Preliminary Environmental Information Report

Volume III - Appendices

Appendix 12D: Bat Survey

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

Prepared by: AECOM

OGCI Clean Gas Project

Redcar

Bat Survey

November 2018

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Prepared by	Alana Skilbeck
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01765 600 799
info@quantsenvironmental.com
quantsenvironmental.com
Quants Environmental Ltd, 65 Kirkby Road, Ripon, North Yorkshire. HG4 2HH

Contents

1 Introduction

1.1.1.1 This report presents the results of Bat Surveys undertaken on land at Redcar Steel Works, Redcar, North Yorkshire, TS10 5BE. The survey was completed to provide supporting information for a planning application for the proposed development at the site. The Local Authority for the application site is Redcar and Cleveland Borough Council.

1.1.1.2 The surveys included:

- Bat roost potential survey on 7 structures (buildings and other built features such as bridges) within the site;
- Two bat activity walked transect surveys; and,
- Two periods of bat activity monitoring using static recording devices.

1.1.1.3 The area surveyed (see Figure 1) is centred on OS grid reference NZ57262457 at an altitude of ~7 m above sea level and is positioned on the northern edge of the town of Redcar. The survey area is located 3.8 km to the north-east of Middlesbrough and 8.3 km to the north of Guisborough. The North Sea coast is approximately 1.65 km to the north-east of the site with the River Tees situated approximately 2.13 m to the west.

1.1.1.4 The aim of the surveys was to determine the ecological baseline with respect to bats in terms of the species present, their distribution, movements and habitat use. A summary of the legislation relating to bats is provided in Appendix A.

2 Methodology

2.1 Bat Roost Potential Survey – Structures

2.1.1.1 Seven structures were subject to a Bat Roost Potential Survey on 8th August 2018.

2.1.1.2 The seven structures were assessed in terms of their potential to support bat roosts. This was done using professional judgement to determine roost potential within the following categories according to best practice guidance[1]:

- Negligible potential.
- Low potential.
- Moderate potential.
- High potential.
- Confirmed roost.

2.1.1.3 The locations of each structure are shown on Figure 1 and photographs of each of them are provided in Appendix B.

2.2 Bat Activity Surveys – Walked Transects

2.2.1.1 Two walked bat activity transect surveys (one per month) were undertaken in August and September 2018.

2.2.1.2 The transect route is shown in Figure 2. The transect route was walked once per survey.

2.2.1.3 The transect survey involved walking the transect route slowly, with stops at pre-determined Stationary Listening Points (SLPs, see Figure 2), and recording all bat observations on scaled maps with notes on species and activity/behaviour. At each of the SLPs the surveyors stopped for a period of approximately 3 minutes to record all bat activity during that period. Any bat activity observed whilst walking between the SLPs was also recorded. The survey dates, recorded bat activity and weather conditions are presented in Appendix C.

2.3 Bat Activity Surveys – Static Monitoring

2.3.1.1 Static bat recorders were placed at two locations (see Figure 2) for a period of 11 consecutive nights in August 2018 and a period of 10 consecutive nights in September 2018. Both static detectors were successful in recording bat passes for 11 nights in August 2018. During September, Anabat 1 recorded for 10 successive nights; however a technical fault with Anabat 2 prevented any recordings beyond the sixth night of the recording period. The weather conditions during the period were mostly dry with occasional light rain. The lowest and highest temperatures recorded by the detector each night in August is displayed in Table 1 and for each night in September in Table 2. In summary, weather conditions were suitable for bat activity during the recording period.

2.3.1.2 The static bat recorders recorded frequency division[2] bat sound and were programmed to record simultaneously from 30 minutes before sunset until 30 minutes after sunrise during each night.

2.3.1.3 One static bat recorder was placed at ground level adjacent to the entrance of an underpass (NZ57142448) in the location shown as Anabat 1 (A1) in Figure 2 and the second bat recorder was also positioned at ground level on open ground (NZ57332467) as shown as Anabat 2 (A2) in Figure 2. Both locations are considered likely to be used as foraging/commuting features.

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[1] . Collins, J. (ed) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London. Table 4.1 pg. 35

[2] Frequency division is one of the 'broad band' systems that simultaneously monitor the full range of frequencies contained within all bat calls. Collins, J. (ed) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.

2.3.1.4 The recorded bat sounds (sonograms) were subsequently analysed using the computer programme Analook. The sonograms were analysed through comparison with published bat sound parameters such as maximum frequency, minimum frequency, peak frequency, call duration and inter-pulse interval in order to identify each bat sound to species or genus level wherever possible[3]. The number of bat registrations per species was recorded for each location.

2.3.1.5 Four species belonging to the *Myotis* genus are known to be present within the local area [4], namely whiskered bat (*Myotis mystacinus*) Brandt's bat (*Myotis brandtii*), Daubenton's bat (*Myotis daubentonii*) and Natterer's bat (*Myotis nattereri*). There is a significant overlap between the echolocation call characteristics of these species and subsequently a conclusive identification of *Myotis* bats to species level is rarely possible. As such, all calls characteristic of *Myotis* species have been identified to genus only.

Table 1. Static Monitoring Survey Temperatures– August 2018

Date	Temperature (lowest and highest recorded in °C)	
	A1	**A2**
08/8/18	8 - 16	13 - 18
09/8/18	5 - 17	12 -17
10/8/18	5 - 11	9 - 13
11/8/18	15 - 17	16 - 19
12/8/18	14 - 18	16 - 19
13/8/18	13 - 17	15 - 18
14/8/18	16 - 18	18 - 20
15/8/18	14 - 18	16 - 20
16/8/18	7 - 13	12 - 16
17/8/18	21 - 22	22 - 24
18/8/18	21 - 22	22 - 23

[3] Russ, J., Barlow, K., Briggs, P. and Sowler, S. (2012). *British bat calls – A guide to Species Identification*. Exeter, UK: Pelagic Publishing.

[4] Trust, B. (2018). UK Bats - Types of bats - Bat Conservation Trust. [online] Bat Conservation Trust. Available at: https://www.bats.org.uk/about-bats/what-are-bats/uk-bats [Accessed 26 Nov. 2018].

Table 2. Static Monitoring Survey Temperatures – September 2018

Date	Temperature (lowest and highest recorded in °C)	
	A1	**A2**
13/9/18	11 - 16	12 - 18
14/9/18	5 - 13	7 -14
15/9/18	12 - 14	14 - 15
16/9/18	5 - 16	6 - 17
17/9/18	14 - 20	15 - 21
18/9/18	12 - 18	10 - 14
19/9/18	8 - 13	-
20/9/18	6 - 11	-
21/9/18	5 - 11	-
22/9/18	3 – 9	-

2.4 Personnel and Equipment

2.4.1.1 All survey work was undertaken by two experienced surveyors (Andrew Westgarth MCIEEM CEnv[5] and Thomas McQuillan MCIEEM[6]).

2.4.1.2 Survey equipment used for the Bat Transects included Pettersson D200 bat detector and Echo meter Touch 2.

2.4.1.3 The static detector models used for the static detector monitoring surveys were Anabat Express.

2.5 Limitations

2.5.1.1 The bat transect surveys and automated surveys were undertaken in good weather conditions and therefore no limitations to any of the surveys have been identified with respect to weather conditions.

2.5.1.2 The bat transect surveys commenced 10 – 20 minutes after sunset. This was due to the site being a large flat open area where there was little or no shade either from topographical features,

[5] Natural England Class Licence Registration No. 2015-14953-CLS-CLS - CL18 Level 2 (Bats).
[6] Natural England Class Licence Registration No. 2015-11312-CLS-CLS - CL18 Level 2 (Bats).

habitats or buildings therefore the environment remained light for some time after sunset. The survey start times were therefore adjusted to take this into account.

2.5.1.3 Access was restricted to all buildings such that internal inspections and close external examinations were not possible for most of them. In these cases the potential of the buildings to support bats was assessed visually. The main exception to this was the small red brick outbuilding (B5), which it within open and accessible habitat. A detailed close external inspection was possible here, although the interior could not be accessed safely.

2.5.1.4 One of the static bat detectors suffered a technical fault during the September survey. However, this is not believed to have been a significant limitation to the surveys when considered in context with the results of the transect surveys, the data collected from the other static recording device and the fact that the recording period for this month still exceeded the period of 5 consecutive nights recommended in best practice guidance[7].

2.5.1.5 Overall there were no significant limitations to the surveys.

[7] Collins, J. (ed) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London. Table 8.3, pg. 58

3 Results

3.1 Bat Roost Potential Survey – Structures

Building B1 – RDL Building

3.1.1.1 Located at approximate NGR NZ 5732 2526, the RDL building is a large disused warehouse covering approximately 6000 m^2. The building is of mixed material construction with the external walls and roof elevations clad in corrugated sheeting. The building has not been in used since the 1990s. Several missing sections of cladding on the external elevations provide open access for bats to the internal areas of the warehouse.

3.1.1.2 Attached to the western elevation of the main warehouse is a disused canteen of redbrick construction with a pitched corrugated roof at the north and south elevations. Many of the windows were boarded with timber sheeting at the time of the survey. Timber barge and fascia boarding is present on the external elevations. Pigeon (*Columba* sp.) activity was noted within the building.

3.1.1.3 The RDL building was considered to hold features of at least low bat roost potential. Features of potential value to roosting bats included gaps/crevices behind the timber fascia and barge boards on the canteen building, behind the boarding on the external windows, between corrugated sheeting, and within the brick-built stores on the south east elevation of the building.

Building B2 – Tube City

3.1.1.4 Positioned at approximate NGR NZ 5722 2500, Tube City is a small/medium warehouse with an approximate footprint of 770 m^2. The lower walls are of redbrick construction with the upper walls clad in corrugated sheeting. Large roller doors are located on the north and south elevations. The building has a pitched roof at the east and west elevations that are clad in corrugated sheeting. The building was previously used as a car workshop and garage until its closure within the last 12 months.

3.1.1.5 Tube City was considered to hold features of low bat roost potential. Features of potential value to roosting bats included gaps/crevices between individual pieces of corrugated sheeting and between the redbrick walls and the overlapping corrugated sheeting on the external elevations.

Building B3 & B4 – Pellet Plant & Runtech Garage

3.1.1.6 Located at approximate NGR NZ 5702 2497 is the Pellet Plant and Runtech Garage.

3.1.1.7 The disused Pellet Plant is a large complex building of redbrick construction with a flat roof. Open doorways and windows could allow bats to access the internal areas of the building. Swallows (*Hirundo rustica*) were recorded nesting within the ground floor open-fronted storage pits.

3.1.1.8 Runtech Garage remains in use and includes a medium sized building that is used as a car garage. The external elevations of the building are of redbrick construction and partially clad in corrugated sheeting. The building has a flat roof.

3.1.1.9 Both the Pellet Plant and Runtech Garage were considered to hold features of low bat roost potential. Features of potential value to roosting bats included gaps/crevices on the external brick walls and between the overlapping corrugated sheeting on the external elevations.

Building B5 – Bridge & Small Brick Building

3.1.1.10 The bridge is located at approximate NGR NZ 5713 2447 to the west of the watercourse known as The Fleet, and supports road infrastructure. It is approximately 18 m wide and has a steel structure (underside and side walls), with reinforced vertical concrete abutments to the north and south. The bridge spans an area of bare earth with several sections of disused pipe. A bat dropping was noted on a piece of disused steel pipe under the bridge. Due to the open access underneath the bridge it is likely the dropping is a result of bats commuting between the teardrop plots 1 and 2 and land to

the south of the site. The bridge was considered to hold features of low bat roost potential. Features of potential value to roosting bats included gaps/crevices where the reinforced vertical concrete abutments had started to disintegrate and gaps between the concrete abutments and the steel girders beneath the bridge deck.

3.1.1.11 Located at approximate NGR NZ 5718 2450 is a small outbuilding of redbrick construction with a north-facing sloped concrete slab roof. The building is located to the south of the watercourse known as The Fleet. The disused building has no windows with an open doorway on the southern elevation. A barn owl (*Tyto alba*) box is located within the building along with several old swallow nests. The building contains a single room and is not in current use. The building is in a poor state of repair with gaps noted in the external and internal walls and around the timber doorframe. The small outbuilding was considered to be of low bat roost potential based on the presence of these features.

Building B6 – Entrance Bridge

3.1.1.12 The entrance bridge is located to the west of the gate house at approximate NGR NZ 5739 2392. The bridge is supported by three parallel lines of steel columns, with each line containing eight individual supports. The bridge itself has a width of approximately 25 m and supports road and rail infrastructure. The bridge spans four vehicle lanes. The underside of the bridge is clad in steel sheeting with paving located on the sloping abutments. Artificial lighting is located on the bridge with the road network on and below the bridge in regular use.

3.1.1.13 The entrance bridge was considered to hold features of negligible bat roost potential because of the lack of significant gaps or crevices in the walls of the bridge and regular disturbance from high noise and vibration levels from the vehicular access to the site.

Building B7 – Steel House

3.1.1.14 Located at approximate NGR NZ 5766 2411, Steel House is a large office building of brick construction with a complex structure formed of a series of interlocking hexagons that span up to six floors. Its immediate surroundings include areas of car parking, ornamental planting, amenity grassland and a pond. It was built in 1977 and closed in 2016, since which time it has been disused. The building has suffered from water ingress via the flat roofs. .

3.1.1.15 Steel House was considered to hold features of low bat roost potential. Features of potential value to roosting bats included gaps/crevices in the external walls (i.e. around windows), behind ivy on the external elevations and gaps behind the corrugated sheeting that covers some of the windows.

3.2 Bat Activity Surveys – Walked transects

3.2.1.1 The majority of bats observed were flying in close proximity to water features along the boundaries of the site. The overall bat activity observed during the transect surveys was low with bats observed and/or heard at SLPs 4 and 7 only. The only bat species recorded was common pipistrelle (*Pipistrellus pipistrellus*).

3.2.1.2 The highest number of passes (2) was recorded at SLP 4. No bat calls were recorded while walking between the SLPs. The raw survey data are included in Appendix C.

3.3 Bat Activity Surveys – Static Monitoring

3.3.1.1 The numbers of bat passes and species recorded for each static bat recorder location in August and September 2018 are summarised in Table 3. In August three species of bat (common pipistrelle, soprano pipistrelle *(Pipistrellus pygmaeus*) and noctule (*Nyctalus noctula*) were recorded by Anabat 1 and two species of bat (common and soprano pipistrelle) were recorded by Anabat 2. In September common pipistrelle and noctule were recorded at both of the static detector positions.

3.3.1.2 Multiple passes were recorded for all species, however the static recording devices are unable to distinguish between individual bats, so it is important to note that the number of bat passes does

not necessarily relate to the number of bats in a location; i.e. a single bat could be foraging within the area throughout the night and subsequently this would result in multiple passes.

Table 3. Static Monitoring Survey Results – August and September 2018

Month	Static Detector Location (Figure 2)	Species (total passes / passes per night)			Total Passes (all species)
		Common pipistrelle	Soprano pipistrelle	Noctule	
August	A1	93 / 8.5	2 / 0.2	5 / 0.5	100
	A2	3656 / 332.4	56 / 5.1	0 / 0	3712
September	A1	1430 / 143.0	0 / 0	6 / 0.6	1436
	A2	16 / 2.7	0 / 0	23 / 3.8	39

3.3.1.3 During August Anabat 2 recorded a significantly greater number of common pipistrelle and soprano pipistrelle passes than Anabat 1. The peak common pipistrelle number of passes was at Anabat 2 on 9th August 2018 when more than 900 bat calls were recorded in a single night. Calls from noctule bats were recorded only at Anabat 1.

3.3.1.4 In September Anabat 1 recorded a significantly greater number of common pipistrelle passes than Anabat 2 for the same period. There were no records of soprano pipistrelle in September. The peak number of common pipistrelle passes during September was at Anabat 1 on 15th and 16th September 2018 when more than 400 bat calls were recorded in a single night. Noctule calls were occasional at both Anabat positions. A similar number of noctule passes was recorded in August and September at Anabat 1, but at Anabat 2 all recorded noctule passes were during September.

4 Conclusions

4.1 Bat Roost Potential Survey – Structures

4.1.1.1 No evidence of confirmed bat roosting activity was recorded during the daytime assessment. A single bat dropping was found under the bridge (B5) on a steel pipe. As the dropping was not positioned directly underneath any visible structure that could be used as a bat roost it is likely to be the result of bats commuting through this area.

4.1.1.2 Structures B1, B2, B3, B4, B5 and B7 were considered to hold features of at least low bat roost potential. The entrance bridge (B6) was considered to hold features of negligible bat roost potential.

4.1.1.3 Six of the seven structures surveyed have the potential for individual bats to roost opportunistically and do not provide suitable conditions to be used by large numbers of roosting bats by virtue of the limited roosting space and shelter that they provide and the level of disturbance to which they are subjected on a day to day basis[8].

4.2 Bat Activity Surveys –Walked transects

4.2.1.1 The overall bat activity observed during the transect surveys was low with bats observed and/or heard at SLPs 4 and 7. The only bat species recorded was common pipistrelle.

4.3 Bat Activity Surveys – Static Monitoring

4.3.1.1 Of the species of bat recorded, common pipistrelle was by far the most abundant within the site.

4.3.1.2 Although a large number of bat passes was recorded at both static detector locations this does not necessarily imply there was a large number of individual bats. A single bat could have been foraging within the area throughout the night and subsequently this would result in multiple passes.

4.3.1.3 In total three species of bat were recorded at both of the static detector positions. Species include common pipistrelle, soprano pipistrelle and noctule.

4.4 Summary

4.4.1.1 All structures provide at most low bat roost potential and have the potential for individual bats to roost opportunistically.

4.4.1.2 No evidence of bat roosts was found within the site or the surveyed structures. A single bat dropping was found under the bridge (B5) and this is likely to be the result of a fly pass as bats commute through or feed within the area.

4.4.1.3 Based on findings from both the walked transects and static monitoring surveys the general level of bat activity within the site is considered to be low. The majority of recorded bat activity comprised low numbers of commuting and foraging common pipistrelle with occasional soprano pipistrelle and noctule passes, all of which are commonly occurring species in the wider area surrounding the proposed development[9]. No brown long eared (*Plecotus auritus*) or *Myotis* bats were recorded on site from both the walked transects and static monitoring surveys.

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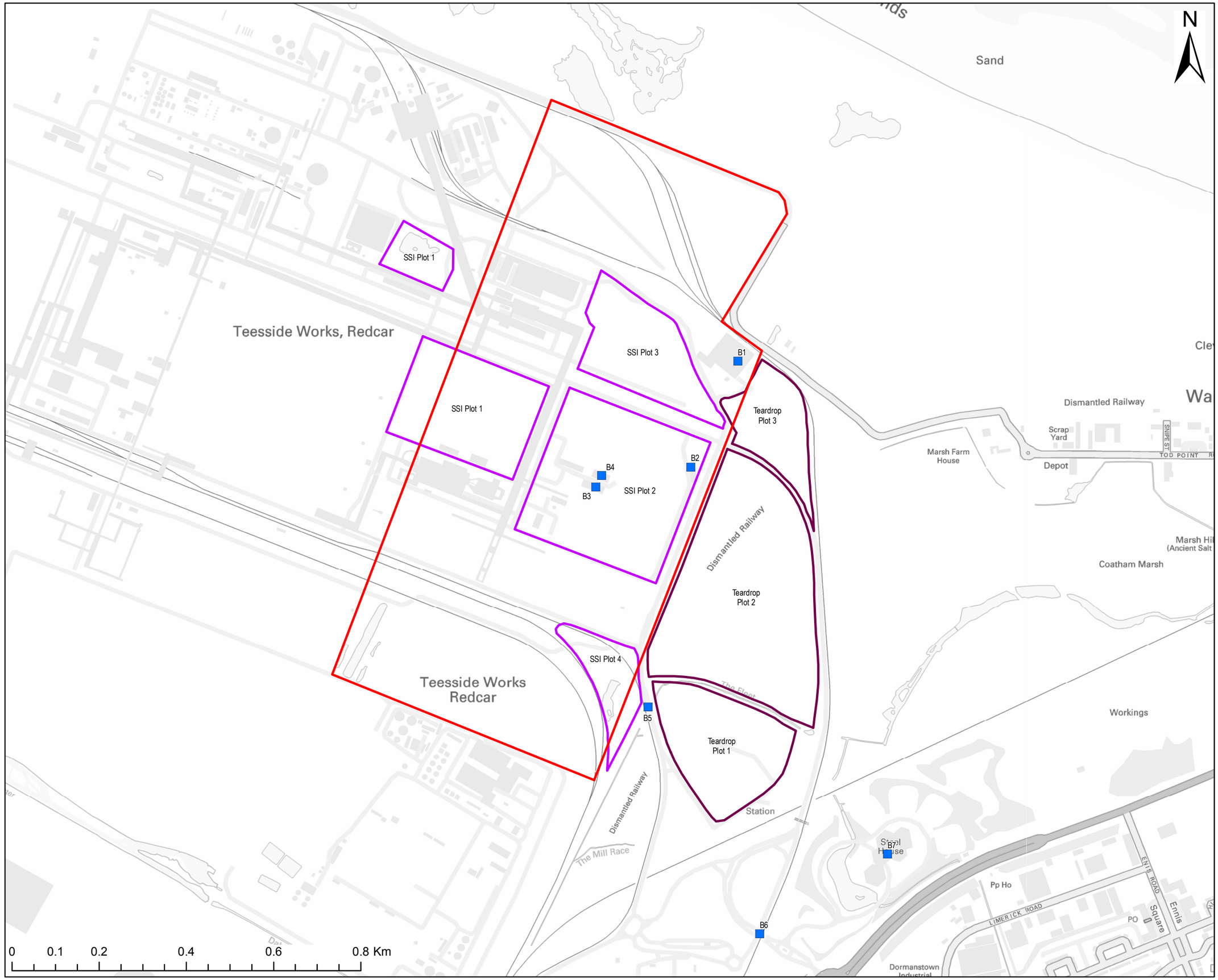
[8] Space, shelter, protection and "appropriate conditions" including levels of disturbance are factors to be considered when classifying bat roost potential as set out in Collins (ed) (2016), Table 4.1 pg. 35.

[9] Joint Nature Conservation Committee. 2007. Second Report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Peterborough: JNCC (Available from: www.jncc.gov.uk/article17); http://www.nybats.org.uk/page8.htm; and https://species.nbnatlas.org/species/NHMSYS0000080186

Figures

Figure 1. Bat Scoping Survey – Building Assessment Locations



Filename: K:\Newproje\60559231 - Clean Gas Project\GIS\02_Maps\FIGURE X Building Locations.mxd

AECOM Limited
2 City Walk
Leeds, LS11 9AR
+44 (0)113 204 5000
www.aecom.com

Project Title:

CLEAN GAS PROJECT

Client:

OGCI
CLIMATE INVESTMENTS

Location Inset:

LEGEND

- SSI Boundary
- SSI Plot
- Teardrop Plot
- Building Location

AECOM Internal Project No:

60559231

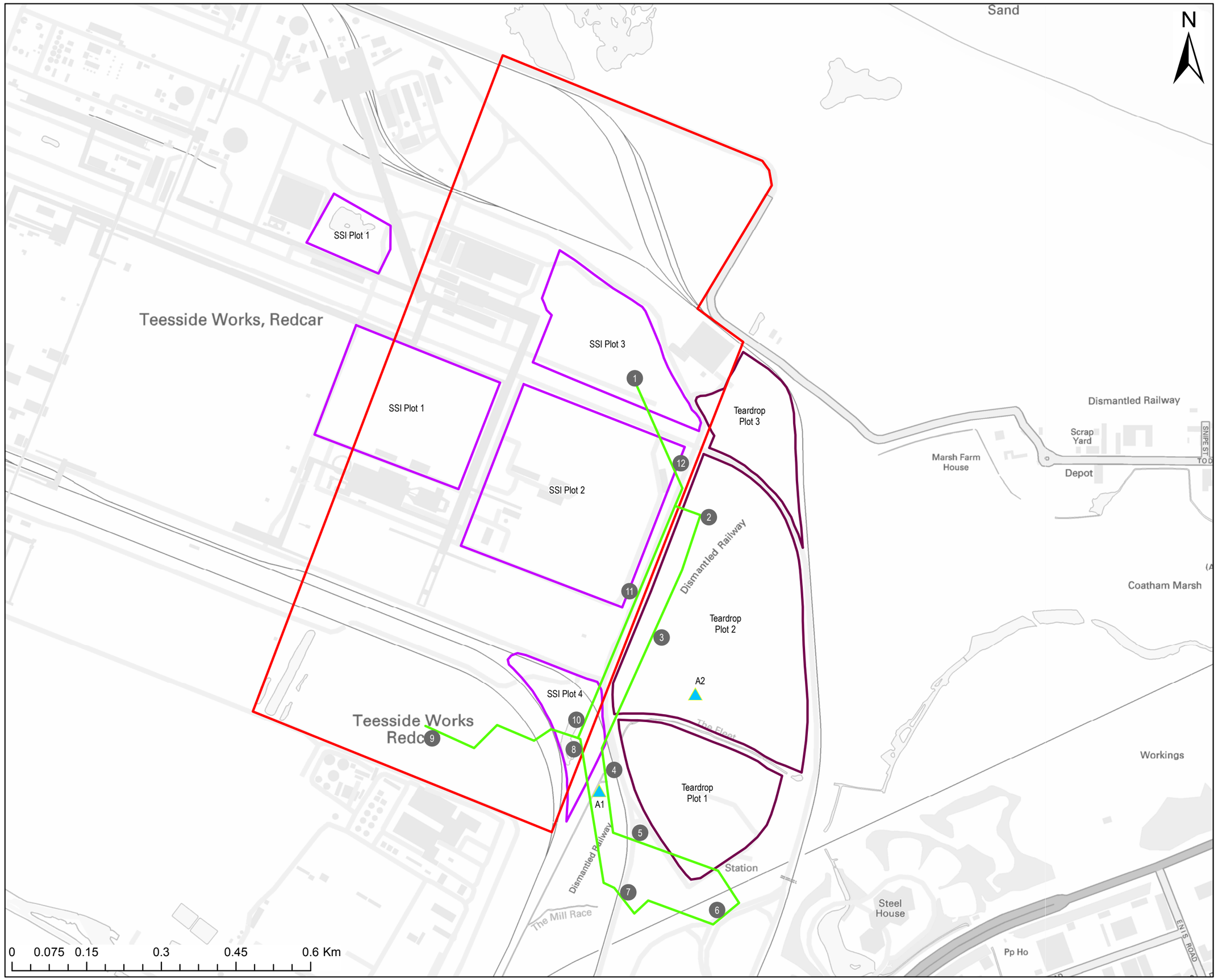
Drawing Title:

BUILDINGS AND STRUCTURES SURVEYED

Scale at A3: 1:8,000

Drawing No:			Rev:
FIGURE 1			01
Drawn:	**Chk'd:**	**App'd:**	**Date:**
AG	RW	RW	23/11/18

Figure 2. Bat Activity Surveys – Walked Transect and Static Monitoring Locations



Filename: K:\Newproje\60559231 - Clean Gas Project\GIS\02_Maps\FIGURE X Bat Transect Route.mxd

AECOM Limited
2 City Walk
Leeds, LS11 9AR
+44 (0)113 204 5000
www.aecom.com

Project Title:

CLEAN GAS PROJECT

Client:

OGCI
CLIMATE INVESTMENTS

Location Inset:

LEGEND

- SSI Boundary
- SSI Plot
- Teardrop Plot
- Bat Transect Route
- Stationary Listening Point (SLP)
- Anabat Position

AECOM Internal Project No:

60559231

Drawing Title:

BAT TRANSECT AND RECORDING LOCATIONS

Scale at A3: 1:7,000

Drawing No:			Rev:
FIGURE 2			01
Drawn:	**Chk'd:**	**App'd:**	**Date:**
AG	RW	RW	23/11/18

Appendix A. Legislation Context

Bats

Bats are fully protected through The Conservation of Habitats and Species Regulations 2017 as European Protected Species (EPS). They also receive some protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

It is an offence to deliberately capture, injure or kill a bat. It is an offence to damage or destroy a breeding site or resting place of a bat. It is an offence to deliberately disturb a bat; in particular any disturbance which is likely (a) to impair their ability - (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or (b) to affect significantly the local distribution or abundance of the species to which they belong.

Under the Wildlife and Countryside Act 1981 (as amended), it is also an offence to intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection; or obstruct access to any structure or place which any such animal uses for shelter or protection.

Appendix B. Photographs

Photo 1. RDL Building (B1).

Photo 2. Tube City (B2).

Photo 3. Buildings B3 and B4 – Pellet Plant and Runtech Garage.

Photo 4. Building B5.

Photo 4. Bridge B5.

Photo 6. Entrance Bridge (B6).

Photo 7. Steel House (B7).

Appendix C. Raw Survey Data

Surveyor	Thomas McQuillan Andrew Westgarth			**Date**	8/8/18
Start time	21:08	**Finish time**	22:25	**Sunset**	20:52
Weather (Level of rainfall, wind and cloud cover)					
Dry, 1- 2 Bft, 20% cloud cover, Humidity 72%					
Temp at start	-	**Temp at end**	13.2 °C	**Weather changes**	N/A
Spot count time	3 min			**Detector**	Pettersson D200 Echo meter Touch 2

BAT PASSES:

Station number	Time (start/end)	Common pipistrelle	Soprano pipistrelle	*Myotis*	BLE	Noctule	Leisler's	Other	Comments
1	21:08								
2	21:13								
3	21:19								
4	21:25	2 x passes							
5	21:33								
6	21:41								
7	21:48	1 x Pass W to E							
8	21:58								
9	22:03								
10	22:10								
11	22:15								
12	22:22								

Surveyor	Thomas McQuillan Andrew Westgarth			**Date**	13/9/18
Start time	19:37	**Finish time**	21:00	**Sunset**	19:28
Weather (Level of rainfall, wind and cloud cover)					
Dry, 2 Bft, 40% cloud cover, Humidity 67%					
Temp at start	14.7 °C	**Temp at end**	14 °C	**Weather changes**	N/A
Spot count time	3 min			**Detector**	Pettersson D200 Echo meter Touch 2

BAT PASSES:

Station number	Time (start/end)	Common pipistrelle	Soprano pipistrelle	*Myotis*	BLE	Noctule	Leisler's	Other	Comments
1	19:37								
2	19:45								
3	19:52								
4	19:58	1 x pass							
5	20:07								
6	20:14								
7	20:21								
8	20:28								
9	20:33								
10	20:40								
11	20:44								
12	20:53								