transect surveys.

Spring Transect Activity Survey- 1 June 2023

- 12C.4.23 Three species of bat were recorded during the spring transect survey, they were the common pipistrelle, noctule bat and an unknown species of *Myotis* genus bat. The noctule bat was the first bat pass recorded at 21:14 and the most frequently recorded species, either foraging over the standing bodies of water within the Survey Area or commuting over the Survey Area. All the bat passes recorded during the survey were located at the standing bodies of water located within Survey Area B near OS NGR NZ 51440 24511. No bat passes were heard at any other location within Survey Area B.
- 12C.4.24 There was a total of 49 bat passes over the approximate three-hour survey period with an overall average of 16.33 bat passes, which gives a BAI of low levels of activity.

Summer Transect Activity Survey- 10 August 2023

- 12C.4.25 No species of bat were recorded during the summer transect survey and therefore, the overall BAI was very low.

Autumn Transect Activity Survey- 12 September 2023

- 12C.4.26 No species of bat were recorded during the autumn transect survey and therefore, the overall BAI was very low.

Static Monitoring Survey – Survey Area B

- 12C.4.27 The static monitoring survey results at Survey Area B in 2023 are presented in Annex 4, Table 12C-22 and the raw data from the static detector is tabulated in Annex 5, Table 12C-25.
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12C.4.28 The static detector deployed at Survey Area B in August (summer) and September (autumn) 2023 recorded at least seven species of bat: common pipistrelle, soprano pipistrelle, *Myotis sp.*, noctule bat, Nathusius' pipistrelle, Leisler's bat (*Nyctalus leisleri*) and brown long-eared bat (*Plecotus auritus*).

12C.4.29 Common pipistrelle was the most frequently recorded species in August and September with a slight increase in common pipistrelle activity in September. All other species were mostly singular passes over the course of the survey periods.

12C.4.30 The average amount of bat passes in the summer was 5.59 and in the autumn 7.89, giving both seasons a BAI of low levels of activity. Overall, the average bat passes across both seasons was 6.74, giving an overall BAI of low levels of activity.

Bat Activity Transect Surveys – Survey Area C

12C.4.31 Figure 12-C-4 within Annex 1 shows the transect route walked and the location where the static detector was deployed, with summaries below. Tables 12-C-18 to 12-C-20 within Annex 3 show the survey forms from the transect surveys.

Spring Transect Activity Survey- 30 May 2023

12C.4.32 Three species of bat were recorded during the spring transect survey and they were the common pipistrelle, soprano pipistrelle and noctule bat. The first bat pass was recorded at 21:56 by a common pipistrelle. The most bat passes were seen throughout the duration of the survey. The highest levels of activity during this survey were around a pond (NGR NZ 48060 25140) within the woodland and along connected linear walkways (NGR NZ 47965 25109 and NZ 48018 25168) through the woodland that the bats were using to forage and commute. The most abundant and frequently recorded species was the common pipistrelle with the occasional pass by the soprano pipistrelle and noctule. The noctule bats were observed commuting across the top of the woodland and not using the woodland to forage in. The noctule bats were heading in the direction of more open areas of riparian habitat in a south-easterly direction from Survey Area C.

12C.4.33 There were a total of 102 bat passes over the approximate three-hour survey period with an overall average of 34 bat passes, which gives a BAI of moderate levels of activity.

Summer Transect Activity Survey- 7 August 2023

12C.4.34 Two species of bat were recorded during the summer transect survey and they were the common pipistrelle and an unknown species of *myotis sp.* The first bat pass was at 21:30 by a common pipistrelle and the highest levels of activity during this survey was around the same pond in the spring woodland clearing and along the same woodland walkways that the bats were using to forage and commute. The most abundant and frequently recorded species was the common pipistrelle and only two passes of an unknown *myotis sp.*

12C.4.35 There was a total of 50 bat passes over the approximate three-hour survey period with an overall average of 16.66 bat passes, which gives a BAI of low levels of activity.

Autumn Transect Activity Survey- 13 September 2023

12C.4.36 No species of bat were recorded during the autumn transect survey and therefore, the overall BAI was very low.

Static Monitoring Survey – Survey Area A

12C.4.37 The static monitoring survey results at Survey Area C in 2023 are presented in Annex 4, Table 12-C-21 and the raw data from the static monitoring surveys are tabulated in Annex 5, Tables 12-C-24.

12C.4.38 The static detector deployed at Survey Area C in May and June (spring), August (summer) and September (autumn) 2023 recorded at least six species of bat: common pipistrelle, soprano pipistrelle, *Myotis sp.*, noctule bat, Nathusius' pipistrelle and Leisler's bat.

12C.4.39 Common pipistrelle was the most frequently recorded species in all three seasons with the highest common pipistrelle activity in the summer survey period and lower activity levels in June and September.

12C.4.40 The average amount of bat passes in spring per night was 12.27 and, in the summer, it was 22.95. This gives both seasons a BAI of low levels of activity. Only common pipistrelle and noctule bats were recorded over the spring survey period and all six species recorded over the summer survey period.

12C.4.41 The average amount of bat passes in the autumn was 1.8, giving an overall BAI for the autumn period of very low activity levels. The common pipistrelle was the most frequently recorded species during the autumn survey.

12C.4.42 The overall average amount of bat passes for Survey Area C was 12.07 across all the survey seasons, giving an overall BAI of low activity levels.

12C.5 Conclusions

12C.5.1 The activity surveys at Survey Area C found only low levels of activity overall for all bats recorded, with the common pipistrelle the most abundant species. Common pipistrelle is a widespread and unthreatened species (Bat Conservation Trust, 2023) and the levels of bat activity recorded indicate a bat population within the zone of influence of no more than local nature conservation importance.

12C.5.2 The activity surveys at Survey Areas A and B found very low levels of overall activity for all bats recorded, with the noctule the most abundant at Survey Area B and the common pipistrelle at Survey Area A. Similarly, to the common pipistrelle, the noctule bat is a widespread and unthreatened species (Bat Conservation Trust, 2023) and the levels of bat activity recorded indicate a bat population within the zone of influence of no more than local nature conservation importance.

12C.5.3 The preliminary roost assessments found only small numbers of trees with low suitability to support roosting bats within the Proposed Development Site. These trees are unlikely to provide enough space, shelter and/or protection to be used on a regular basis or by larger numbers of bats within the Proposed Development Site.

12C.6 References

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- Tees Valley Nature Partnership (2012). *Tees Valley Local Biodiversity Species*.

12C.7 ANNEX 1: Figures

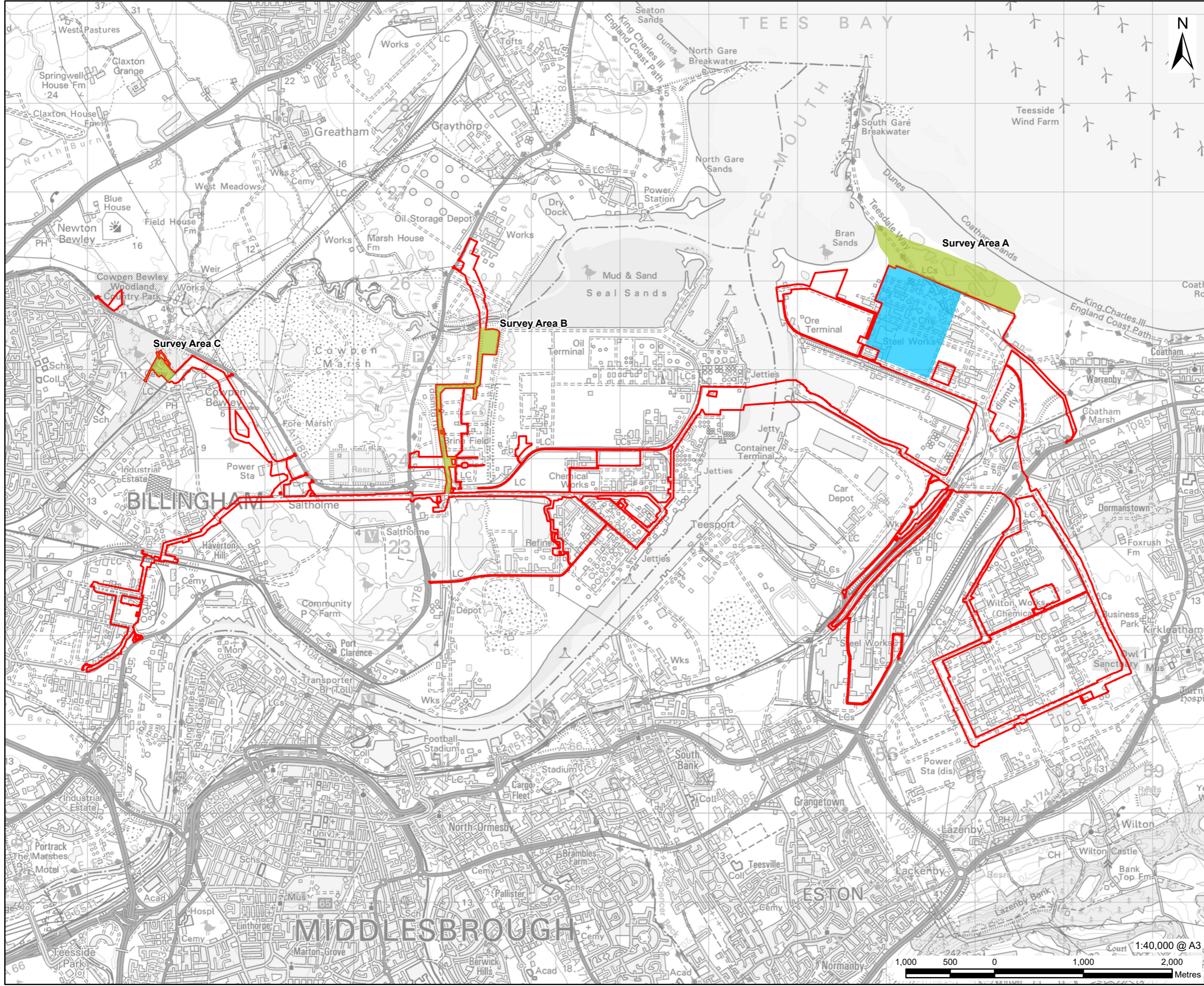
Figure 12-C-1: The Proposed Development Site and Bat Survey Areas

Figure 12-C-2: Survey Area A Transect and Static Location

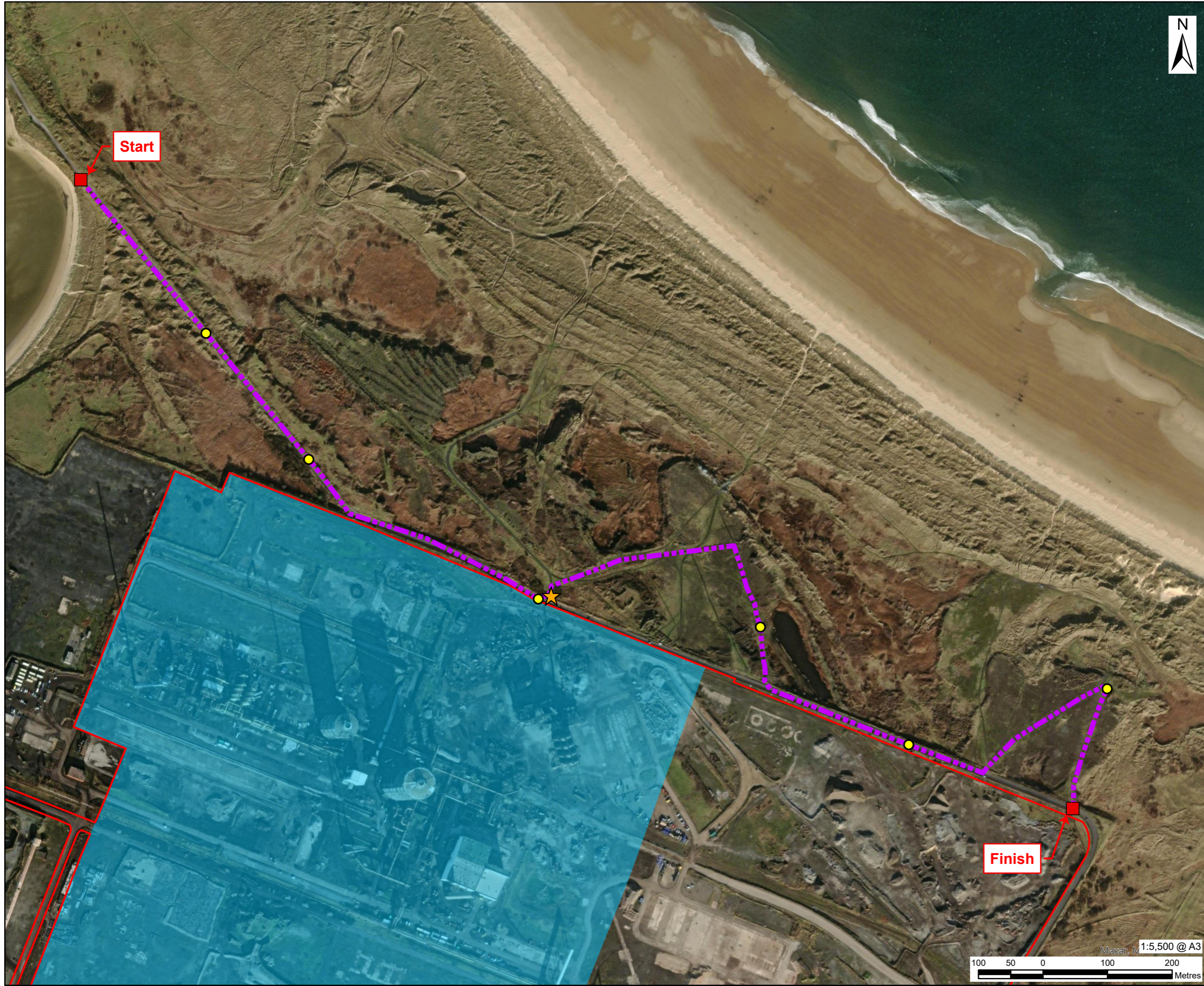
Figure 12-C-3: Survey Area B Transect and Static Location

Figure 12-C-4: Survey Area C Transect and Static Location

Figure 12-C-5: Desk Study Results



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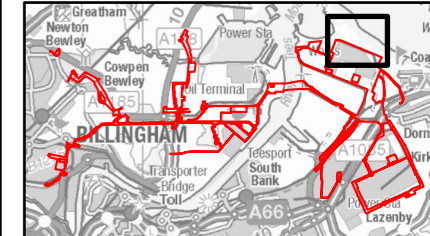
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- LEGEND**
- Proposed Development Site
 - Main Site
 - ★ Automatic Static Bat Detector Location
 - Start/Finish
 - 3 Min Stop
 - Bat Survey Transect



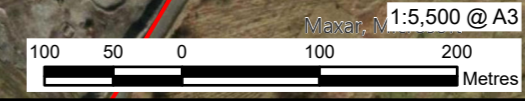
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Environmental Statement

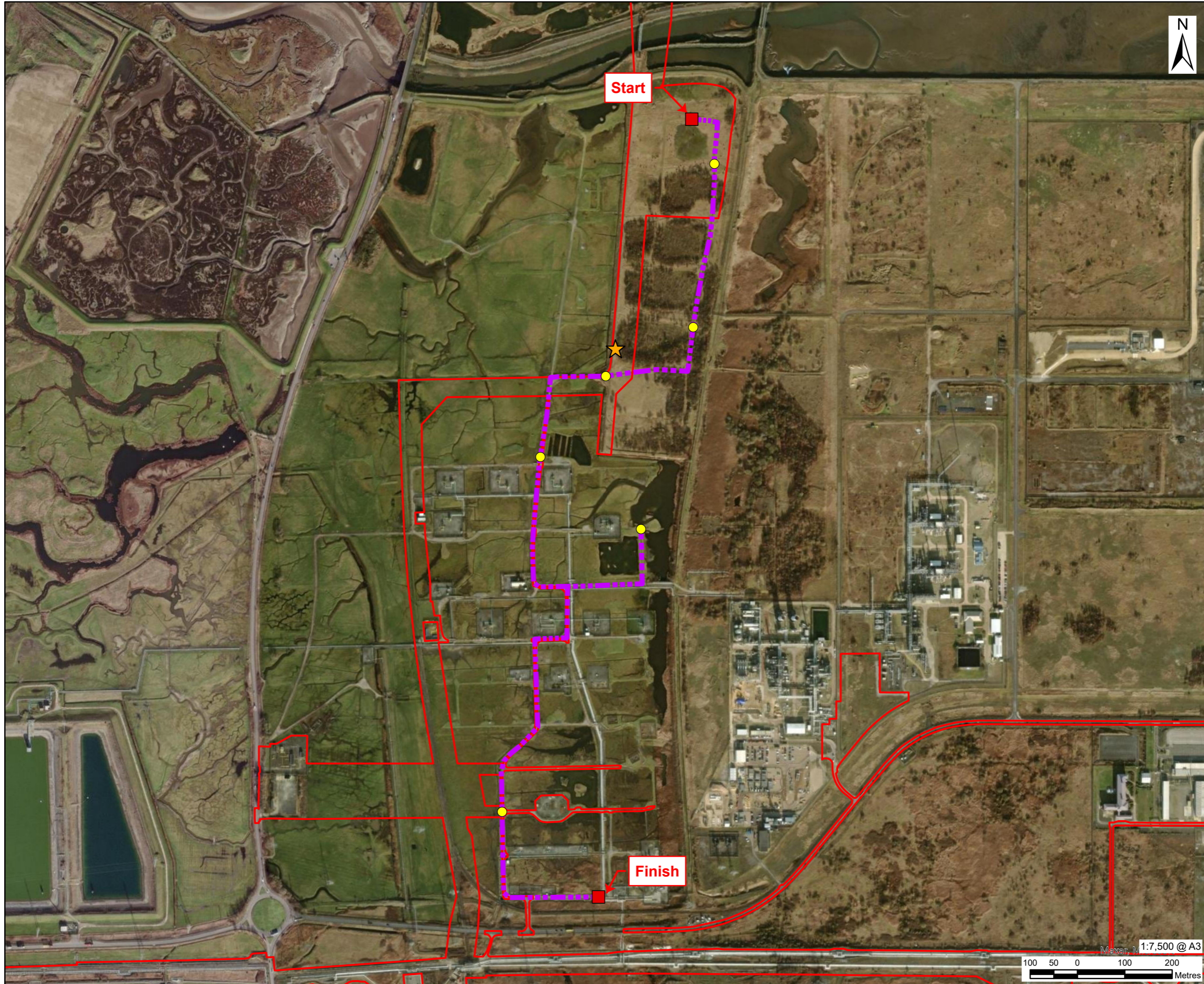
PROJECT NUMBER
60689030

FIGURE TITLE
Survey Area A Transect and Static Location

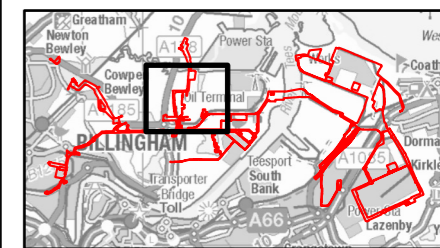
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Figure 12-C-2



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- LEGEND**
- Proposed Development Site
 - ★ Automated Static Bat Detector
 - Start/Finish
 - 3 Min Stop
 - Bat Survey Transect



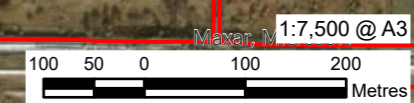
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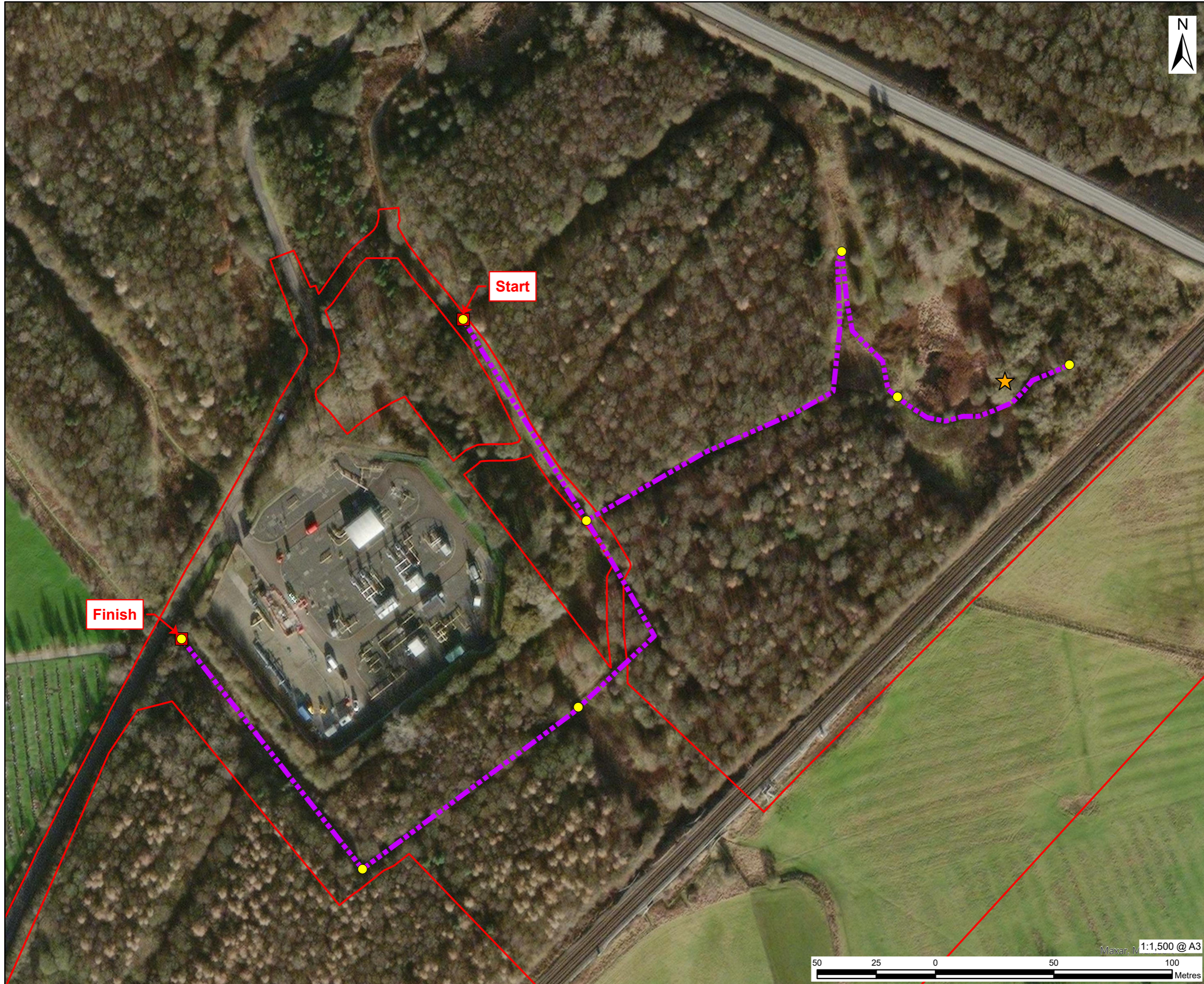
PROJECT NUMBER
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FIGURE TITLE
Survey Area B Transect and Static Location

FIGURE NUMBER
Figure 12-C-3



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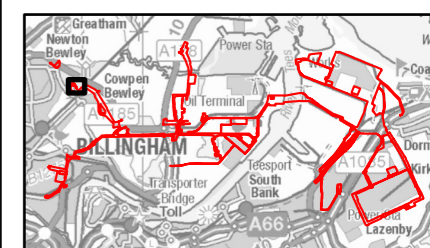
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- LEGEND**
- Proposed Development Site
 - ★ Automated Static Bat Detector Location
 - Start/Finish
 - 3 Min Stop
 - Bat Survey Transect



NOTES

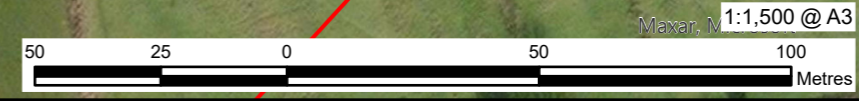
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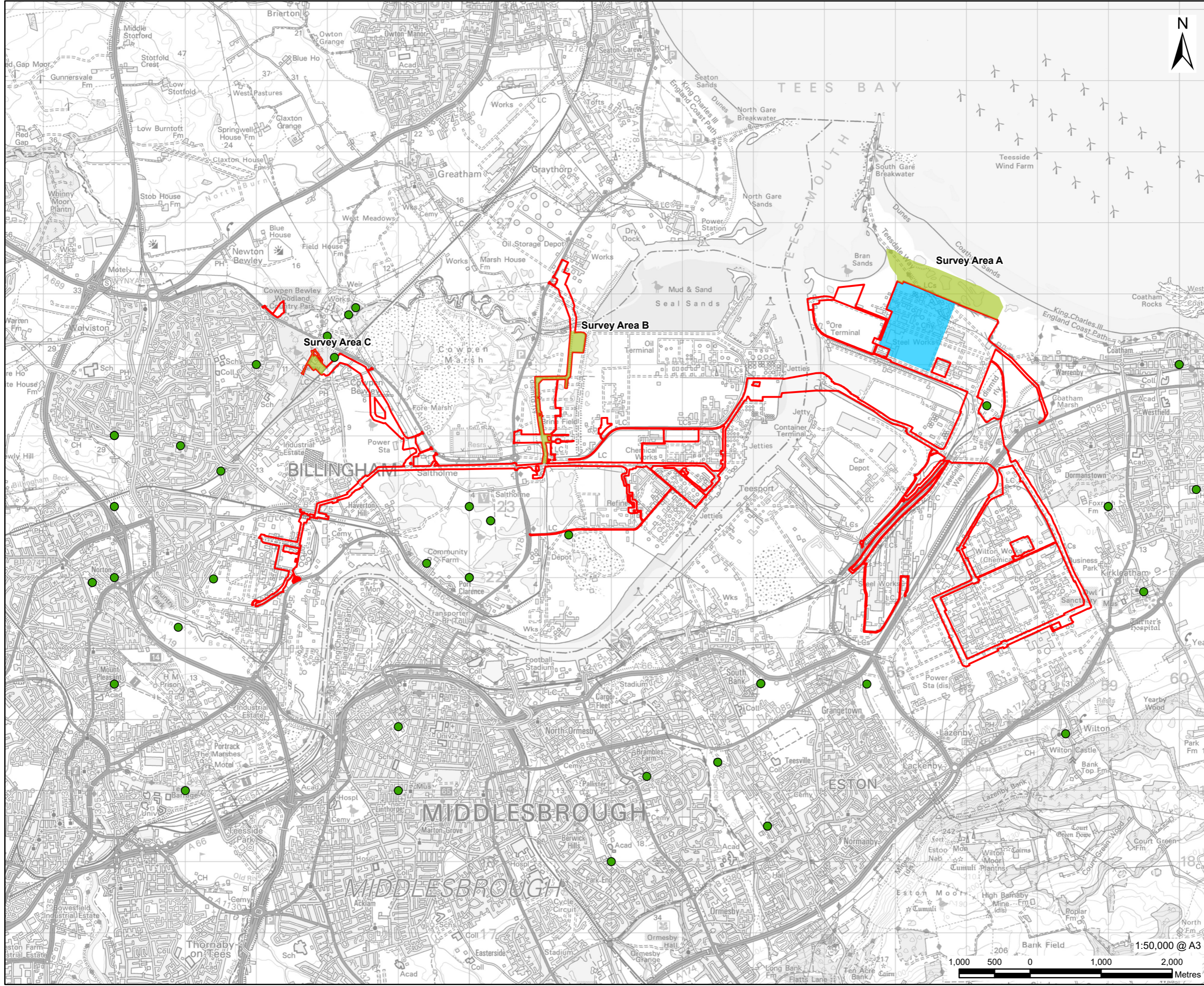
PROJECT NUMBER
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FIGURE TITLE
Survey Area C Transect and Static Location

FIGURE NUMBER
Figure 12-C-4



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- LEGEND**
- Proposed Development Site
 - Main Site
 - Bat Survey Area
 - Environmental Records Information Centre North East (From 2012 to 2021)

NOTES

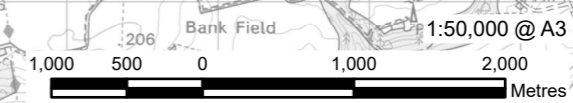
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ISSUE PURPOSE
Environmental Statement

PROJECT NUMBER
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FIGURE TITLE
Desk Study Results

FIGURE NUMBER
Figure 12-C-5



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12C.8 ANNEX 2: Relevant Legislation, Planning Policy, and Guidance

12C.8.1 A summary of the relevant international, national, and local legislation, planning policy, and guidance is set out below.

Legislation

12C.8.2 The following legislation is relevant to this report:

- Wildlife and Countryside Act 1981 (as amended) (WCA) (HM Government, 1981); and
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (HM Government, 2019).

12C.8.3 Nine of the 18 species of bat found in the UK are found in the Tees Valley, including: common pipistrelle, soprano pipistrelle, Daubenton's, noctule, Natterer's, brown long-eared, whiskered (*Myotis mystacinus*), Brandt's (*Myotis brandtii*), and Nathusius's pipistrelle. All 18 bat species in the UK are protected under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and Schedule 5 of the WCA 1981 (as amended). The relevant aspects of this legislation when taken together, results in a level of protection that prohibits the intentional, deliberate, or reckless:

- Killing, injuring, capture or disturbance of bats; and
- Damaging, destroying, or obstructing any places used by bats for the purposes of breeding, sheltering or protection.

12C.8.4 All UK bat species are included as a European protected species under the Annex IV of Council Directive 92/43/EEC (HM Government, 1992). This offers similar protection for both bats and their habitats.

12C.8.5 Natural England (2022) has also published guidance for Local Planning Authorities (LPAs) in determining planning decisions, for proposals which have the potential to affect bats alongside other protected species. The guidance sets out responsibilities and minimum requirements for bat surveys and potential mitigation.

NERC Act 2006

12C.8.6 The NERC Act (2006), as amended, put an obligation on public bodies to have regard, so far as is consistent with the proper exercise of their functions, to the purpose of conserving and enhancing biodiversity. Under the terms of the NERC Act, conserving biodiversity includes restoring or enhancing populations and/or habitats. The local planning authority (LPA) or other determining authority must therefore consider the effects of planning applications upon biodiversity and how it can be mitigated for or enhanced.

12C.8.7 A list of species and habitats 'of principal importance for the purpose of conserving biodiversity' is published under Section 41 of the NERC Act (2006). 7 species of UK bats are listed as a species of principal importance in England under the NERC Act, 2006, including; Bechstein's bats (*Myotis bechsteinii*), Barbastelle bats (*Barbastella barbastellus*), brown long-ear bats, greater horseshoe bats (*Rhinolophus*

ferrumequinum), lesser horseshoe bats (*Rhinolophus hipposideros*), soprano pipistrelles, and noctules. Section 40 of the NERC requires that local planning authorities have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Local Biodiversity Action Plans (LBAPs)

- 12C.8.8 The Tees Valley Biodiversity Action Plan (Tees Valley Nature Partnership, 2012) is the relevant LBAP for the defined Study Area (refer to Appendix 12A: Phase 1 Habitat and Botanical Survey Report) and was updated in 2012. The LBAP outlines biodiversity conservation objectives within the region and identifies priorities for action for priority habitats, species, locally important wildlife and sites.
- 12C.8.9 All bats except the common pipistrelle are LBAP species and "*nine of the 16 species of bat that breed in Britain are found in the Tees Valley. Listed very approximately from what are likely to be the commonest (or most widespread) to the rarest in the Tees Valley these are: Common pipistrelle, Daubenton's, brown long-eared, noctule, Natterer's Myotis nattereri, soprano pipistrelle, whiskered Myotis mystacinus, Brandt's Myotis brandtii, Nathusius' pipistrelle. The Common pipistrelle probably makes up at least 90% of the total number of bats in the Tees Valley and other than Daubenton's the other bats are likely to be quite rare locally.*" (Tees Valley Nature Partnership, 2012).

12C.9 ANNEX 3: Bat Activity Transect Survey Forms

Table 12C-9: Survey Area A Spring Activity Transect Data - June

Project Name	H2Teesside		Surveyors	SR, NM	
Survey Location	Survey Area A		Rain (0-5)	0	
Date	14 June 2023		Wind (0-7)	0	
Start	21:39		Cloud Cover (0-5)	0	
Sunset	21:42		Temperature	16	
Finish	23:13		Weather description	Clear, dry and warm	
zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
1	11:00	Pipi	1	Heard not seen	Commuting
2	11:03	Pipi	1		
3	11:06	Ppyg	1		
4	11:07	Pipi	1		
5	11:12	Pipi	1		

*Species abbreviations: Nyno= Noctule, Pipi= Common soprano, Pina= Nathusius', Mysp= Myotis sp.

Table 12C-10: Survey Area A Summer Activity Transect Data - August

Project Name	H2Teesside		Surveyors	JW, BC	
Survey Location	Survey Area A		Rain (0-5)	0	
Date	8 August 2023		Wind (0-7)	2	
Start	20:44		Cloud Cover (0-5)	0	
Sunset	20:52		Temperature °C	17	
Finish	22:21		Weather description	Cool, calm, dry	
zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
1	22:03	Pipi	1	Seen	Foraging over trees by side of road

Table 12C-11: Survey Area A Autumn Transect Data - September

Project Name	H2Teesside		Surveyors		JW and BC
Survey Location	Survey Area A		Rain (0-5)		0
Date	14 September 2023		Wind (0-7)		0
Start	19:10		Cloud Cover (0-5)		2
Sunset	19:25		Temperature		17
Finish	20:55		Weather description		Few clouds passing, warm and dry
zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
1	20:11	Pipi	1	Seen	Foraging
2	20:20	Pipi	1	Seen	Foraging
3	20:21	Pipi	1	Seen	Foraging
4	20:22	Pipi	1	Seen	Foraging
5	20:22	Pipi	1	Seen	Foraging
6	20:22	Pipi	1	Seen	Foraging
7	20:22	Pipi	1	Seen	Foraging
8	20:24	Pipi	1	Seen	Foraging
9	20:33	Pipi	1	Seen	Foraging
10	20:33	Pipi	1	Seen	Foraging
11	20:34	Pipi	1	Seen	Foraging
12	20:11	Pipi	1	Seen	Foraging
13	20:20	Pipi	1	Seen	Foraging
14	20:21	Pipi	1	Seen	Foraging
15	20:22	Pipi	1	Seen	Foraging
16	20:22	Pipi	1	Seen	Foraging
17	21:11:40	Pipi	1	Seen	Foraging
18	21:14:25	Pipi	1	Seen	Foraging
19	21:14:05	Pipi	1	Seen	Foraging
20	21:14:35	Pipi	1	Seen	Foraging

21	21:14:45	Pipi	1	Seen	Foraging
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*Species abbreviations: Pipi = Common pipistrelle,

Table 12C-12: Survey Area B Spring Activity Transect Data - June

Project Name	H2Teesside		Surveyors	SR and NM	
Survey Location	Sabic		Rain (0-5)	0	
Date	1 June 2023		Wind (0-7)	2	
Start	21:29		Cloud Cover (0-5)	5	
Sunset	21:29		Temperature	11	
Finish	23:05		Weather description	Cool, overcast and dry	
zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
LP.1	21:33 – 21:36	None			
LP.2	21:48 – 21:52	None			
LP.3	21:56 – 21:59	None			
LP.4	22:06 – 22:09	None			
A	21:14	Nyno	1	H&S	Commuting east
B	21:18	Nyno	2	H&S	Commuting
C	22:20	Nyno	2	H&S	Foraging
LP5	22:26 – 22:31	Nyno	2	H&S	Foraging
D	22:47	Nyno	1	H&S	Commuting
LP6	22:52	None			
Finish	23:01	None			

*Species abbreviations: Nyno= Noctule, Pipi= Common soprano, Pina= Nathusius', Mysp= Myotis sp.

Table 12C-13: Survey Area B Summer Activity Transect Data - August

Project Name	H2Teesside		Surveyors		JW and BC
Survey Location	Survey Area B		Rain (0-5)		0
Date	10 August 2023		Wind (0-7)		0
Start	20:33		Cloud Cover (0-5)		0
Sunset	20:48		Temperature		22
Finish	22:49		Weather description		Clear, calm, humid and warm
zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
No bats					

*Species abbreviations: Nyno= Noctule, Pipi= Common soprano, Pina= Nathusius', Mysp= Myotis sp.

Table 12C-14: Survey Area B Autumn Activity Transect Data - September

Project Name	H2Teesside		Surveyors		JW and BC
Survey Location	Survey Area B		Rain (0-5)		0
Date	12 September 2023		Wind (0-7)		0
Start	20:29		Cloud Cover (0-5)		0
Sunset	20:44		Temperature		14
Finish	22:24		Weather description		Cool, clear and dry
zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
No bats					

*Species abbreviations: Nyno= Noctule, Pipi= Common soprano, Pina= Nathusius', Mysp= Myotis sp.

Table 12C-15: Survey Area C Spring Activity Transect Data - May

Project Name	H2Teesside		Surveyors		JW & NM
Survey Location	Survey Area C		Rain (0-5)		0
Date	30 May 2023		Wind (0-7)		1
Start	21:12		Cloud Cover (0-5)		5

Sunset	21:27	Temperature	12		
Finish	22:57	Weather description	Mild, cloudy, no rain, humid		
zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
1	21:56	Pipi	1	Seen	Foraging over scrub near pond
2	21:58	Nyno	1	Seen	Foraging, seen flying south
3	22:00	Pipi	1	Seen	Flying over tall ruderal
4	22:01	Pipi	1	Seen	Flying over tall ruderal
5	22:02	Pipi	1	Heard not seen	Flying down path
6	22:04	Pipi	1	Heard not seen	Flying down path
7	22:11	Pipi	1	Seen	Flying down path
8	22:17	Pipi	1	Seen	Flying along road and into woods
9	22:18	Pipi	1	Heard not seen	Foraging
10	22:29	Pipi	1	Heard not seen	Foraging/ commuting
11	22:32	Pipi	1	Heard not seen	Foraging/ commuting
12	22:36	Pipi	1	Seen	Foraging up and down path West to East
13	22:28	Pipi	1	Seen	Foraging along path
14	22:39	Pipi	1	Heard not seen	Foraging
15	22:41	Nyno	1	Heard not seen	Foraging
16	22:41	Pipi	1	Heard not seen	Foraging

17	22:43	Pipi	1	Heard not seen	Foraging
18	22:44	Pipi	1	Heard not seen	Foraging
19	22:45	Pipi	1	Heard not seen	Foraging
20	22:47	Nyno	2	Seen	Foraging/ social flying North
21	22:48	Pipi	1	Heard not seen	Foraging/ commuting
22	22:49	Pipi	1	Heard not seen	Foraging
23	22:53	Nyno	1	Heard not seen	Commuting/foraging
24	22:55	Pipi	1	Seen	Foraging over pond
25	23:01	Pipi	1	Heard not seen	Foraging
26	23:03	Pipi	1	Heard not seen	Foraging
27	23:04	Pipi	2	Seen	Foraging along path on woodland edge
28	23:08	Pipi	1	Heard not seen	Foraging
29	23:09	Nyno	1	Heard not seen	Foraging
30	23:09	Pipi	1	Heard not seen	Foraging
31	23:12	Pipi	2	Seen	Foraging along path into woodland

*Species abbreviations: Nyno= Noctule, Pipi= Common pipistrelle

Table 12C-16: Survey Area C Summer Activity Transect Data - August

Project Name	H2Teesside	Surveyors	JW & BC
Survey Location	Survey Area C	Rain (0-5)	0
Date	7 August 2023	Wind (0-7)	2

Start	20:45	Cloud Cover (0-5)	0		
Sunset	20:54	Temperature	17		
Finish	22:25	Weather description	Clear, warm and dry		
zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
1	21:30	Pipi	1	Along road	Commuting
2	21:32	Pipi	1	Along road	Commuting
3	21:34	Pipi	2	Along road	Commuting
4	21:42	Pipi	1	Along potential pipeline area	Foraging
5	21:47	Pipy	1	Along walkway	Foraging
6	21:52	Pipi	1	Over pond	Foraging
7	21:53	Pipi	1	Over pond	Foraging
8	21:56	Pipi	1	Over pond	Foraging
9	21:57	Pipi	2	Along walkway	Foraging
10	22:01	Pipy	1	Along walkway	Foraging
11	22:05	Pipy	1	Along walkway	Foraging
12	22:08	Pipi	1	Not seen	Foraging
13	22:12	Pipi	1	Along road	Foraging
14	22:13	Pipi	1	Along road	Foraging
15	22:17	Pipi	1	Along road	Foraging

*Species abbreviations: Nyno= Noctule, Pipi= Common pipistrelle, Pipy = Soprano pipistrelle, Pina= Nathusius' pipistrelle, Mysp= Myotis *sp.*

Table 12C-17: Survey Area C Autumn Activity Transect Data - September

Project Name	H2Teesside	Surveyors	NM and DC
Survey Location	Survey Area C	Rain (0-5)	0
Date	13 September 2023	Wind (0-7)	0
Start	19:18	Cloud Cover (0-5)	0
Sunset	19:27	Temperature	15
Finish	20:15	Weather description	Clear, calm and dry

zSpot Count/Loc.	Time	Species*	No. of bats	Observation	Description of behaviour
None					

*Species abbreviations: Nyno= Noctule, Pipi= Common soprano, Pina= Nathusius, Mysp= Myotis *sp.*

12C.10 ANNEX 4: Static Monitoring Survey Results

Table 12C-18: Survey Area A Static Monitoring Survey Results and Averages over the First Five Nights

SEASON	DATE	APPROX HOURS OF RECORDING	COMMON PIPISTRELLE	SOPRANO PIPISTRELLE	MYOTIS SP.	NOCTULE	NATHUSIUS PIPISTRELLE	LEISLER'S BAT	TOTAL PASSES PER NIGHT (AVERAGE PER HOUR)	OVERALL AVERAGE BAT ACTIVITY INDEX (5 NIGHTS)
Spring	1 June	2	1		1		2 (1)	2.85		11.31
	2 June	4	12			2	14 (3.5)		104 (13)	
	3 June	4	9				9 (2.25)		114 (14.25)	
	4 June	4	7	1	7	3	18 (4.5)		103 (12.87)	
	5 June	6	17			1	18 (3)		42 (5.25)	
	6 June	5	15			4	19		62	
	7 June	4	9			1	10		40	
Summer	8 August	4	15		1		16 (4)	4.32	r	22.95
	9 August	11	73				73 (6.63)		167 (20.87)	
	10 August	11	78		1		79 (7.18)		152 (19)	
	11 August	11	41	1			42 (3.81)	4	179 (22.37)	
	12 August	11					0 (0)	2	183 (22.87)	

SEASON	DATE	APPROX HOURS OF RECORDING	COMMON PIPISTRELLE	SOPRANO PIPISTRELLE	MYOTIS SP.	NOCTULE	NATHUSIUS PIPISTRELLE	LEISLER'S BAT	TOTAL PASSES PER NIGHT (AVERAGE PER HOUR)	OVERALL AVERAGE BAT ACTIVITY INDEX (5 NIGHTS)
	13 August	11	26				26		130	
	14 August	6	6				6	1	134	
	14-September	4	10				10 (2.5)	1.33	36	
Autumn	15 September	13	52				52 (4)		18 (3.6)	1.82
	16 September	14	1				1 (0.07)		18 (2)	
	17 September	8	1				1 (0.12)		10 (0.9)	
	18 September	12	0				0 (0)		3 (0.5)	
	19 September	8					0		22 (2)	
			317	2	10	6				
TOTAL PASSES (PER SPECIES)			1330	2	1		1			

Table 12C-19: Survey Area B Static Monitoring Survey Results and Averages over the First Five Nights

SEASON	DATE	APPROX HOURS OF RECORDING	COMMON PIPISTRELLE	SOPRANO PIPISTRELLE	MYOTIS SP.	NOCTULE	NATHUSIUS PIPISTRELLE	LEISLER'S BAT	BROWN LONGE-EARED BAT	TOTAL PASSES PER NIGHT (AVERAGE PER HOUR)	OVERALL AVERAGE BAT ACTIVITY INDEX
Summer	10 August	3	18		1	4			1	27 (9)	5.59
	11 August	10	55			3				68 (6.8)	
	12 August	6	7		3	1				17 (2.83)	
	13 August	6	30		1	5	1	1		44 (7.33)	
	14 August	10	8		1	1				20 (2)	
	15 August	10	64	4		9				77	
	16 August	5	33		1					34	
Autumn	12 September	3	33							33 (11)	7.89
	13 September	8	44	1	1		1			47 (5.87)	
	14 September	9	128		1	1	2			132 (14.66)	

SEASON	DATE	APPROX HOURS OF RECORDING	COMMON PIPISTRELLE	SOPRANO PIPISTRELLE	MYOTIS SP.	NOCTULE	NATHUSIUS PIPISTRELLE	LEISLER'S BAT	BROWN LONGE-EARED BAT	TOTAL PASSES PER NIGHT (AVERAGE PER HOUR)	OVERALL AVERAGE BAT ACTIVITY INDEX
	15 September	12	66	1	2	3	7			79 (6.58)	
	16 September	11	11		1		3			15 (1.36)	
	17 September	3	4							4	
TOTAL PASSES (PER SPECIES)			501	6	12	27	14	1	1		

Table 12C-20: Survey Area C Static Monitoring Survey Results and Averages over the First Five Nights

SEASON	DATE	APPROX HOURS OF RECORDING	COMMON PIPISTRELLE	MYOTIS SP.	NOCTULE	NATHUSIUS PIPISTRELLE	TOTAL PASSES (PER NIGHT)	OVERALL MEAN BAT ACTIVITY INDEX
30 May 31 May 1 June 2 June 3 June 4 June 5 June	3	33			15			48 (16)
	8	81			23			104 (13)
	8	86			28			114 (14.25)
	8	72			31			103 (12.87)
	8	26			16			42 (5.25)
	8	49			13			62
	8	49			13			40
	4	38			2			
7 August 8 August 9 August 10 August 11 August 12 August 13 August	3	80	2	1	3			89 (29.66)
	8	148	1	3	7			167 (20.87)
	8	110	3	10	20	1		152 (19)
	8	137	2	3	22	3	4	179 (22.37)
	8	157		7	8	1	2	183 (22.87)
	8	157		7	8	1	2	130
	8	119			1	2		134
	8	119		2	3	1	1	
14 August	4	24		4	2	2		36

SEASON	DATE	APPROX HOURS OF RECORDING	COMMON PIPISTRELLE	MYOTIS SP.	NOCTULE	NATHUSIUS PIPISTRELLE	TOTAL PASSES (PER NIGHT)	OVERALL MEAN BAT ACTIVITY INDEX
13 September 14 September 15 September 16 September 17 September	5	14			4			18 (3.6)
	9	11		6		1		18 (2)
	11	8			2			10 (0.9)
	6	1		2				3 (0.5)
	11	17		4	1			22 (2)
18 September			6					

12C.11 ANNEX 5: Static Monitoring Survey Raw Data

Table 12C-21: Survey Area A Static Monitoring Raw Data

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:00-21:00	21:00-22:00	22:00-23:00	23:00-00:00	00:00-01:00	01:00-02:00	02:00-03:00	03:00-04:00	04:00-05:00	05:00-06:00	06:00-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR	
Spring	01-Jun-23	21:29	9-14	Pipi	22:08				1										04:42	1	2		
				Nyno					1								22:40			1			
	02-Jun-23	21:30	4-15	Pipi	22:45				5	7										04:41	12		15
				Nyno							1						00:23		1				
				Pina							2										2		
	03-Jun-23	21:31	9-15	Pipi	22:54				1	7	1							00:25	04:40	9	9		
	04-Jun-23	21:32	9-15	Pipi					1	4	2							00:15	04:39	7			

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:00-21:00	21:00-22:00	22:00-23:00	23:00-00:00	00:00-01:00	01:00-02:00	02:00-03:00	03:00-04:00	04:00-05:00	05:00-06:00	06:00-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR		
				Nyno	22:16				7											7	18			
				Pina						3														3
				Mysp								1												1
	05-Jun-23	21:33	10-14	Pipi					1	8	1	2	1	4						04:39	17	18		
				Pina						1														1
	Summer	08-Aug-23	20:53	10-19	Pipi					15									22:58	05:34	15	16		
Nyno					21:53					1														1
09-Aug-23		20:51	17-23	Pipi	21:36			7	40	26								23:35	05:36	73	73			

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:00-21:00	21:00-22:00	22:00-23:00	23:00-00:00	00:00-01:00	01:00-02:00	02:00-03:00	03:00-04:00	04:00-05:00	05:00-06:00	06:00-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR	
	10-Aug-23	20:49	18-25	Pipi	21:37			1	20	16	14	9	5	9	3	1		05:23	05:38	78	79		
				Nyno																			1
	11-Aug-23	20:47	14-22	Pipi	20:56		1	1	16	21	1		1						05:39	41	42		
				Mysp									1										1
	12-Aug-23	20:45	17-20	N/A	N/A														N/A	05:41	N/A		N/A
	Autumn	14-Sep-23	19:27	11-15	Pipi	20:56		1	5	2	2								23:55	06:40	10		10
15-Sep-23		19:24	8-13	Pipi	19:52	3	19	9	14		1	2		2	2			04:25	06:42	52	52		
16-Sep-23		19:22	3-12	Pipi	00:48						1							00:48	06:44	1	1		

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:00-21:00	21:00-22:00	22:00-23:00	23:00-00:00	00:00-01:00	01:00-02:00	02:00-03:00	03:00-04:00	04:00-05:00	05:00-06:00	06:00-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR
	17-Sep-23	19:19	9-14	Pipi	21:12			1										21:12	06:45	1	1	
	18-Sep-23	19:17	10-14	N/A	N/A													N/A	06:47	N/A	N/A	

*Species abbreviations: Pipi = Common pipistrelle, Nyno = Noctule bat, Mysp = Myotis species, Pina = Nathusius bat

Table 12C-22: Survey Area B Static Monitoring Raw Data

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR	
Spring																							
Summer	10-Aug-23			Pipi				10	8											18	24		
				Nyno			1	2														3	
				Mysp					1													1	

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR
				Nyle					1											1		
				Plau					1											1		
	11-Aug-23			Pipi			1	21	13	7	2	7	3	1				04:12		55		
				Nyno	21:33		2	1												3		
	12-Aug-23			Pipi						2	3	1	1							7		
				Nyno			1													1		
				Mysp							1	2								3		
	13-Aug-23			Pipi			5	19	4	2										30		

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR
				Nyno				5														
				Mysp					1													
				Pina							1											
				Nyle					1													
	14-Aug-23			Pipi				1	1	1	1		1	3					03:51	8	10	
			Nyno	21:47				1												1		
			Mysp										1									1
	15-Aug-23			Pipi				5	14	20	1	1	1	14	8					63		

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR
				Nyno				2	6	1										8		
				Pipy									4							4		
Autumn																						

* Species abbreviations: Pipi = Common pipistrelle, Myotis species, Nyno = Noctule bat, Pipy = Soprano pipistrelle, Plau = Brown long-eared bat, Nyle = Leisler's bat

Table 12C-23: Survey Area C Static Monitoring Raw Data

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR
Spring	30-May-23			Pipi				3	23	8								23:57		34	50	
				Nyno	21:57			5	9	2												

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR			
	31-May-23			Pipi	21:36			1	11	7	7	2	9	43	4					84					
				Nyno				6	4	2	1			9	4			04:15		26					
	01-Jun-23			Pipi	21:48					1	8	10	3	7	14	45						88	117		
				Nyno						12	11				6			1	06:08		29				
	02-Jun-23			Pipi							12	6	8	10	3	32	1				04:08		72	103	
				Nyno	21:48					11						6	14					31			
	03-Jun-23			Pipi							16	8		1		1							26	42	
				Nyno	21:55						5	11									02:44		16		

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR		
Summer	07-Aug-23			Pipi	21:25			36	28	17								23:44		81	88			
				Nyno				3												3				
				Mysp						1												1		
				Pipy					1	1	1											3		
	08-Aug-23				Pipi	21:13			68	33	18	6	10	6	8	6			04:34		155	173		
					Nyno				5		2										7			
					Mysp				1				2								3			
					Pipy	21:13			1	4	1		1								7			

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR
				Noid									1							1		
	09-Aug-23			Pipi				62	10	9	5	9	2	8	8					113	151	
				Nyno				15	4	3										22		
				Mysp					1	6	2			1						10		
				Pipy						4										4		
				Noid				1												1		
				Pina									1							1		
	10-Aug-23			Pipi				46	9	5	6	10	7	12	40	9				147		

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR
				Nyno			1	11	5	1	3		2	4						27		
				Mysp				1	1	2		1								5		
				Pipy				1		1				1						3		
				Pina					2				1							3		
				Nyle				1		4										5		
	11-Aug-23			Pipi				53	16	10	6	6	13	14	42					160	181	
			Nyno					3	2	1		1			1					8		
			Mysp							2	1	2	2									7

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR		
				Pipy				1					1	1						3				
				Pina					1											1				
				Nyle							2									2				
Autumn	13-Sep-23			Pipi		4	3	6	1									23:53		14	18			
				Nyno	19:30	4																4		
	14-Sep-23				Pipi			1	3	2	1		3	1	1				04:49		12	21		
					Mysp				3					1	2								6	
					Pipy												1				04:49		1	

SEASON	DATE	SUNSET	MIN-MAX TEMP °C	SPECIES	FIRST BAT PASS	19:00-20:00	20:01-21:00	21:01-22:00	22:01-23:00	23:01-00:00	00:01-01:00	01:01-02:00	02:01-03:00	03:01-04:00	04:01-05:00	05:01-06:00	06:01-07:00	LAST BAT PASS	SUNRISE	SPECIES TOTAL (PER NIGHT)	BAT TOTAL (PER NIGHT)	BAI PER HOUR	
				Pina									2							2			
	15-Sep-23			Pipi			1	1	2	1	1			2				03:40		8	10		
				Nyno	19:43	2														2			
	16-Sep-23			Pipi	20:18		1													1	3		
				Mysp							1			1				04:18		2			
	17-Sep-23			Pipi			2	5	9	1										17	22		
				Nyno	19:39	1														1			
				Mysp							1			1	2			04:42		4			

*Abbreviations- Pipi, Nyno

12C.12 ANNEX 6: Plates



Plate 12C-1: Two Aspen and a willow sp. with low bat roost suitability



Plate 12C-2: Cowpen Bewley Woodland Park broadleaved plantation with negligible bat roost suitability



Plate 12C-3: Line of trees along Seaton Carew road



Plate 12C-4: Line of trees along Seaton Carew road



Plate 12C-5: White poplar with low bat roost suitability



Plate 12C-6: White poplar with low bat roost suitability



Plate 12C-7: Willow sp. with low bat roost suitability



Plate 12C-8: Secondary broadleaved woodland with low bat roost suitability