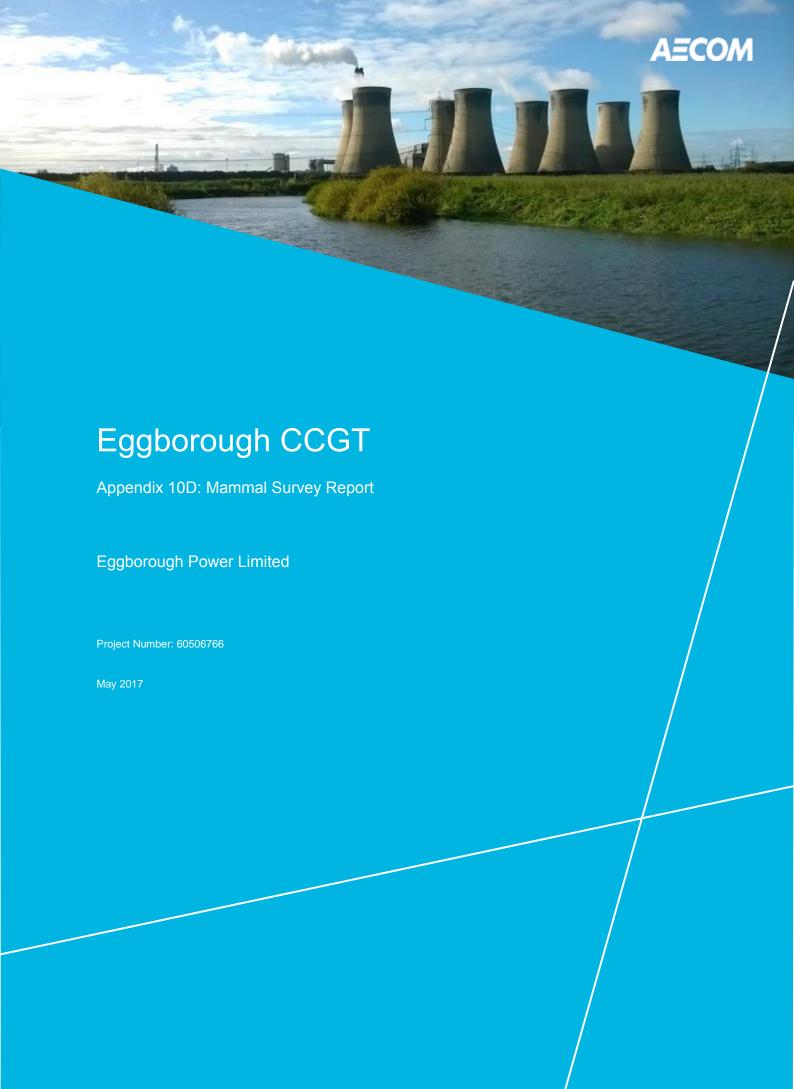


Appendix 10D: Mammal Survey Report



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1. Introduction

1.1 Background

This report presents the approach and findings of surveys undertaken for protected mammals to inform the ecological impact assessment (EcIA) of the Proposed Development. The terms of reference used in this report to describe the different elements of the Proposed Development are consistent with those defined within the main chapters of the Environmental Statement (ES).

Suitable habitat for bats, badger (*Meles meles*), otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) was identified in association with the Site during the Preliminary Ecological Appraisal (PEA) (see Appendix 10C of the ES Volume III) and further surveys for these species are required to define the ecological baseline relevant to the Proposed Development.

1.2 Scope of Works

The following scope of survey work was identified by the PEA:

- preliminary bat roost assessment of all buildings, other built structures and trees that will be impacted (directly or indirectly) by the Proposed Development to determine their suitability for roosting bats;
- bat emergence and/or re-entry surveys of any buildings, structures or trees identified during the Preliminary Roost Assessment as having the potential to support roosting bats;
- bat activity surveys (walked transects and automated detector surveys) of suitable habitats within
 the existing coal-fired power station to identify the bat species present and the levels and
 patterns of bat activity;
- badger survey of all suitable habitat within 50 m of the Site boundary; and
- otter and water vole survey of the River Aire, Ings and Tetherings Drain and Hensall Dyke within the Site.

1.3 Legislation and Planning Policy

1.3.1 Bats

The Wildlife and Countryside Act 1981 (as amended) Schedule 5 (animals) confers protection to all species of bat and their roosts (whether occupied or not). This Act has been amended several times by Orders and by primary legislation (e.g. Countryside and Rights of Way Act 2000; Natural Environment and Rural Communities Act 2006).

In addition, the Conservation of Habitats and Species Regulations 2010 (as amended, the 'Habitats Regulations') transposes the European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (the 'Habitats Directive') into domestic legislation, and places an obligation on the UK to protect bats and their habitats, and requires appropriate monitoring of bat populations to be undertaken.

All species of bat in the UK are afforded protection under the Habitats Regulations and it is an offence to intentionally kill, injure or disturb bats, to damage/ destroy a place used by bats for shelter (regardless of whether bats are in occupation at the time), or intentionally or recklessly obstruct access to a bat roost. Works that are considered to result in disturbance to bats and/ or bat roosts can apply for derogation to the Habitats Regulations through the European Protected Species Mitigation (EPSM) licensing scheme regulated by Natural England.

1.3.2 Badger

Badgers are protected under the Protection of Badgers Act 1992 making it an offence (with exceptions) to:

wilfully take, injure or kill a badger;

- cruelly treat a badger;
- interfere with a badger sett;
- sell or possess live badgers; and
- mark or ring badgers.

Works that affect badger setts are subject to restrictions within a 30 m radius to prevent damage or disturbance to the sett. Any works within 30 m may be subject to licensing by Natural England, depending on the extent and duration of the impact. Licences are only issued for sett closure between July and November inclusive for welfare purposes, to avoid destruction of setts containing breeding females with dependent cubs.

1.3.3 Otter

Otter receives full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended). This legislation, when taken together, results in a level of protection that prohibits the intentional, deliberate or reckless:

- killing, injuring, taking or disturbance of otters;
- damaging, destroying or obstructing any place used by otters for the purposes of breeding, sheltering or protection; and
- selling and/or advertising for sale an otter or any part thereof.

Otter is a species of principal importance for nature conservation in England in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of the same Act requires that local and regional authorities have regard to the conservation of biodiversity in England, when carrying out their normal functions.

1.3.4 Water Vole

Water vole receives full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended); as such it is illegal to intentionally or recklessly:

- capture, kill or injure water voles;
- damage, destroy or block access to their places of shelter or protection;
- disturb them in a place of shelter or protection; and
- possess, sell, control or transport live or dead water voles or parts of them.

Water vole is a species of principal importance for nature conservation in England in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of the same Act requires that local and regional authorities have regard to the conservation of biodiversity in England, when carrying out their normal functions.

1.4 Desk Study

A desk study was undertaken as part of the PEA (see Appendix 10C of ES Volume III). Historical records of protected species within a 1 km radius of the Site were obtained from the local ecological records centre (North and East Yorkshire Ecological Data Centre (NEYEDC)) and North Yorkshire Bat Group (NYBG).

In addition, the Multi-Agency Geographical Information for the Countryside (MAGIC) website was consulted on 8th November 2016 to determine whether any European Protected Species Mitigation (EPSM) Licences have been issued by Natural England for bats or otters within 1 km of the Site, to supplement other desk study data.

Ecological records reported in the Site's Integrated Land Management Plan (ILMP) were also used to supplement data collected during surveys (ADAS Property Services Ltd, 2001); although now somewhat out-of-date, these data provide useful background information on the historical ecological baseline of the Site.

Bats, otter and water vole are listed on the Selby Biodiversity Action Plan (BAP). A number of actions are presented in the Selby BAP to achieve Selby District Council's objective to increase the population and geographical ranges of these species.

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2. Methodology

2.1 Bat Survey

2.1.1 Preliminary Roost Assessment

All buildings, structures and trees that could potentially be directly or indirectly impacted by the Proposed Development were appraised for their potential to support roosting bats by a suitably experienced and licensed AECOM ecologist¹. This followed current best practice survey methodology (Collins, 2016) and comprised a ground based visual inspection using close focussing binoculars and a high-powered torch for features of potential value to roosting bats, such as sheltered crevices, cavities and voids, as well as any evidence of bat presence such as bat droppings. A comprehensive list of suitable features in buildings and trees is provided in Table A1 in Annex A.

Based on the results of the visual inspections, buildings and trees were categorised as having negligible, low, moderate or high suitability for roosting bats, in accordance with the criteria detailed in Table A2 in Annex A. This categorisation informs the level of further survey effort that may be required to establish the presence or likely absence of roosting bats, as set out in best practice guidance (Collins, 2016).

Preliminary roost assessments of all relevant buildings and the majority of trees associated within the Site were completed in July 2016. A small number of trees within the Proposed Gas Connection area were not surveyed until November 2016 due to access restrictions.

2.1.2 Bat Emergence / Re-entry Surveys

As detailed in Section 3.1.2, all buildings to be potentially impacted by the Proposed Development were appraised as having negligible suitability for roosting bats and all trees to be potentially affected were appraised as having negligible or low suitability. Therefore, in accordance with best practice guidance (Collins, 2016), it was not necessary to undertake any further surveys of these features to determine whether they support roosting bats.

2.1.3 Bat Activity Surveys

The habitats associated with the existing coal-fired power station that will be potentially impacted by the Proposed Development were appraised to have moderate suitability for foraging and commuting bats in accordance with criteria set out in best practice guidance (Collins, 2016). Habitats of value to bats are generally restricted to the periphery of the existing coal-fired power station, and include plantation woodland on screening bunds and a large water storage reservoir (lagoon). Land use surrounding the existing coal-fired power station is predominantly arable cropping, but hedgerows along field boundaries provide some habitat connectivity to the wider area.

In accordance with best practice guidance (Collins, 2016), a combination of walked transect surveys and automated detector monitoring was used to characterise bat activity within the existing coal-fired power station.

As justified in Section 5.3.2 of the PEA report (Appendix 10C of ES Volume III), it was not considered necessary to undertake bat activity surveys within land to be crossed by the Proposed Gas and Cooling Water Connections as this comprises intensively managed arable land of low value to bats and there is a low likelihood of adverse effects as a result of the Proposed Development given the nature of the works in these areas of the Site.

2.1.3.1 Walked Transect Surveys

Walked transect surveys were undertaken on a monthly basis within the period July to September 2016. July and September transects were undertaken at dusk and the August survey comprised a

¹ This did not include all buildings and trees within the Site boundary as many of these will not be impacted by the Proposed Development. The majority of operational buildings within the existing coal-fired power station and trees within areas of screening plantation woodland will be retained and protected during construction.

dusk and pre-dawn survey within 24 hours. Each dusk survey commenced at around sunset and lasted for at least two hours; this coincides with peak activity periods as bats emerge and disperse from their roosts. The pre-dawn survey commenced two hours before sunrise and finished at around sunrise to coincide with peak activity as bats return to roost sites.

The surveys involved walking a defined transect route that provided representative coverage of the habitats of potential value to bats (see Figure 10D.3 in Annex B). The transect route was walked at a steady speed and bat activity was continuously monitored using a handheld frequency division bat detector (Batbox Duet) connected to a recording device (Edirol recorder). An SM2Bat+ automated detector was also used to make high quality recordings (WAV format) of all bats detected. Several stopping points were included along the transect route (see Figure 10D.3 in Annex B), where surveyors monitored bat activity for a period of five minutes at fixed locations where direct impacts on habitats are likely during construction of the Proposed Development. The transect route was reversed between survey visits in order to sample different areas of the site at different times of night, which reduces the likelihood that bat activity at a particular location and time will be overlooked.

An additional dusk bat activity survey was undertaken in August on the lagoon in isolation, following the identification of high levels of bat foraging activity in association with this habitat during the July transect. The aim was to provide supplementary information on bat usage of the lagoon and to contextualise the results of automated monitoring undertaken at this location (see Section 2.1.3.2). The survey did not follow a set transect route; instead surveyors moved around in response to bat activity.

Identification of bats during activity surveys was later verified by analysing bat call recordings using BatSound v4.2 software. Reference was also made to bat call identification guidance (Russ, 2012) where necessary.

All survey visits were completed during suitable weather conditions, i.e no rain or strong wind and with temperatures above 10°C at sunset. The dates and weather conditions during each of the activity surveys are provided in Table 2.1 below.

Table 2.1: Bat Activity Survey Dates and Weather Conditions

Month	Dates	Dusk / dawn	Temperature (start & end)	Weather
July	27 th July 2016	Dusk	17-16°C	Dry, warm
August	11 th August 2016	Dusk (lagoon only)	18-18°C	Mild, dry, light wind. Previous evening heavy rain showers
	22 nd August 2016	Dusk	19-18°C	Clear sky, mild with light breeze. Rainy and unsettled previous few days.
	23 rd August 2016	Dawn	19-19°C	Overcast, very light drizzle at times
September	6 th September 2016	Dusk	24-23°C	Cloudy, warm

2.1.3.2 Automated Detector Surveys

Automated detector surveys were undertaken at the following two locations within the existing coal-fired power station, where there will be direct impacts on habitats as a result of the Proposed Development. The locations are shown on Figure 10D.3 in Annex B):

- Location A: Plantation at the southern boundary of a block of plantation woodland that will need to be removed to accommodate the Proposed Power Plant Site; and
- Location B: Lagoon on the screening bunds around the lagoon, which will be infilled and removed to accommodate the Proposed Construction Laydown area. The position of the automated detector was altered on each survey to monitor each side of the lagoon (north, south, east and west).

Automated monitoring was undertaken for a period of at least five nights per month during July, August and September 2016 at both locations. An additional period of monitoring was undertaken at the lagoon in August in tandem with the additional bat activity survey completed at this location (see 2.1.3.1).

Data was collected using SM2 Bat+ automated bat detectors. These were set to start recording half an hour before sunset and to stop recording half an hour after sunrise. Bat calls were recorded in Zero Crossing (ZC) format.

Typically the automated detectors were left to run for longer than required to compensate for any nights when conditions were suboptimal for bats e.g. cold, windy or wet. Data recorded on these nights was excluded from further analysis. The survey dates and associated environmental conditions are summarised in Table 2.2 (minimum and maximum temperatures are logged automatically by the device whilst it is activated, so a range of temperatures for each monitoring period is provided).

Table 2.2: Automated Detector Survey Dates and Temperatures

Month	Survey locations	Dates	Temperature (min and max)
July	Location A: Plantation Location B: Lagoon South	27-31 July 2016	13-21 °C
August	Location A: Plantation Location B: Lagoon North	11-15 August 2016	9-22 °C
August	Location B: Lagoon West	25-30 August 2016	10-19 °C
September	Location A: Plantation Location B: Lagoon East	15-19 September 2016	9-27 °C

Bat call recordings made by automated detectors were later analysed using AnalookW software. This provides information on the species present at each location, as well as the number and timing of bat passes. A bat pass is defined as a single automated detector file made up of bat pulses of a single species; this can be one bat in a file or many bats in a file. The number of passes recorded on automated detectors gives an indication of the level of bat activity at a given location, but this cannot be reliably correlated to actual bat abundance because there is no observational context. Data derived from automated detectors needs to be contextualised using information gathered during manned bat activity surveys.

For the purposes of analysis, bat activity has been quantified using the average (mean) number of bat passes per hour of night (between sunset and sunrise times). There is currently no published guidance on the categorisation of bat activity levels based on the number of bat passes. The following scale has been used in this report:

- Very Low Activity = mean of <2 passes per hour (at each survey location);
- Low Activity = mean of 2 to 25 passes per hour;
- Moderate Activity = mean of 26 to 99 passes per hour; and
- High Activity = mean of over 100 passes per hour.

2.2 Badger Survey

A badger survey was undertaken by a suitably experienced AECOM ecologist on 3rd November 2016. This was focussed on the larger blocks of plantation woodland within 50 m of the Site boundary that were not thoroughly inspected as part of the Phase 1 Habitat survey. In accordance with standard guidance (Harris et al., 1989), a systematic search was made for the following badger field signs:

- setts comprising either single isolated holes or a series of holes, likely to be interconnected underground;
- runs paths between setts or leading to feeding areas;

- foraging activity snuffle holes (small scrapes) where badgers have searched for insects, earthworms and plant tubers:
- latrines badgers usually deposit faeces in characteristic excavated pits, concentrations of which are typically found at home range boundaries;
- footprints in soft substrates;
- scratching posts near any setts normally at the base of tree trunks; and
- badger hairs caught on fences.

Badgers use several different types of sett, as defined in Table 2.3. This classification allows a measure of importance to be assigned to setts. For example, a disused outlier sett would not be considered as important as a main breeding sett if development were to disturb them.

Table 2.3: Badger sett classification

Sett type	Definition
Main	Several holes with large spoil heaps and obvious paths emanating from and between sett entrances.
Annexe	Normally less than 150 m from main sett, comprising several holes. May not be in use all the time, even if main sett is very active.
Subsidiary	Usually at least 50 m from main sett with no obvious paths connecting to other setts. May only be used intermittently.
Outlier	Little spoil outside holes. No obvious paths connecting to other setts and only used sporadically. May be used by foxes and rabbits.

2.3 Otter and Water Vole Survey

A survey of the River Aire and Ings and Tetherings Drain within the Site boundary (and up to 50 m beyond) for signs of otter and water vole was undertaken on 14th October 2016 by suitably experienced AECOM ecologists. Changes to the Site boundary in early 2017 brought Hensall Dyke within the Site and this was surveyed for otter and water vole on 2nd May 2017. A repeat survey of Ings and Tetherings Drain was also completed at the same time. No other habitats suitable for these species were identified within the Site during the Phase 1 Habitat survey. The Proposed Gas and Cooling Water Connections will cross numerous drainage ditches within arable farmland to the north of the existing coal-fired power station, but these were all dry at the time of survey and are likely to be dry for significant periods of the year, which makes the presence of otter and water vole very unlikely.

The surveys were undertaken in accordance with best practice guidance for otter survey (Crawford, 2010 and Chanin, 2003) and water vole survey (Strachan and Moorhouse, 2011) during suitable weather conditions (dry, mild). There were no periods of heavy rainfall leading up to the survey that could have washed field signs (such as droppings) away.

The survey involved a search of the banks and margins of the watercourses, where safely accessible, for field signs of otter and water vole, as detailed below. Ings and Tetherings Drain and Hensall Dyke were surveyed from within the wetted channel. The River Aire was surveyed from the banks only as the water was too deep to enter. Signs of otter and water vole along the River Aire were also searched for during fish and macro-invertebrate surveys of the river which were undertaken from a boat.

The otter survey was extended to include a search of any areas of terrestrial habitat suitable for otter refuge (such as dense scrub, woodland) that will be affected by the Proposed Development within 500 m of the watercourses surveyed.

Otter field signs include the following:

• spraints – these are usually black in colour and have a sweet smell likened to jasmine or fresh cut hay. The otter uses spraints to define its home range, and these are deposited at prominent points such as on boulders and ledges;

- footprints the otter has five toes that are webbed. The footprints are very characteristic and easy to recognise. Each print is around 50 - 60mm wide;
- paths found along river banks;
- couches flattened vegetation amongst scrub or dense vegetation, which may indicate an above ground resting area for an otter during the day;
- holts holes in the riverbank, hollow trees, cavities amongst tree roots, piles of rocks, wood or debris may all be used as holts; and
- feeding remains including fish remains.

The presence and distribution of these signs can be used to assess the likely importance of the watercourse for the local otter population.

Water vole field signs include the following:

- faeces these are 8-12 mm long and 4-5 mm wide, with a smooth 'tic tac' like shape, varying in colour from green to black, and odourless with a putty-like texture;
- latrines found throughout the territory, often comprising a pile of flattened droppings, with fresh droppings on top;
- feeding stations comprise a neat pile of chewed feeding remains, often comprising lengths of vegetation up to 10 cm long, showing the marks of the two large incisors;
- burrows these are typically wider than they are high, with a diameter of 4-8cm, and are usually located along the water's edge;
- lawns around burrows there is often an area of grazed vegetation, surrounded by taller vegetation, these are most often produced when the female is nursing young;
- footprints as with other rodents, the footprints of the fore foot, show four toes in a star arrangement, with the hind foot showing five toes. The size of footprints for the hind foot is 26-34 mm; and
- runways these are low tunnels within the vegetation, often adjacent to the water's edge.

2.4 Limitations

2.4.1 Bat Survey

The preliminary roost assessment of buildings was limited to an external inspection only; none of the buildings were inspected internally for signs of roosting bats. However, this is not considered to be a limitation to the assessment as the majority of buildings surveyed had no internal features, such as voids or crevices, that could be used by roosting bats, for example sheet material warehouses and site cabins. A small number of buildings have features, such as fascia boards, that could potentially provide access into internal areas for bats. However, these features could be fully inspected during the external inspection and in most cases were found to not provide suitable access for bats, for example due to being set flush to the building walls (further information on the assessment of such features is provided in Table C1 in Annex C). Therefore, an accurate assessment of suitability could be made from the external appraisal alone.

Best practice guidance (Collins, 2016) recommends that walked transects and automated detector monitoring are undertaken on a monthly basis between May and September inclusive for sites with moderate suitability for foraging / commuting bats. Due to the timing of project inception, these surveys could only be completed between July and September. However, the absence of survey information for May and June is not considered to significantly constrain the overall results of the bat activity surveys as a large amount of data was collected during the period of peak bat activity (June to August). Natural England has commented in their scoping opinion that they do not consider this to be a significant limitation (see Table 10.4 within Chapter 10: Ecology and Nature Conservation of the ES Volume I).

The identification of bat echolocation calls recorded by bat detectors is not always possible due to poor recording quality, which can be a result of bats recorded at distance, interference caused by

weather or bats altering their call in response to different environmental factors. Species identification within a genus is not always possible due to the similar nature of the echolocation calls. When identification to species level cannot be accurately made, calls are identified to genus level where possible (for example, *Myotis* species) or as 'Unknown'.

2.4.2 Badger Survey

Parts of the mature plantation woodland on the screening bund around the main coal stockyard within the existing coal-fired power station could not be fully accessed due to the presence of dense scrub in the understorey and ground flora. The presence of badger setts in such areas is considered unlikely, as no other badger field signs were located in the vicinity (such as paths in vegetation), but cannot be fully ruled out. This does not represent a significant constraint to the survey or EcIA as the inaccessible areas are located within screening bunds that will be retained within the Proposed Development. All areas of plantation woodland to be removed during construction of the Proposed Development were fully accessible for badger survey.

2.4.3 Otter and Water Vole Survey

Access was restricted to the southern bank of the River Aire during the survey. The survey along this bank was also limited by the presence of dense stands of tall ruderal vegetation. However, the survey was supplemented by searches for otter and water vole field signs on both banks of the river during boat based fish and aquatic invertebrate surveys, which adequately compensated for the lack of bank access during the land based otter and water vole survey.

The water vole survey in October 2016 was completed at the end of the optimal period for finding field signs associated with water vole breeding territories, such as latrines (late April to early October). However, the weather remained mild enough at the time of survey for continued small mammal activity, which was confirmed by the finding of abundant bank vole field signs (latrines) along Ings and Tetherings Drain. The repeat survey in early May 2017 provides increased confidence in the survey results.

3. Results

3.1 Bat Survey

3.1.1 Desk Study Records

A small number of records of common pipistrelle bats (*Pipistrellus pipistrellus*) and unidentified pipistrelle bats (*Pipistrellus* sp.) were returned for the desk study area, including records of roosts, bats in flight and injured bats. None of the records relate to areas within the Site boundary.

No EPSM licences for bats have been issued by Natural England within 1 km of the Site.

3.1.2 Preliminary Roost Assessment

3.1.2.1 Buildings

A total of thirty-three buildings, or groups of buildings, were subject to preliminary roost assessment, as shown on Figure 10D.1 in Annex B. These are all associated with the operation of the existing coal-fired power station and include brick built plant buildings, site cabins, gatehouse buildings, amenity and office blocks, large sheet material warehouses and gas and oil tanks.

All buildings were appraised to have negligible suitability for roosting bats due to a lack of potential roosting features. Full results of the preliminary roost assessment, including photographs of the buildings, are provided in Table C1 in Annex C.

3.1.2.2 Trees

The majority of trees to be impacted by the Proposed Development are not mature enough to have developed features of potential value to roosting bats and were appraised to have negligible suitability.

Eight trees were assessed as having low suitability, due to the presence of features with very limited roosting potential, such as minor cracks, shallow cavities or sparse ivy cover. Full results of the preliminary assessments of these trees, including photographs, are provided in Table C2 in Annex C and their locations are shown on Figure 10D.2 in Annex B.

3.1.3 Bat Activity Surveys

3.1.3.1 Walked Transect Surveys

The results of the walked bat activity transects are summarised below. Raw survey data is provided in Tables C3 - C7 in Annex C, with accompanying figures (Figures 10D.4 - 10D.8) presented in Annex B.

A low level of foraging activity by individual or small numbers of common pipistrelle bats was recorded across the majority of habitats within the existing coal-fired power station, mostly comprising plantation woodland edge. A small number of passes by noctule (*Nyctalus noctula*) was recorded over the Site during the survey in September. The first bat activity recorded was generally between 40 minutes and 1 hour after sunset. Pipistrelle bats typically emerge from their roosts relatively early, around 20 minutes after sunset, so this later appearance at the site suggests that the bats roost off site

In contrast to the low levels of bat activity recorded across the majority of the site, high levels of bat foraging activity were found in association with the lagoon in the east of the site, which is surrounded by mature conifer plantation on screening bunds. This creates sheltered conditions around the lagoon margins, providing an optimal micro-climate for flying invertebrates, which are exploited by foraging bats. The majority of activity around the lagoon was by common pipistrelle, but soprano pipistrelle (*Pipistrellus pygmaeus*) was also frequently recorded. Approximately 2-3 bats were observed foraging along each side of the lagoon and it is estimated that a total of between 10 and 20 bats were using the lagoon at any one time. No activity by Daubenton's bat (*Myotis daubentonii*), which specialises in foraging over water, was observed or recorded at the lagoon.

During the bat activity survey at the lagoon in isolation in August, bats appeared to enter the site from the east and the first bat activity was recorded approximately 40 minutes after sunset. Automated detector data also consistently recorded the first bats at the lagoon between 45 minutes and 1 hour after sunset. This is consistent with the later appearance of bats in other areas of the existing power station. Given the observation of bats entering the site from the east, it is possible that the bats using the site roost within buildings in villages to the east, such as Gallows Hill and Hensall.

3.1.3.2 Automated Detector Surveys

A summary of the bat species and levels of activity recorded at each automated detector location is provided below and within Table 3.1. Full results of the automated detector surveys are provided in Tables C8 – C14 in Annex C.

Analysis of bat call recordings from the automated detectors revealed the presence of at least six bat species at the site. The vast majority of recordings at both detector locations (91%) were of common pipistrelle bats. Lower numbers of soprano pipistrelle were recorded, mainly at the lagoon. A very small number of recordings could have been of Nathusius' pipistrelle (*Pipistrellus nathusii*), but these could not be definitively split from common pipistrelle based on the recordings made. A very small number of recordings were made of noctule, leisler (*Nyctalus leisleri*), brown long-eared bat (*Plecotus auritus*) and bats in the *Myotis* genus. Recordings of *Myotis* bats were not of sufficient quality to identify to species level.

Indicative bat activity levels were low at Location A (Plantation), with an average of less than 5 bat passes per hour in all months. At Location B (Lagoon) bat activity levels were moderate to high, with average activity in the region of 100 bat passes per hour across the survey period.

The results of the automated detector surveys are consistent with the findings of the walked transect surveys.

Table 3.1: Summary of Automated Detector Survey Results

Month	Num	Number of Passes per Bat Species (total over 5 nights)								l (over	es/ 5	/ity	
	Common pipistrelle	Soprano pipistrelle	Common/ soprano pipistrelle	Nathusius/ common pipistrelle	Noctule	Leisler	Noctule/ leisler	Myotis sp.	Brown Long Eared	Unknown bat species	Total bat passes (o 5 nights)	Bat Activity (passes/ hour, mean of 5	Indicative Bat Activity Level
Location A -	· Planta	ation											
July	172	1	4	0	2	1	0	1	0	0	181	4	Low
August	223	4	8	1	4	0	0	5	0	0	245	5	Low
September	157	1	2	0	7	0	0	0	2	0	169	3	Low
Location B -	- Lago	on											_
July	3214	56	451	3	2	0	0	18	0	61	3813	93	Moderate
Early August	5507	47	166	0	11	2	1	23	0	61	5818	127	High
Late August	5822	508	257	0	7	0	7	0	0	12	6613	132	High
September	7423	123	71	0	0	0	0	252	0	8	7877	137	High

3.2 Badger Survey

All information pertaining to badger is presented in Annex E and is confidential (for distribution to *bona fide* parties only).

3.3 Otter and Water Vole Survey

3.3.1 Desk Study

There are records of both otter and water vole in the desk study area. Otter has been recorded on the Selby Canal, located approximately 300 m to the north of the Proposed AGI Site (at the northern end of the Proposed Gas Connection corridor), and on the River Aire which is crossed by the Proposed Development. The Environment Agency's 'Fifth Otter Survey of England 2009 – 2010' indicated that there are sections within the River Aire catchment where otters are present (Crawford, 2010). Water vole has also been recorded along Selby Canal.

No EPSM licences for otter have been issued by Natural England within 1 km of the Site.

3.3.2 Field Survey

Three watercourses were identified during the Phase 1 Habitat survey with the potential to support otter and water vole – the River Aire, Ings and Tetherings Drain, and Hensall Dyke. The results of the surveys of each of these watercourses are summarised separately below.

3.3.2.1 River Aire

The River Aire within the Site (at the existing cooling water abstraction and discharge points; note although the Proposed Gas Connection crosses the River is will be drilled beneath it) is a partially embanked high level carrier river, approximately 30 m in width, with deep and turbid water (Photographs 1 and 2). The river banks are tall and steep and colonised by a species-poor tall ruderal community. Trees and shrubs of planted origin are locally frequent at the abstraction, but only rarely present on banks elsewhere. A large weir is present in the river between the abstraction and discharge points. The river is subject to the tidal influence of the Humber Estuary downstream of the weir.

No field signs of otter were found during the field survey, or during subsequent boat based fish and aquatic invertebrate surveys. The vegetation on the banks of the river within the Site does not provide sufficient cover for otter refuge (holts and couches). Despite the absence of otter field signs along the river, otter are likely to be present on a transitory basis, given previous records of their presence on the river.

No field signs of water vole were found during the field survey, or during subsequent boat based fish and aquatic invertebrate surveys. The wide and fast flowing nature of the river, and the tidal influence at the existing discharge point, provides sub-optimal conditions for water vole.

Photograph 1: River Aire at existing cooling water abstraction point



Photograph 2: River Aire at existing cooling water discharge point



3.3.2.2 Ings and Tetherings Drain

This is a substantial drainage ditch within arable farmland to the north of the existing coal-fired power station (Photograph 3). It flows into Intake and Marsh Drain and outfalls into the River Aire at Weeland, approximately 2.7 km downstream (east) of the surveyed section. The wetted channel is approximately 2 m wide and up to 1 m deep, with no discernible flow. The banks are colonised by either tall ruderal herbs (predominantly common nettle) with frequent bramble, or by regularly managed species-poor semi-improved grassland. The Drain is subject to regular management to maintain its drainage function.

Otter spraint was found on a concrete shelf beneath a small concrete bridge over the drain at grid reference SE 582 250 (Photograph 4) during the survey in October 2016, indicating that the Drain forms part of an otter territory. Old spraint was still present beneath the bridge during the re-survey in May 2017. No other otter field signs were found along the drain. The section of Drain to be impacted by the Proposed Development does not have sufficient tree or scrub cover to be suitable for otter refuge. Therefore, otters are likely to commute along the Drain, but any presence within the Site is likely to be transitory.

No water vole field signs were identified along the drain during surveys in 2016 and 2017.

Photograph 3: Ings and Tetherings Drain



Photograph 4: Otter spraint found beneath bridge on Ings and Tetherings Drain



3.3.2.3 Hensall Dyke

Hensall Dyke is a drainage channel to the south-east of the Site, the western extent of which falls within the Site boundary. The section within the Site is approximately 100 m long and is heavily shaded by trees and dense scrub along the banks. Its banks are fenced and it is not managed to maintain drainage function. The wetted channel was up to 1 m wide and shallow (less than 0.2 m deep) at the time of survey, with a deep substrate of silt and leaf detritus. In-channel and marginal aquatic vegetation is generally absent. Water levels within the Dyke are likely to fluctuate throughout the year, and it is likely to dry up completely at times.

No signs of otter or water vole presence were found along the Dyke during the survey. The heavy shading and scrub encroachment along the section of Dyke within the Site prevents the establishment of in channel, marginal and bankside vegetation suitable for forage and cover for water voles. The Dyke may be used by foraging otter on occasion, because it has direct connectivity to the River Aire via the Ings and Tetherings Drain into which it flows. However, the shallow nature of the watercourse, which appears likely to dry out in the summer months, will not provide a good food supply for otters. It is therefore considered unsuitable to support a resident population of otters, and any such usage by otter is likely to be on an occasional transitory basis only.

Photograph 5: Hensall Dyke



3.3.2.4 Terrestrial Habitats

No signs of otter refuge were located within suitable terrestrial habitats to be affected by the Proposed Development within 500 m of the above watercourses. The presence of transitory otters on passage between watercourses in the Aire catchment cannot be entirely ruled out, because this species is relatively wide ranging. However, it is considered very unlikely that otters would regularly be encountered in terrestrial habitats away from the nearest watercourse.

4. Conclusions and Evaluation

4.1 Bats

4.1.1 Bat Roosting

No potential bat roosting habitat was identified within any of the buildings or trees to be impacted by the Proposed Development. Therefore, an assessment of impacts on roosting bats will not be necessary.

However, in view of the time lag between the assessment and the commencement of construction, an updated preliminary roost assessment of any buildings and trees to be impacted will be completed prior to construction. This will be timed to allow for further targeted surveys (if necessary) in the main bat active season (June to August inclusive) prior to construction.

4.1.2 Bat Activity

A combination of walked bat activity transects and automated detector surveys identified the presence of at least 6 bat species in association with habitats around the existing coal-fired power station, though the vast majority of activity was by common pipistrelle bats. High levels of bat activity were recorded at the lagoon in the east of the existing coal-fired power station, where a moderate number of bats (estimated 10-20 at any one time) were observed foraging around its sheltered margins. Low levels of activity by individual or small numbers of bats were recorded in association with all other habitats across the existing coal-fired power station.

The relative value of the bat populations recorded foraging at the site is set out in Table 4.1 below. This scoring system is based on that published by Wray *et al.* (2010); further details are provided in Annex D.

All bat species using the site are assessed as being of Local nature conservation value.

Table 4.1. The relative value of the bat populations recorded foraging within the existing power station

Species	Rarity	Number of bats	Roosts/ potential roost nearby	Foraging Habitat Characteristics	Score	Value
Common pipistrelle	Common (2)	Small number (10)	Moderate number (4)	Isolated woodland patches, less	2+10+4+3=19	Local
Soprano pipistrelle	Common (2)	Individual (5)	Not known (4)	intensive arable and/ or small towns/ villages (3)	2+5+4+3=14	Local
Noctule	Rarer (5)	Individual (5)	Not known (4)		5+5+4+3=17	Local
Leisler	Rarer (5)	Individual (5)	Not known (4)	_	5+5+4+3=17	Local
Myotis sp.	Rarer (5)	Individual (5)	Not known (4)	_	5+5+4+3=17	Local
Brown long eared	Common (2)	Individual (5)	Not known (4)	_	2+5+4+3=14	Local
Overall value of bat assemblage						

4.2 Badger

All information pertaining to badger is presented in Annex E and is confidential (for distribution to *bona fide* parties only).

4.3 Otter

Otter was confirmed as present on the Ings and Tetherings Drain, which will be crossed by both the Proposed Gas and Cooling Water Connections. Otter is also likely to be present on the River Aire due to habitat suitability and previous records, though no evidence of otter was confirmed during the survey. Use of the sections of these watercourses to be impacted by the Proposed Development is

only likely to be transitory in nature as there is very little suitable cover of trees and scrub that could provide refuge sites (holts or couches) for otter. Hensall Dyke is unlikely to be used by otter on anything other than a very occasional and transitory basis.

Given that otter is a European protected species and may be directly affected by the Proposed Development, an assessment of impacts on otter is undertaken in the EcIA (see Chapter 10: Ecology and Nature Conservation in ES Volume I). Notwithstanding its legislative protection, otter is a widespread and common species in Selby District. In terms of local status the Selby BAP states that "it is currently not known if otter breeds in the District. The majority of recorded otter activity is on the lower Derwent and the Wharfe. There is some evidence of activity on the Aire and Went, with otters possibly resident in the Lower Aire. The Ouse and Selby canal acts as the main corridors linking the other river systems" (Megson 2004). The Environment Agency's most recent survey of otter in England (2009 – 2010), which is now also somewhat out of date but supersedes the reported distribution in the Selby BAP, records the presence of otter in 16 out of 24 sites in Hull and East Riding and notes that there has been 'significant expansion of otter range in this area particular to the west of Hull'.

The likely transitory foraging presence of otter within the Site is considered to be of Local nature conservation value.

4.4 Water Vole

No evidence of water vole presence was recorded in association with suitable habitats within the Site (Ings and Tetherings Drain, Hensall Dyke and River Aire). Therefore, an assessment of impacts on this species is not necessary.

However, given the recorded presence of the species in the wider local area, and the risk that water voles could colonise watercourses within the Site in the intervening period between the survey and the commencement of construction, an updated water vole survey will be required prior to construction. This will be completed within the active season (late April to early October) prior to the commencement of construction activities affecting Ings and Tetherings Drain, Hensall Dyke and the River Aire. Should the presence of water voles be confirmed, a development licence would need to be obtained from Natural England and an appropriate mitigation strategy implemented for the temporary impacts on water vole habitat.

5. References

ADAS Property Services Ltd (2001) *Eggborough Integrated Land Management Plan*. Report prepared on behalf of British Energy by ADAS Property Services Ltd, Wolverhampton.

Chanin P. (2003) *Monitoring the Otter* Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No.10 English Nature, Peterborough.

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

Crawford, A. (2010) Fifth otter survey of England 2009 – 2010. Environment Agency.

Harris S, Cresswell P and Jefferies D (1989) Surveying Badgers. Mammal Society.

Megson G. (Ed.) (2004) *Selby Biodiversity Action Plan.* http://www.selby.gov.uk/biodiversity-action-plan [accessed December 2016]

Russ. J. (2012) British Bat Calls A Guide to Species Identification. Pelagic Publishing

Strachan, R. and Moorhouse, T. (2011). *Water Vole Conservation Handbook*. Third Edition. Wildlife Conservation Research Unit (WildCRU), Oxon.

Wray. S., Wells. D., Long. E. and Mitchell-Jones. T. (2010) *Valuing bats in ecological impact assessment*. In Practice, No. 70, Institute of Ecology and Environmental Management.

Annex A: Preliminary Bat Roost Assessment Methodology

Prepared for: Eggborough Power Limited

TABLE A1: SURVEY METHODOLOGY FOR UNDERTAKING AN ASSESSMENT OF THE SUITABILITY OF BUILDINGS / STRUCTURES & TREES FOR ROOSTING BATS (BASED ON COLLINS, 2016)

Buildings / Structures

Bats utilise many different features in buildings and other structures for places of shelter and roosting. Features that were observed, noted and graded (in accordance with criteria in Table A2) during the external and internal survey of buildings included:

External

- External features associated with structures were visually inspected for their suitability for use by
 roosting bats. Equipment including close focusing binoculars and powerful spot-lamps were used
 to study the walls, eaves and roofs of the buildings. Inspection mirrors and endoscopes were used
 as required.
- Any of the bat species present in the area would be able to enter a roosting cavity through a gap no larger than 20 mm wide. However, bats usually also require an area to land that is adjacent to the entrance hole and has a rough surface. Such features were sought during the inspection.
- Features include; gaps in ridge tiles (where mortar is missing) gaps under roof tiles or slates, lead flashing around chimney stacks and around dormer windows, gaps under the fascias and soffits, weatherboarding, missing mortar from joints in stone/ brickwork, roof valleys and hips.
- Special attention was paid to the areas directly below any potential access/ egress point in an attempt to identify any accumulation of bat droppings.
- No work involving scaffolding, multi-sectional ladders over 3 m in height or rope access work was undertaken as part of the external survey.

Internal

- The most effective method of determining the presence of bat activity within a building is by the presence of their droppings. Bats deposit droppings in both roost and social areas, but the use of such sites by bats can change due to prevailing weather conditions or the time of year.
- The internal inspection comprised surveying all surfaces, window ledges, rough wall surfaces, floors, cobwebs, cupboard tops and any relatively undisturbed surface.
- Areas of particular interest (but not restricted to) are the tops of gable end walls, top of the ridge beam, hip and other roof beams, mortise joints, junction of roof beams, areas around chimney breasts, between roof tiles and felting.
- Other features, such as accumulations of discarded wings of moths or butterflies were also recorded where present. Certain bat species are more likely than others to deal with prey items and leave evidence such as this, and so such features can help identify the species present. Similarly, the locations of the droppings were recorded as this can provide an indication of both the species and the type of roost that is present.

Trees

Bats will utilise a wide variety of tree features including the following:

- frost cracks, trunk and branch splits, woodpecker holes;
- rot holes where branches have been removed;
- hollow sections of trunk, branches and roots;
- areas beneath loose bark, cavities beneath old root buttresses and coppice stools; and
- gaps within dense epicormic growth, areas behind dense ivy.

These features on each tree were assessed by an ecologist from ground level using binoculars and a high powered torch in order to determine features with the potential to support bats in accordance with criteria in Table A2.

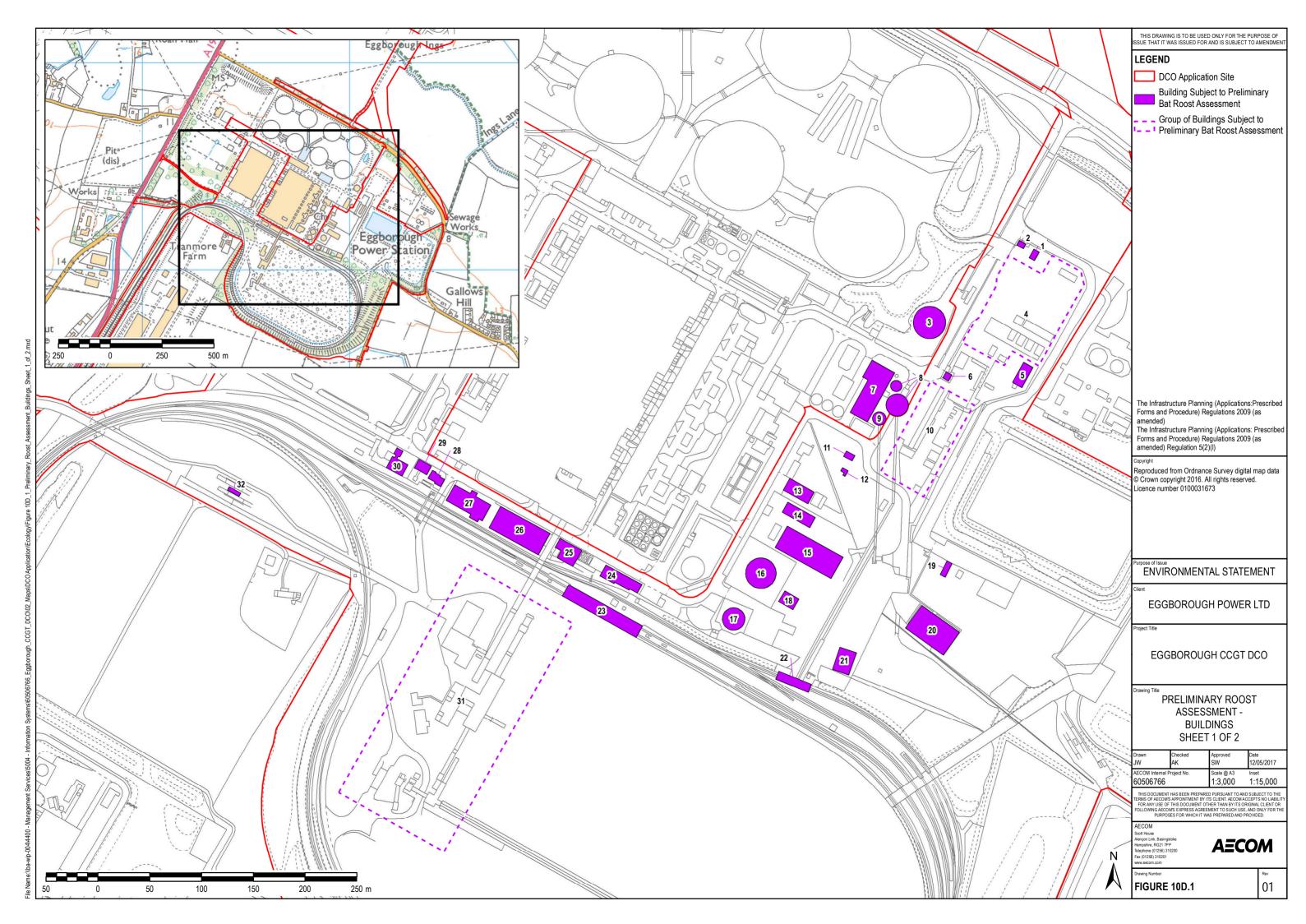
TABLE A2: CRITERIA USED TO DEFINE THE SUITABILITY OF FEATURES FOR ROOSTING BATS (BASED ON COLLINS, 2016)

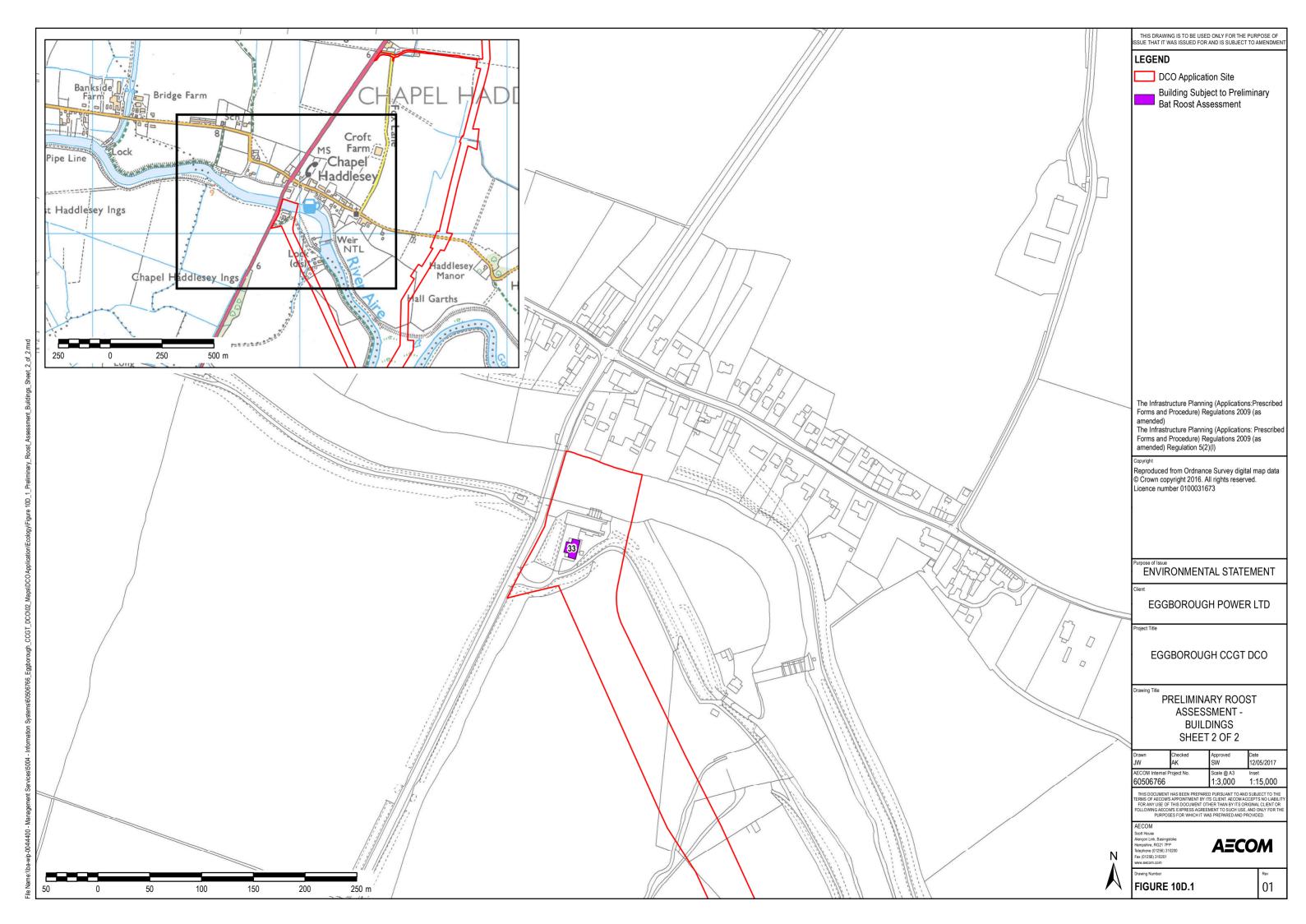
Where possible, the level of suitability of features for roosting bats should be defined with reference to the likely type of roost(s) associated with the relevant feature. Where this is not known then an overall (worst case) level of suitability is assigned.

-	Type of roost								
Level of Suitability for Roosting Bats	Summer or transitional roost used by non-breeding bats	Maternity roost	Hibernation roost						
Confirmed roost	Presence of bats or evidence may require further survey.	of bats (droppings, dead ba	ats). Confirmation of roost status						
High	Feature with multiple roosting opportunities for one or more species of bat. With good connectivity to high quality foraging habitat.	Feature with multiple roosting opportunities for breeding bats (size, temperature). Suitable of supporting larger numbers of bats on a more regular basis. With proximity and connectivity to high quality foraging habitat.	Large site that offers cool stable conditions with multiple roosting opportunities. With proximity and connectivity to high quality foraging habitat.						
Moderate	Feature with some roosting opportunities. With connectivity to moderate or high quality foraging habitat.	Feature providing some roosting opportunities. With some connectivity and proximity to moderate or high quality foraging habitat.	Medium sized feature with some roosting opportunities. With some connectivity and proximity to moderate or high quality foraging habitat.						
Low	Feature with a limited number of roosting opportunities. With poor connectivity to foraging habitat.	Feature with a limited number of roosting opportunities for breeding bats. With low proximity and connectivity to low or moderate quality foraging habitat.	Small sized feature or feature which may be subject to disturbance or environmental variations, with a limited number of roosting opportunities. With poor connectivity to foraging habitat.						
Negligible	Feature with no or very limited roosting opportunities for bats or where the feature is isolated from foraging habitat.	Feature with no suitable roosting opportunities for breeding bats.	Feature with no suitable roosting opportunities for hibernating bats.						

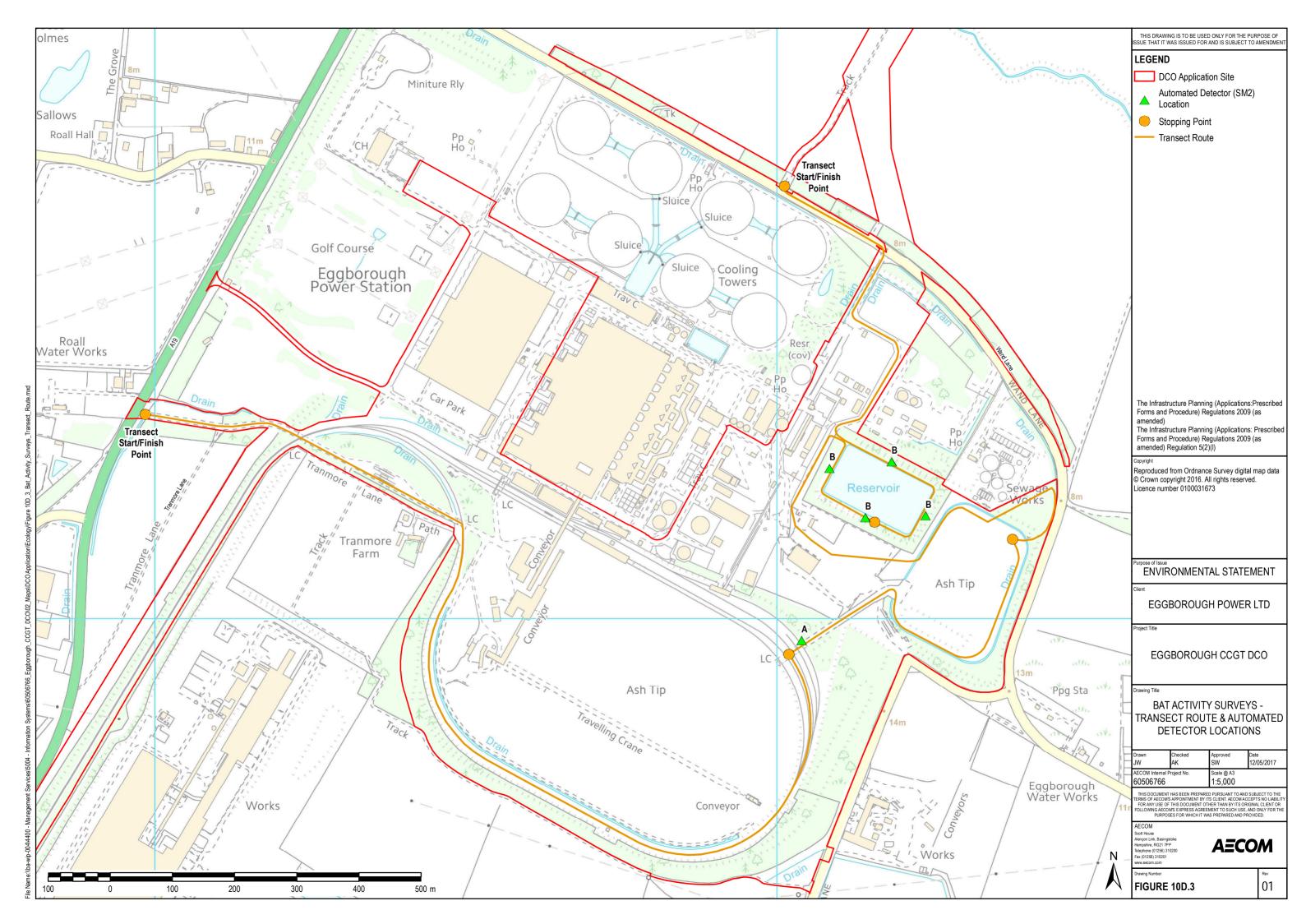
Annex B: Figures

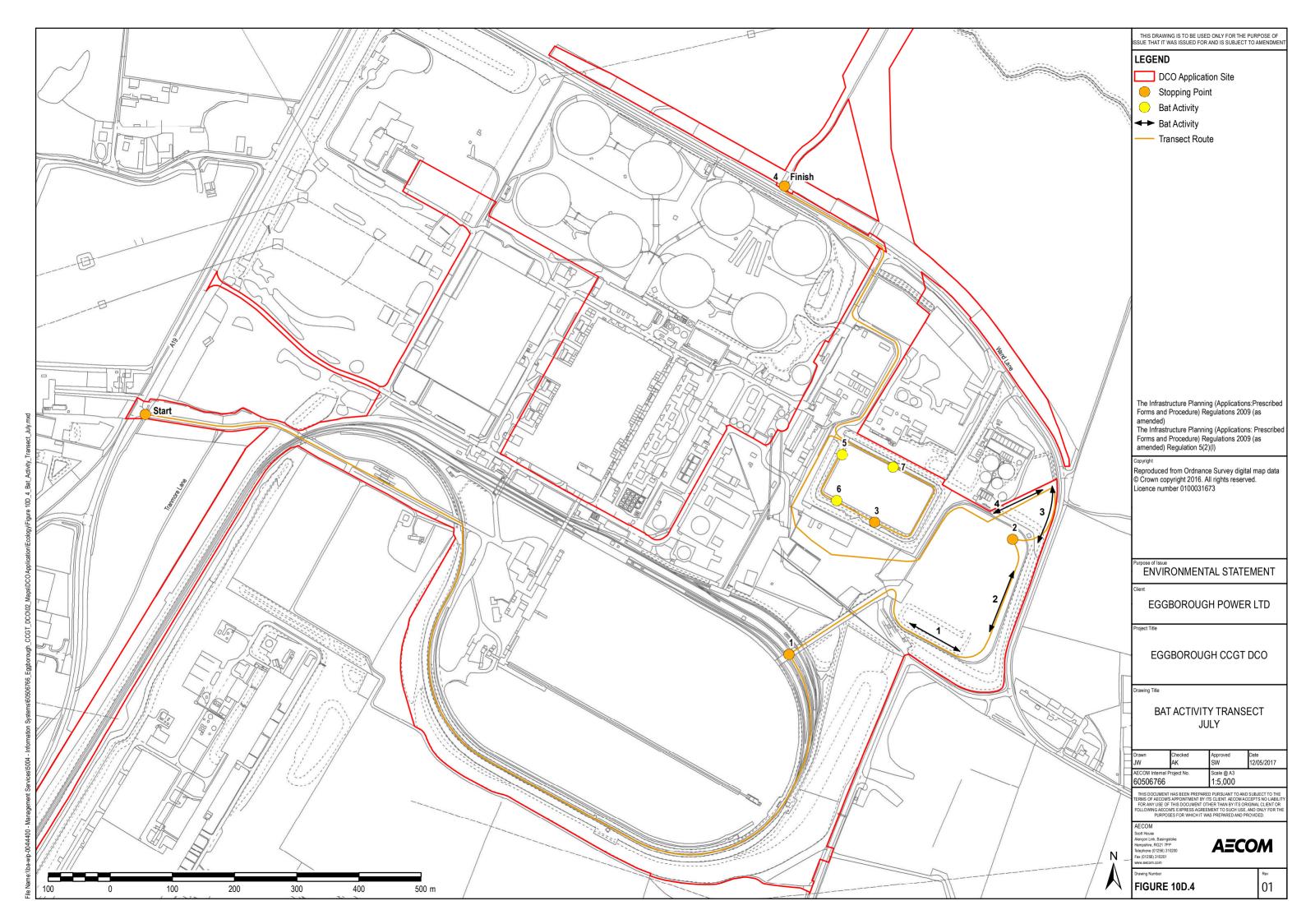
Prepared for: Eggborough Power Limited

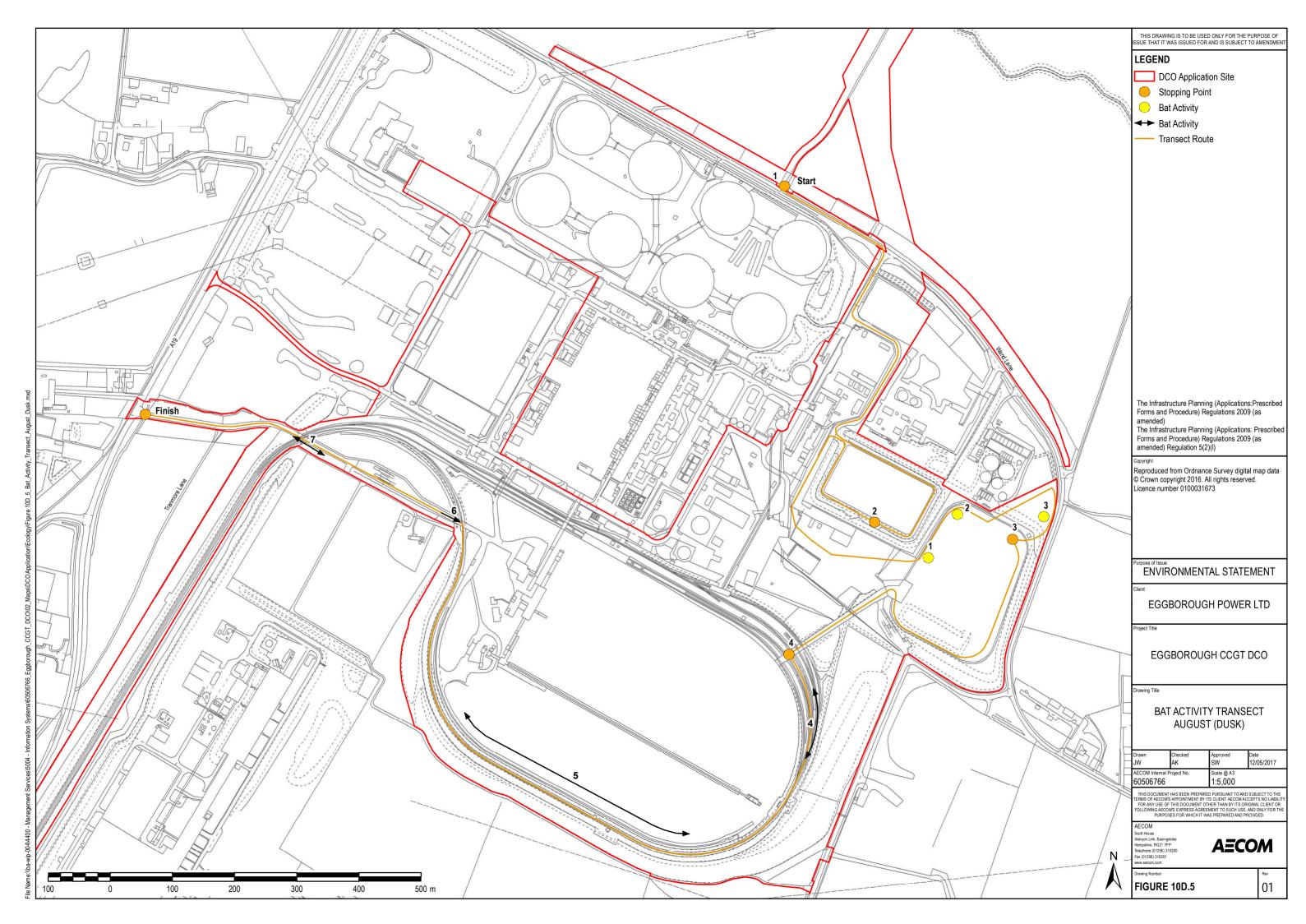


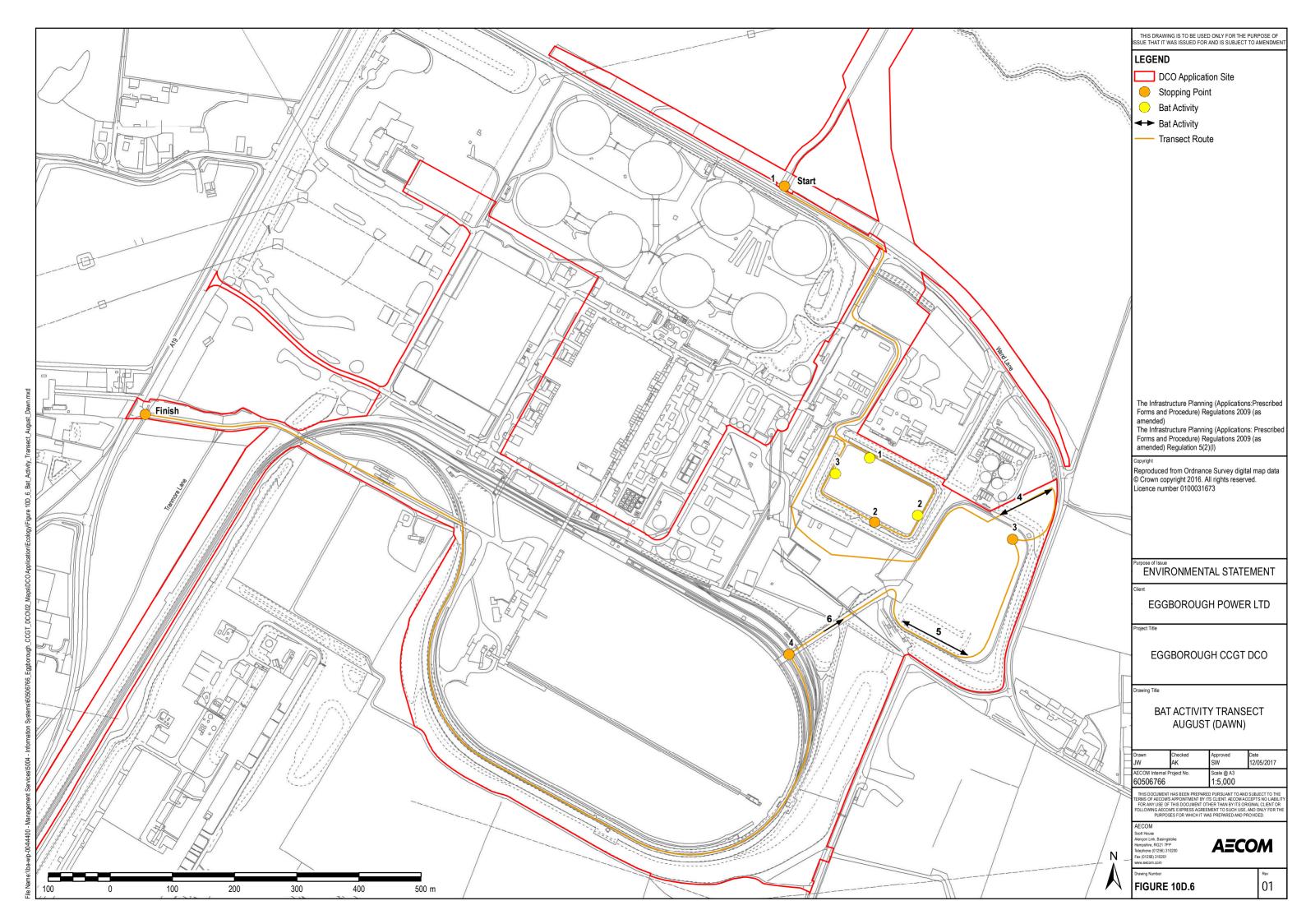


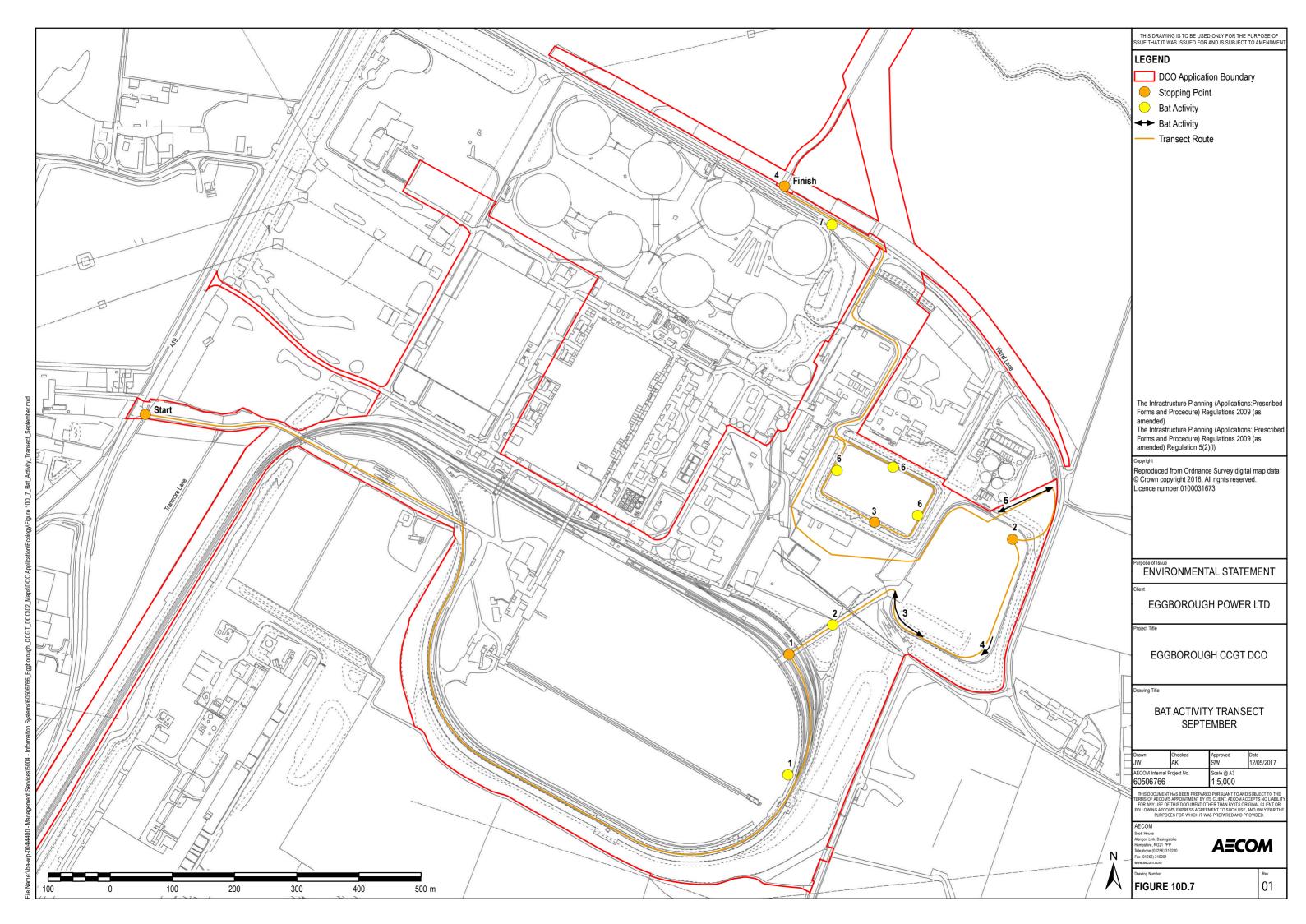












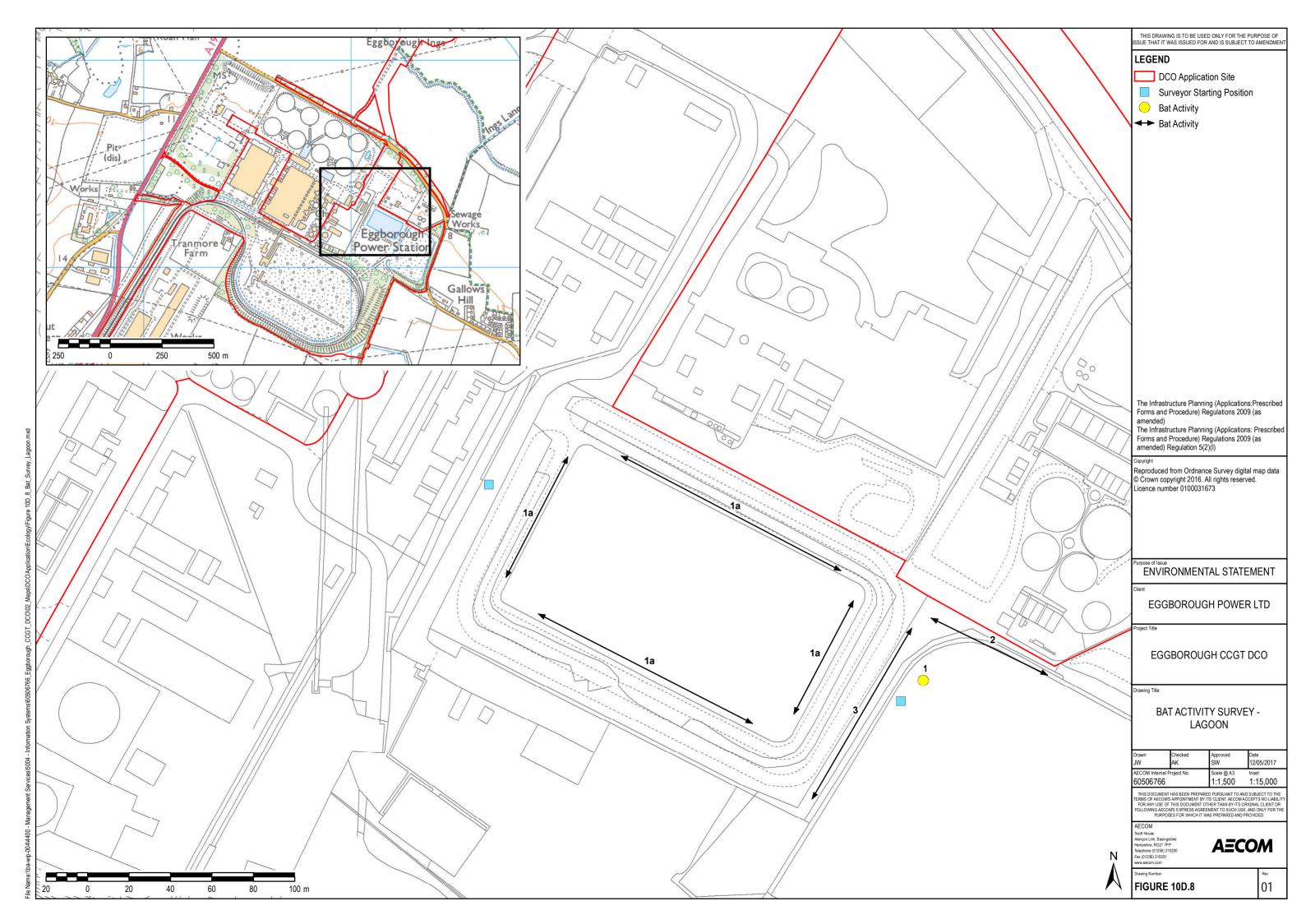


Figure 10D.9 - Badger Survey Results

This figure is confidential and has been deliberately omitted from this report for public issue due to concerns over the illegal persecution of badger. It will be provided to *bona fide* parties for information separately, on request.

Prepared for: Eggborough Power Limited

Annex C: Survey Data

Table C1: Preliminary Roost Assessment Results - Buildings

Building reference	Description and Features of Potential Suitability for Roosting Bats	l .	Photograph
1	Site cabin with no potential roosting opportunities for bats.	Negligible	No. of the second secon
2	Brick building with flat composite roof. The roof overhangs the walls, but it is set flush to the wall leaving no potential access for bats. No other potential roosting opportunities around window frames or walls.	Negligible	
3	Towns water tank - a concrete tank with no potential roosting features.	Negligible	

4	Variety of site cabins, shipping containers and composite sheet material warehouse buildings. None of these buildings offer any potential roosting features for bats.	Negligible	
5	Amenity block - concrete block construction with composite sheet material overhanging roof. The join between the roof and walls is sealed, providing no potential access for bats. There are no other potential roosting opportunities around the buildings.	Negligible	
6	Gatehouse building – brick construction with flat felt roof. There are no gaps between the walls and roof, or within the roof that could be exploited by roosting bats. No other suitable features were identified around the building.	Negligible	
7	Flue Gas Desulphurisation plant – a modern sheet material warehouse with no potential roosting features for bats.	Negligible	

8	Flue Gas Desulphurisation concrete gypsum silo with no potential for roosting bats.	Negligible	
9	Flue Gas Desulphurisation concrete limestone silo with no potential for roosting bats.	Negligible	
10	Similar to Building 4 – a variety of site cabins and modern warehouses with no potential roosting features for bats.	Negligible	

11	Modern sheet material warehouse with no potential for roosting bats.	Negligible	
12	Brick built plant building with flat felt roof. There is a wooden fascia around the roof, but this is set flush to the wall and provides no potential access for bats. There are no other potential roosting features on the building.	Negligible	
13	Concrete warehouse with corrugated asbestos roof. The only area of the building with potential for use by roosting bats is behind wooden cladding at the gable ends, but the gap behind the cladding is large, reducing its suitability as a crevice roost. This area was also thoroughly inspected with a torch and no signs of bat use were found.		
14	Modern sheet material warehouse with no potential roosting opportunities for bats.	Negligible	

15	Large corrugated asbestos warehouse with no features of potential value to roosting bats.	Negligible	
16	Gas oil tank with no potential roosting features.	Negligible	
17	Oil tank with no potential roosting features.	Negligible	
18	Prefabricated building with no potential roosting features.	Negligible	

19	Concrete block office building with ridged felt roof. There are no crevices within the roof, or at the join between the roof and walls (around fascias and soffits) that would allow access for bats. There are no other roosting opportunities around window or door frames, or within the walls.	Negligible	
20	Flue Gas Desulphurisation project offices - site cabins with no features of potential value to roosting bats.	Negligible	ALSO,M
21	Modern sheet material warehouse with no potential roosting features.	Negligible	
22	Track hopper house constructed of sheet material. No potential roosting opportunities for bats.	Negligible	

23	Track hopper house constructed of sheet material. No potential roosting opportunities for bats.	Negligible	
24	Modern sheet material warehouse with no potential roosting features.	Negligible	
25	Brick built storage building. There are no crevices suitable for use by roosting bats.	Negligible	
26	Modern sheet material warehouse with no potential roosting opportunities for bats.	Negligible	Building in the background in the photograph above.

27	Brick and concrete built office block. The walls are in good condition, offering no crevices with potential for use by bats. No other opportunities around window frames or other areas were identified.	Negligible	
28	Brick built office block with composite sheet material roof. There are no roosting opportunities around the walls, windows, or at the join between the walls and roof.	Negligible	
29	Brick built office block with composite sheet material roof. There are no roosting opportunities around the walls, windows, or at the join between the walls and roof.	Negligible	
30	Brick built office block with composite sheet material roof. There are no roosting opportunities around the walls, windows, or at the join between the walls and roof.	Negligible	

31 A range of sheet material Negligible warehouses and hopper buildings, as well as brick built workshops and stores associated with coal handling operations. No features of potential value to roosting bats were identified within any of these buildings. 32 Weighbridge building of brick construction with a flat roof. Negligible There are no crevices around the walls, window frames, or at the join between the roof and walls that could be used by roosting bats.

Brick and concrete plant buildings at the existing abstraction point on the River Aire. There are no crevices around the walls, window frames, or at the join between the roof and walls that could be used by roosting bats.	
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Table C2: Preliminary Roost Assessment Results - Trees

Tree reference	Species	Potential roosting features	Overall Suitability	Photograph
1	Sycamore	Small number of shallow exposed cavities within trunk and/or branches with very limited potential for use by bats. Sparse ivy cover.	Low	

2	Ash	Small number of shallow exposed cavities within trunk and/or branches with very limited potential for use by bats. Sparse ivy cover.	Low	
3	Ash	Small number of shallow exposed cavities within trunk and/or branches with very limited potential for use by bats. Sparse ivy cover.	Low	

4	Ash	Small number of shallow exposed cavities within trunk and/or branches with very limited potential for use by bats.	Low	
5	Ash	Small number of shallow exposed cavities within trunk and/or branches with very limited potential for use by bats.	Low	
6	Ash	Sheltered cavity within trunk with high potential for roosting. How ever, this was accessible and fully inspected with a torch and endoscope and no signs of bat roosting were found. Suitability downgraded to low as a result.	Low	

7	Oak	Small number of shallow exposed cavities within trunk and/or branches with very limited potential for use by bats. Sparse ivy cover.	Low		
8	Oak	Small number of shallow exposed cavities within trunk and/or branches with very limited potential for use by bats. Sparse ivy cover.	Low		

Table C3: July Bat Activity Transect Results

Date: 27/07/16	5	Temperatu	re (°C): 17-16	Rain (0-5) ² : 0
Sunset time:	21:17	Wind (0-7) ³	: 2	Cloud Cover (0-5) ⁴ : 1
Start Time: 21:20	Finish Time: 23:22	Equipment Duet and E	: used : Batbox dirol	Weather description (incl. previous evening): Dry, warm
Reference Number/Stop	Time	Species ¹	No. of bats	Activity/Description
Stop 1	21:54-21:59	-	-	No bat activity
1	22:07	PIPI	1	Five passes
2	22:15	PIPI	1	Two passes
Stop 2	22:17-22:22	PIPI	2	Continuous foraging during stop
3	22:24	PIPI	2	Foraging along path through woodland, four passes
4	22:30	PIPI	1	Foraging along woodland path, two passes
5	22:47	PIPI	1	Five passes
6	22:53	PIPI	1-3	Continuous foraging around lagoon
Stop 3	22:55-23:00	PIPI	1-3	Continuous foraging
7	23:12	PIPI	2-3	Continuous foraging by two to three bats on all sides of the lagoon. Total number using lagoon estimated to be between 10 and 20.
Stop 4	23:17-23:22	-	-	No bat activity

¹Species codes: PIPI: common pipistrelle (*Pipistrellus pipistrellus*)

Rain scale: 0 = none, 1 = drizzle, 2 = shower, 3 = rain, 4 = downpour, 5 = flood

³Beaufort wind force scale: 0 No wind, 1 Light air smoke drifts, 2 Light Breeze leaves rustle, 3 Gentle Breeze small twigs move, 4 Mod Breeze small branches move, 5 Fresh Breeze small trees sway, 6 Strong Breeze large branches move, 7 Mod Gale whole trees in motion

Percentage scale based on: 1 = 0-20%, 2 = 21--40%, 3 = 41-60%, 4 = 61-80%, 5 = 81-100%

Table C4: August Bat Activity Survey Results - Lagoon in Isolation

Date: 11/08/1	6	Temperature (° C): 18-18	Rain (0-5)² : 0
Sunset time:	20:42	Wind (0-7) ³ : 3-	·5	Cloud Cover (0-5) ⁴ : 3-4
Start Time: 20:42	Finish Time: 22:45	Equipment us Duet and SM2B		Weather description (incl. previous evening): Mild, dry, breezy. Previous evening: heavy rain showers, showers during day of survey.
Reference Number	Time	Species ¹	No. of bats	Activity/Description
1	21:24-21:30	PIPI	1-2	Intermittent foraging activity, heard not seen
2	21:33-21:44	PIPI	1-2	Intermittent foraging along scrub line
3	21:46-21:52	PIPI	1-3	Continuous foraging on east side of plantation around lagoon (sheltered from the breeze)
1a	21:36-22:45	PIPI & PIPY	1-3	Continuous bat foraging activity around lagoon (less in areas more exposed to the breeze). Up to 3 individual bats seen at any one time, estimated between 10 and 20 bats using the lagoon in total. The majority of activity was from common pipistrelle.

¹Species codes: PIPI: common pipistrelle (*Pipistrellus pipistrellus*), PIPY: soprano pipistrelle (*Pipistrellus pygmaeus*)

Rain scale: 0 = none, 1 = drizzle, 2 = shower, 3 = rain, 4 = downpour, 5 = flood

Beaufort wind force scale: 0 No wind, 1 Light air smoke drifts, 2 Light Breeze leaves rustle, 3 Gentle Breeze small twigs move, 4 Mod Breeze small branches move, 5 Fresh Breeze small trees sway, 6 Strong Breeze large branches move, 7 Mod Gale whole trees in motion

Percentage scale based on: 1 = 0-20%, 2 = 21--40%, 3 = 41-60%, 4 = 61-80%, 5 = 81-100%

Table C5: August Dusk Bat Activity Transect Results

Date: 22/08/16		Temperatu	re (°C): 19-18	Rain (0-5)²: 0
Sunset time: 2	0:17	Wind (0-7) ³	: 1-2	Cloud Cover (0-5) ⁴ : 0
Start Time: 20:20	Finish Time: 22:17	Equipment Duet and SI	used: Batbox M2Bat	Weather description (incl. previous evening): Clear sky, mild with a light breeze. Rainy and unsettled previous few days
Reference Number/Stop	Time	Species ¹	No. of bats	Activity/Description
Stop 1	20:20-20:25	-	-	No bat activity
Stop 2	20:50-20:55	-	-	No bat activity
1	21:14	PIPI	1	Heard not seen, two passes
2	21:17	PIPI	1	Heard not seen, three passes
3	21:21	PIP	1	Heard not seen, three passes
Stop 3	21:24-21:29	-	-	No bat activity
Stop 4	21:41-21:46	PIPI	1-2	Foraging along woodland edge, seven passes
4	21:50-21:54	PIPI	1	Foraging along woodland edge, four passes
5	21:56-22:04	PIPI	1	Foraging along woodland edge, six passes
6	22:07	PIPI	1	Single pass
7	22:12-22:16	PIPI	1	Foraging along track between wooded blocks, three passes

¹Species codes: PIPI: common pipistrelle (*Pipistrellus pipistrellus*), PIP: pipistrelle species (*Pipistrellus* sp.)

²Rain scale: 0 = none, 1 = drizzle, 2 = shower, 3 = rain, 4 = downpour, 5 = flood

³Beaufort wind force scale: 0 No wind, 1 Light air smoke drifts, 2 Light Breeze leaves rustle, 3 Gentle Breeze small twigs move, 4 Mod Breeze small branches move, 5 Fresh Breeze small trees sway, 6 Strong Breeze large branches move, 7 Mod Gale whole trees in motion

Percentage scale based on: 1 = 0-20%, 2 = 21--40%, 3 = 41-60%, 4 = 61-80%, 5 = 81-100%

Table C6: August Dawn Bat Activity Transect Results

Date: 23/08/16		Temperatu	re (°C): 19-19	Rain (0-5) ² : 0-1
Sunrise time:	05:58	Wind (0-7) ³	: 0-1	Cloud Cover (0-5) ⁴ : 5
Start Time: 04:00	Finish Time: 06:00	Equipment Duet and SI	used : Batbox M2Bat	Weather description (incl. previous evening): Overcast, very light drizzle at times
Reference Number/Stop	Time	Species ¹	No. of bats	Activity/Description
Stop 1	04:00-04:05	PIPI	1	Heard not seen, two passes
1	04:20	PIPI	1	Heard not seen, four passes
2	04:23	PIPI	1	Heard not seen, three passes
Stop 2	04:25-04:30	PIPI	1-2	Almost continuous foraging during stop
3	04:32	PIPI	1	Foraging around lagoon, four passes
4	04:50	PIPI	1	Foraging along path through wood, four passes
Stop 3	04:55-05:00	PIPI	1	Foraging along woodland edge, five passes
5	05:04	PIPI	1	Two passes along woodland edge
6	05:13	PIPI	1	1 pass along road between coal stockyards
Stop 4	05:15-05:20	PIPI	1	Heard not seen, one pass

¹Species codes: PIPI: common pipistrelle (*Pipistrellus pipistrellus*)

²Rain scale: 0 = none, 1 = drizzle, 2 = shower, 3 = rain, 4 = downpour, 5 = flood

³Beaufort wind force scale: 0 No wind, 1 Light air smoke drifts, 2 Light Breeze leaves rustle, 3 Gentle Breeze small twigs move, 4 Mod Breeze small branches move, 5 Fresh Breeze small trees sway, 6 Strong Breeze large branches move, 7 Mod Gale whole trees in motion

Percentage scale based on: 1 = 0-20%, 2 = 21--40%, 3 = 41-60%, 4 = 61-80%, 5 = 81-100%

Table C7: September Dusk Bat Activity Transect Results

Date: 06/09/16	i	Temperature (° C): 24-23	Rain (0-5) ² : 0
Sunset time: 1	19:41	Wind (0-7) ³ : 0		Cloud Cover (0-5) ⁴ : 5
Start Time: 19:45	Finish Time: 21:41	Equipment us Duet and SM2l		Weather description (incl. previous evening): Very warm, muggy
Reference Number/Stop	Time	Species ¹	No. of bats	Activity/Description
1	20:14	NYNO	1	Heard not seen, one pass
Stop 1	20:20-20:25	PIPI	1	Heard not seen, one pass
2	20:29	PIPI	1	Heard not seen, one pass
3	20:33	PIPI	2	Foraging along woodland edge, three passes
4	20:38	PIPI	1	Foraging along woodland edge, one pass
Stop 2	20:42-20:47	PIPI	1	Single pass
		NYNO	1	Single pass
5	20:53	PIPI	1-3	Foraging along path at edge of wood, six passes
6	20:59-21:30	PIPI & PIPY	1-3	Continuous foraging activity around lagoon
Stop 3	21:20-21:25	PIPI & PIPY	1-3	Continuous foraging activity
7	21:35	PIPI	1	Heard not seen, six passes along Wand Lane
Stop 4	21:36-21:41	-	-	No bat activity

¹Species codes: PIPI: common pipistrelle (*Pipistrellus pipistrellus*), NYNO: noctule (*Nyctalus noctula*), PIPY: soprano pipistrelle (*Pipistrellus pygmaeus*)

Rain scale: 0 = none, 1 = drizzle, 2 = shower, 3 = rain, 4 = downpour, 5 = flood

³Beaufort wind force scale: 0 No wind, 1 Light air smoke drifts, 2 Light Breeze leaves rustle, 3 Gentle Breeze small twigs move, 4 Mod Breeze small branches move, 5 Fresh Breeze small trees sway, 6 Strong Breeze large branches move, 7 Mod Gale whole trees in motion

Percentage scale based on: 1 = 0-20%, 2 = 21--40%, 3 = 41-60%, 4 = 61-80%, 5 = 81-100%

Table C8: Results of the July Static Monitoring Survey - Location A: Plantation

							Spec	ies and	d numb	oer of I	oat pas	sses		
Night	Date	Sunset	Sunrise	Hours of dark-ness	Temp (min and max)	Total no. bats	Common pipistrelle	Soprano Pipistrelle	Common / Soprano pipistrelle	Noctule	Leisler	Myotis Sp.	Bat Acti (passes hour	per
1	27/07/16	21:09	05:14	8.08	18-13	30	28	0	2	0	0	0	3.71	
2	28/07/16	21:07	05:16	8.15	19-16	28	27	0	0	0	1	0	3.44	
3	29/07/16	21:05	05:17	8.20	17-14	23	22	0	0	1	0	0	2.80	
4	30/07/16	21:04	05:19	8.25	21-12	52	51	0	0	1	0	0	6.30	
5	31/07/16	21:02	05:21	8.32	17-12	48	44	1	2	0	0	1	5.77	
					•	Total	172	1	4	2	1	1	Mean bat activit y	4

Table C9: Results of the August Static Monitoring Survey - Location A: Plantation

							Spo	ecies	and nu pass		t			
Night	Date	Sunset	Sunrise	Hours of darkness	Temp (min and max)	Total no. bats	Common pipistrelle	Soprano Pipistrelle	Common / Soprano pipistrelle	Nathusius / Common pipistrelle	Noctule	Myotis Sp.	Bat Activity (passes per hour)	
1	26/08/16	20:07	06:06	9.98	19-11	106	99	1	4	1	0	1	10.62	
2	27/08/16	20:05	06:08	10.05	15-14	0	0	0	0	0	0	0	0.00	
3	28/08/16	20:02	06:09	10.12	17-10	1	1	0	0	0	0	0	0.10	
4	29/08/16	20:00	06:11	10.18	17-11	76	70	1	2	0	2	1	7.46	
5	30/08/16	19:58	06:13	10.25	21-12	62	53	2	2	0	2	3	6.05	
	1	1	,	1	1	Total	223	4	8	1	4	5	Mean 5 bat activit y	

Table C10: Results of the September Static Monitoring Survey - Location A: Plantation

					(x		Spe		d num asses	ber of	bat		
Night	Date	Sunset	Sunrise	Hours of darkness	Temp (min and max)	Total no. bats	Common pipistrelle	Soprano Pipistrelle	Common / Soprano pipistrelle	Noctule	Brown long eared	Bat Act (passes	s per
1	15/09/16	19:19	06:41	11.37	27-17	50	40	1	0	7	2	4.40)
2	16/09/16	19:16	06:43	11.45	19-14	15	15	0	0	0	0	1.31	I
3	17/09/16	19:14	06:44	11.50	19-9	12	12	0	0	0	0	1.04	1
4	18/09/16	19:11	06:46	11.58	20-16	65	65	0	0	0	0	5.61	I
5	19/09/16	19:09	06:48	11.65	18-14	27	25	0	2	0	0	2.32	2
	I	1	1	1	1	Total	157	1	2	7	2	Mean bat activit y	3

Table C11: Results of the July Static Monitoring Survey - Location 2: Lagoon

				Sp	ecie	s and	numl	oer of	bat p	oasse	s					
Night	Date	Sunset	Sunrise	Hours of dark-ness	Temp (min and max)	Total no. bats	Common pipistrelle	Soprano Pipistrelle	Nathusius pipistrelle/ Common pipistrelle	Common / Soprano pipistrelle	Noctule	Noctule / Leisler	Myotis Sp.	Unknown	Bat Act (passes hou	per
1	27/07/16	21:09	05:14	8.08	17- 14	660	534	5	0	103	5	0	6	7	81.6	5
2	28/07/16	21:07	05:16	8.15	17- 15	632	534	5	0	80	3	0	1	9	77.5	5
3	29/07/16	21:05	05:17	8.20	16- 14	179	147	13	0	6	0	0	1	12	21.8	3
4	30/07/16	21:04	05:19	8.25	18- 12	879	760	11	1	71	0	0	6	30	106.5	55
5	31/07/16	21:02	05:21	8.32	16- 13	146 3	123 9	22	2	191	0	2	4	3	175.9	91
		1	1	•	•	Total	321 4	56	3	451	8	2	18	61	Mean bat activity	93

Table C12: Results of the Early August Static Monitoring Survey - Location 2: Lagoon

							Sp	ecie	s and	numl	oer of	bat p	asses	3		
Night	Date	Sunset	Sunrise	Hours of dark-ness	Temp (min and max)	Total no. bats	Common pipistrelle	Soprano Pipistrelle	Common / Soprano pipistrelle	Noctule	Leisler	Noctule / Leisler	Myotis Sp.	Unknown	Bat Act (passes hour	per
1	11/08/16	20:41	05:39	8.97	22- 16	887	857	6	10	0	0	0	0	14	98.9	2
2	12/08/16	20:38	05:41	9.05	17- 15	325	298	1	10	0	0	0	0	16	35.9	1
3	13/08/16	20:36	05:43	9.12	17- 15	1910	1769	23	73	6	1	0	9	29	209.5	51
4	14/08/16	20:34	05:45	9.18	18- 10	1093	1046	8	23	4	1	0	9	2	119.0)2
5	15/08/16	20:32	05:46	9.23	17-9	1603	1537	9	50	1	0	1	5	0	173.6	51
		•	•		•	Total	5507	47	166	11	2	1	23		Mean bat activit y	127

Table C13: Results of the Late August Static Monitoring Survey - Location 2: Lagoon

							Spe	cies an	d numl	oer of b	at pass	ses		
Night	Date	Sunset	Sunrise	Hours of dark-ness	Temp (min and max)	Total no. bats	Common pipistrelle	Soprano Pipistrelle	Common / Soprano pipistrelle	Noctule	Noctule / Leisler	Unknown	Bat Act (passes hou	s per
1	25/08/16	20:09	06:04	9.92	19- 14	149	137	2	5	3	2	0	15.0	3
2	26/08/16	20:07	06:06	9.98	18- 11	2732	2189	306	223	2	5	7	273.6	66
3	27/08/16	20:05	06:08	10.05	16- 14	1349	1321	9	14	0	0	5	134.2	23
4	28/08/16	20:02	06:09	10.12	17- 10	1861	1712	132	15	2	0	0	183.9	95
5	29/08/16	20:00	06:10	10.17	17- 11	522	463	59	0	0	0	0	51.3	4
		•	1		1	Total	5822	508	257	7	7	12	Mean bat activit y	132

Table C14: Results of the September Static Monitoring Survey - Location 2: Lagoon

							Species and number of bat passes						
Night	Date	Sunset	Sunrise	Hours of darkness	Temp (min and max)	Total no. bats	Common pipistrelle	Soprano Pipistrelle	Common / Soprano pipistrelle	Myotis Sp.	Unknown	Bat Ac (passe hou	s per
1	15/09/16	19:19	06:41	11.37	27- 17	1146	1130	9	0	4	3	100.82	
2	16/09/16	19:16	06:43	11.45	19- 14	3363	3286	54	14	6	3	293.	.71
3	17/09/16	19:14	06:44	11.50	20-9	1242	1186	36	8	11	1	108.	.00
4	18/09/16	19:11	06:46	11.58	20- 16	945	871	10	49	15	0	81.	58
5	19/09/16	19:09	06:48	11.65	18- 14	1181	950	14	0	216	1	101.	.37
						Total	7423	123	71	252	8	Mean bat activit y	137

Annex D: Method for Valuing Bats in Ecological Impact Assessment

Table D1: Categorising Bat Species by Rarity in England			
Rarity	Species		
Rarest (popn. Under 10,000)	Greater horseshoe Bechstein's Alcathoe Greater Mouse-eared Barbastelle Grey-long eared		
Rarer (popn. 10,000-100,000)	Lesser horseshoe Whiskered Brandt's Daubenton's Natterer's Leisler's Noctule Nathusius' pipistrelle Serotine		
Common (popn. Over 100,000)	Common pipistrelle Soprano pipistrelle Brown long eared		

Table D2: Scores used to Value Bat Commuting and Foraging Habitat					
Species	Number of Bats	Roosts/Potential Roosts Nearby	Foraging and Commuting Habitat Characteristics		
Common (2)	Very Low (5)	None (1)	Industrial or other site without established vegetation (1) Absence of (other) linear features (1)		
		Small number (3)	Suburban areas or intensive arable land Un-vegetated fences and large field sizes (2)		
Rarer (5)	Low (10)	Moderate number/Not known (4)	Isolated woodland patches, less intensive arable and/ or small towns/ villages Walls, gappy or flailed hedgerows, isolated well grown hedgerows, and moderate field sizes (3)		
		Large number of roosts, or close to a SSSI for the species (5)	Larger or connected woodland blocks, mixed agriculture, and small villages/ hamlets Well-grown and well-connected hedgerows, small field sizes (4)		
Rarest (20)	Moderate/ High (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas Complex network of mature well-established hedgerows, small fields and rivers/streams (5)		

Table D3: Explanation of the 'Number of Bats' Categories used in Table D2				
Number of bats	Explanation			
Individual bats (5)	Up to 3 bats recorded regularly along a commuting route			
Small numbers of bats (10)	Estimated 5 to 10 bats using a resource for foraging			
Large numbers of bats (20)	A large number of bats (estimated to be at least 20) from a nearby maternity roost using a resource for regular foraging			

Table D4: Scoring System for valuing Commuting and Foraging Bats				
Value for purposes of EcIA assessment	Score (Sum of scores presented in Table D2)			
International i.e. European	>50			
National i.e. England	41 - 50			
County/ Regional i.e. North Yorkshire/ Yorkshire and Humber	31 – 40			
District i.e. Selby district	21 – 30			
Local i.e. Survey Area and up to 2 km radius	11 – 20			
Negligible i.e. used where value is less than local	1 - 10			

Annex E: Badger Survey Results and Evaluation

This information is confidential and has been deliberately omitted from this report for public issue due to concerns over the illegal persecution of badger. It will be provided to *bona fide* parties for information separately, on request.

Prepared for: Eggborough Power Limited