
The Cambridge South East Transport Order

Transport And Works Act 1992

Transport And Works (Applications And Objections Procedure) (England And Wales) Rules 2006

Appendix 10.4 – Badger Surveys

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1 Executive Summary

Capita ecologists were commissioned by Greater Cambridgeshire Partnership to undertake Badger Activity Surveys to map the territorial extents of three clans within the footprint of the proposed Cambridge South East Transport route Phase 2.

An ecological constraint survey previously undertaken in 2019 by WYG and which was followed up by a further detailed badger survey by White Young Green (WYG) in January 2020 identified a large number of badger setts including five suspected main setts detailed in the WYG report.

Given the abundance of setts recorded within the survey area and the evidence from the badger survey conducted in January 2020 by WYG, it was decided that a further bait marking exercise should be undertaken to gain a better understanding of badger territories across the proposed scheme. Three setts were subject to bait marking survey as detailed in the survey scope from Mott McDonald. Two main setts: WUS06, WUS09 and setts in woodland referenced W11 including OUS07. Additional setts identified by WYG in 2019/20 were outside the zone of influence and not subject to bait marking surveys.

Evidence of badgers (foraging, latrine sites and pathways) using the land within the Scheme footprint was highlighted in the WYG Badger Survey Report. Further incidental records collected during Phase 2 surveys between May and October in 2020 clearly show that badgers are using the field boundaries and crossing arable fields to get to foraging areas and accessing annexe and outlier setts throughout the Scheme footprint.

Based on the survey results of the bait marking surveys, in the absence of mitigation, sub-optimal foraging habitat (arable land and 6m grass margins) will be lost during the construction phase. One badger clan associated with WUS06 and its annexe sett WUS07 are likely to be affected.

Evidence points to potential overlap between WUS06 and WUS09 territories, suggesting that this may potentially be held by one social clan and WUS09, due to its low levels of activity, is actually a subsidiary sett to either WUS06 or a clan with a main sett beyond the survey boundary.

This report describes the methods and results of the badger bait marking survey and provides plans of additional badger activity across the Scheme footprint.

2 Introduction

2.1 Background

- 2.1.1 Capita Ecologists were commissioned by the Greater Cambridgeshire Partnership to undertake surveys to determine badger activity and their territories in relation to the development of The Cambridge South East Transport (CSET) Phase 2, (the 'Scheme').
- 2.1.2 Two main setts were identified as being directly impacted or close to the scheme footprint during surveys in 2019 and 2020 conducted by WYG. These setts were identified as requiring bait marking surveys to provide more information on the movement of badgers across the proposed scheme area and the interconnectivity of the setts. This information is necessary to assess impacts and identify where the artificial sett should be located.
- 2.1.3 The setts identified for bait marking surveys were sett WUS06; WUS09 and OUS07. Sett identification follows the references used in the WYG report.
- 2.1.4 The aim of this report is to summarise the results of the bait marking surveys conducted between Trumpington to Babraham, to inform the design of the Scheme and, in conjunction with the Environmental Statement, provide sufficient information to allow the LPA when deciding whether to grant planning permission of the Scheme.

2.2 Project Description and Purpose of the Scheme

- 2.2.1 The Cambridge South East Transport (CSET) Phase 2 project aims to create a new public transport route which would link the Cambridge Biomedical Campus via Great Shelford, Stapleford and Sawston to a new travel hub near the A11/A1307 with connections to Babraham and Granta Park.
- 2.2.2 The route would be entirely off-line, only interacting with other traffic at junctions. Junctions between existing roads and the new public transport route would be controlled by traffic lights. Alongside this new public transport route would be a new path for active travel. The section between Babraham and Sawston has been reviewed in terms of its detailed alignment, to reduce the impact on farm operations and reduce impacts on landscape character in the area.
- 2.2.3 The Cambridge South East Transport (CSET) Project aims to create a vital link to ease congestion, offer sustainable travel choices, connect communities and support growth in the in the South East of Cambridge. CSET will form part of the Cambridgeshire Autonomous Metro, providing high quality, frequent and affordable public transport.

- 2.2.4 CSET Phase 2 comprises a segregated public transport route from the A11 (near Brabham) to the Cambridge Biomedical Campus (CBC). This bus route would include new walking, cycling and equestrian links.
- 2.2.5 The preferred route (brown route and travel hub B) largely crosses open arable land.

2.3 Legislation and Policy

- 2.3.1 Badgers receive protection in the UK as a result of both legislation and planning policies. This section outlines the primary legislation protecting badgers. All of the information below is relevant to this badger report and to the work proposed at the development scheme.

Legislation

- 2.3.2 Badgers are protected under the Protection of Badgers Act (1992) which makes the following actions illegal:
 - To wilfully kill, injure, take or possess a badger
 - The reckless and/or intentional cruelty of a badger
 - Interference with a badger sett by damaging or destroying it
 - Obstruction of access to, or any entrance of a badger sett; and
 - Disturbance of a badger when it is occupying a sett.

The Natural Environment and Rural Communities Act 2006

- 2.3.3 Section 40 of NERC Act 2006 places a statutory duty on public bodies, such as local authorities, that "every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity".

Planning Policy

- 2.3.4 National Planning Policy is set out by the National Planning Policy Framework (NPPF February 2019) combined with the guidance document Planning for Biodiversity and Geological Conservation: A Guide to Good Practice" (ODPM 2005).
- 2.3.5 Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to 'improve biodiversity' (paragraph 8c).

- 2.3.6 References to biodiversity net gain elsewhere in the new NPPF (such as paragraph 175d) support the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protect, and enhance biodiversity promoting conservation, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006), ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006). The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 174b).
- 2.3.7 Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF (paragraph 175) which promotes Local Planning Authorities to assess if significant harm would occur to biodiversity and decide accordingly.

2.4 Personnel and Quality Assurance

- 2.4.1 All ecologists employed by Capita adopt best practice working methods in undertaking surveys including the Chartered Institute of Ecology and Environmental Management's (CIEEM) code of professional and all fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior staff and appropriately licensed ecologists.
- 2.4.2 The badger surveys were led by Senior Ecologists Ann Sherwood and Neil Page assisted by Consultant Ecologists, Philip Dutt, Thomas Severn with Tom Fawley and Mark Johnson undertaking some of the latrine checks.
- 2.4.3 Ann Sherwood is a full member of CIEEM and has been an ecological consultant for over 35 years. She has managed large scale habitat and species monitoring programmes and designed protected species mitigation. She has a great deal of experience with badgers where she has held numerous development and damage licences including closing setts, working on live setts and designed mitigation for badgers.
- 2.4.4 Philip Dutt is a full member of CIEEM and has over 16 years' experience in ecological consultancy including working on large-scale infrastructure projects such as railway line upgrades, smart motorway schemes, new water mains, international power cables, and windfarms and has conducted numerous species surveys over many years. His key skills lie in relation to protected (and other) species including a range of badger surveys.
- 2.4.5 Thomas Severn is an assistant ecologist who has two years' experience in ecological consultancy. He has conducted badger walkover surveys and assisted with the set-up of camera traps to record badger activity.
- 2.4.6 Thomas Fawley is an ecologist with over 6 years' experience in ecology. Thomas has extensive surveying experience for badger and regularly leads initial walkover surveys of sites to identify signs of badger activity.
- 2.4.7 Mark Johnson is an assistant ecologist with three years' experience working within professional ecological consultancy. Mark has worked on national infrastructure projects (specifically High Speed Two) and is building survey experience for badgers. He has assisted on numerous badger walkover surveys and set up camera traps effectively to record badger activity around sets.

3 Methods

3.1 Survey and Report Objectives

- 3.1.1 The surveys and report were carried out to identify territorial boundaries of three badger clans associated with two main setts WUS06, WUS09 and setts associated with woodland W11 including OUS07 as detailed by the survey scope issued by Mott McDonald (403394-MMD-ENV-00-TN-EN-4089_A. August 2020).
- 3.1.2 In addition, badger activity maps include detail of observations made between May and October 2020.

3.2 Desk-based Study

- 3.2.1 Biological Records provided by Cambridgeshire and Peterborough Environmental Records centre (CPERC) in July 2020 covering a 2km radius of the scheme were reviewed.

3.3 Field Survey

Badger Bait Marking

- 3.3.1 A scoping survey was undertaken a few days prior to the bait marking exercise to identify the known latrine sites identified in the WYG Badger Survey from January 2020 and to identify any new latrine sites that had been created since March. A systematic survey for latrines began by following badger paths from the main sett, along with walking all boundaries within 500m.
- 3.3.2 The methodology used for the bait marking surveys is outlined below and followed the general methods detailed in Delahey et al 2000.
- 3.3.3 Bait was comprised of a ratio of dry bait (peanuts, oats and peanut butter) and mixed with syrup and treacle in a 10:1 ratio of bait to pellets to bind the pellets in a ratio of approximately 10:1 by volume of peanuts and syrup/dry ingredients. A different spoon was used for each bucket of bait to avoid cross-contamination. Standard plastic pellets designed for badger bait marking exercises were used with a different colour/s for each of the three setts surveyed. Bait colours used, correspond to the three setts as detailed in table 1 below:

Table 1 - Pellet colour corresponding to Sett designation for three sites

Pellet Colour	Sett
Green	OUS07
Red	WUS06
Grey	WUS09

- 3.3.4 Bait was placed inside active sett entrances to arouse interest initially on 10 and 11 September 2020. This was followed up by fresh bait put on 14 September at all three setts.
- 3.3.5 Following this, the three active setts (WUS06, WUS09 & those in W11 woodland including OUS07) were re-baited on 18 September and, from this date, baited daily (including weekends). While baiting in the morning increases the risk of non-target species eating the bait, this was not always practicable. Wherever possible, bait laying was alternated between the sites so that all sites had bait laid in the late afternoon wherever possible. The bait stations were well-hidden and it is considered unlikely that these were taken by non-target species, especially bait laid inside sett entrances particularly at site WUS06.
- 3.3.6 At one sett (WUS06), its known active annexe setts (WUS07 & WUS08) were also baited because the setts were almost indistinguishable from one another and with numerous sett entrances distributed along the whole hedgeline plus well-worn pathways linking the setts together, it was obvious that the three setts belonged to the same badger clan and annexes were within the 30m radius from WUS06. Therefore the methods have not deviated from best practice (Delahey *et al* 2000), however it is acknowledged that badger activity could have been influenced by the presence of food within annexe locations.
- 3.3.7 Where there were no obvious safe places to hide the bait, the bait was continued to be put down active or seemingly active holes to ensure that badgers took up the bait at the sett. Elsewhere bait was placed in depressions and covered with rocks, stones, bricks and sticks or whatever was available, wherever possible to prevent other mammals eating the bait. The bait was placed along well-worn pathways and obvious badger crossing points through fence lines at regular intervals.
- 3.3.8 Approximately 25-30 bait points were applied per sett, roughly 50-100 ml (up to half a cup) per bait point. Bait marking was undertaken. Baiting was undertaken for the minimum of 14 days at sett WUS09 due to access constraints but 21 days at the other two setts. Latrine checks commenced on 18 September, 3 and 4 days after pre-baiting therefore all setts have been baited to the minimum standard as ascribed in best practice (Delahey *et al* 2000).

- 3.3.9 A systematic survey was undertaken, paying particular attention to linear features such as ditch banks, hedgerows and the River Granta and other land boundaries as well as crossing points such as foot bridges or fence lines and visual landmarks such as bunds and telegraph poles, for example.
- 3.3.10 All droppings were broken apart using a stick and spread on the ground and checked thoroughly for pellets. Care was taken to avoid treading on dung pits/latrines as this can disrupt their use and cause anomalous results. All results were recorded daily to provide reliable data for territorial analysis. This included noting whether bait had been taken, checking all known latrines daily and reporting any fresh deposits and noting if pellets were present. The locations of the latrines/dung pits were all marked using a Global Positioning device. Photographs were taken of any relevant findings.
- 3.3.11 Searches/checks were undertaken along all boundaries within 250m of the main setts daily. Where latrines were identified just outside of the 250m buffer (see mapping), these were also inspected. All latrines along boundaries within 500m of the main sett were conducted once a week.

3.4 Survey Limitations and Assumptions

- 3.4.1 Although bait marking surveys is recommended to be undertaken in late February to late April when territory marking is most intense, they can also be conducted between early September and mid-October. The surveys for the CSET Phase 2 scheme were conducted in September and/or October 2020 so fall within this latter period and are considered to provide an accurate reflection of badger activity around the setts surveyed.
- 3.4.2 The bait marking at OUS07 was stopped after 14 days into the survey period because of shooting interests on the estate at the request of the landowner/occupier who had already held up pheasant release to allow other Phase 2 surveys to be completed. Therefore, survey monitoring was limited at this site to the technical minimum providing sufficient results.
- 3.4.3 Despite best attempts to conceal and hide bait under vegetation, logs, stones etc. and placing them along well-used badger pathways and crossing points, it is possible that some bait could have been taken by other animals, although there was no evidence to suggest this (other mammal droppings were recorded throughout the surveys and no pellets or undigested bait were observed). Enough bait points were set throughout the survey and overall, this was not considered to significantly affect the results of the survey.

4 Results

4.1 Desk Based Study

- 4.1.1 Data obtained from the CPERC identified 76 records of badger within 2 km of the Scheme. Four of these relate to road collisions on the A11 between 2007 and 2008. Two records relate to Sawston Road and includes camera trapping exercises in 2019 in which a young club was identified.
- 4.1.2 Three records relate to setts at:
- Magog Down 2008 (TL488528)
 - Haverhill Road, 2007 (TL488529), and
 - Stapleford Parish Pit 2016 (TL486528)
- 4.1.3 Immediately to the east of the route a main sett is identified at Greater Shelford to the west at the rear of properties at Trinity Lane, approximately 600m west of the scheme.
- 4.1.4 In addition an unidentified potential main sett is located at Trumpington Meadows, however this is separated by the M1 Motorway network to the northwest (2.7 5km).
- 4.1.5 Immediately near the scheme, a sett was identified in proximity of the Uplands at Cherry Hinton Road. However, due to recording accuracy of 1km precision within the data, it is difficult to define the location exactly.
- 4.1.6 Road collisions have additionally been recorded at Graham's Road near Whitehill Farm woodlands which is a known main sett location.
- 4.1.7 A sett has been confirmed at Whitefields (Uplands) during the Phase 2 surveys conducted between May and October 2020.
- 4.1.8 The sett mentioned above in 'Whitehills woodland' was also confirmed as being present although the sett in woodland adjacent to Granham's Road was disused, but a further active sett was recorded in woodland again at Whitehill Farm. Badger pathways were noted in the woodland by the road and through the hedgerow.

4.2 Field Survey

- 4.2.1 Bait was readily taken up and all bait laid out was taken on every occasion. The full survey results are shown in Appendix A – Badger Bait Marking Results and shown on the plans in Appendix B – Badger Territory Plans. Incidental badger activity recorded between May and October 2020 is shown on Appendix C - Badger Activity Plans. Photographs to illustrate the results are at Appendix D.

Badger baiting marking**Sett WUS06 – Bury Farm**

- 4.2.2 Sett WUS06 is located along the banks of a dry ditch and hedgerow running east to west for around 700m between arable fields. There are 29 holes in total: 27 active with high levels of fresh digging, spoil and path networks as well as two partially used sett entrances were recorded along both the northern and southern banks of the ditch associated with this and its annexe setts: WUS07 and WUS08.
- 4.2.3 Latrines (LT) were observed at either side of the hedgerow at:
- its eastern end close to WUS08
 - along the farm track used for access parallel to the north and along the bank of the River Granta to the south, and
 - in the field margin immediately adjacent to the river.
- 4.2.4 A total of thirty-one latrines/dung pits were recorded within the 250m and 500m survey areas. Only three latrines appeared to be disused during the survey period.
- 4.2.5 Red pellets were recorded on seven occasions during the survey period between 14 September and 9 October 2020. First records were found at LT23 on the 14 September (TL 48744 51362) adjacent to sett WUS08 at the eastern end of the hedgerow.
- 4.2.6 Red pellets were found in latrine/dung pits at seven separate locations mainly along the River Granta and the main farm access track/footpath. Five latrines/dung pits (LT17 – LT21) were recorded on 3 October between TL48273 51505 and TL48665 51486 along the main farm access track/footpath with at least five latrines along the top of the river bank. Two and four of these latrines respectively had red pellets in them strongly suggesting that the river and the farm access track form territory boundaries.
- 4.2.7 Red pellets and undigested bait were also recorded (LT30) outside the 500m boundary to the west of the main sett near the boundary of Bury Farmhouse (TL 47617 51425). Although not described as a latrine it has been referenced in the survey results as such.
- 4.2.8 An additional latrine LT24 (TL48975 51433) with red pellets was recorded on 25 September outside the 500m boundary to the east of the ditch and hedgerow along a dry drainage ditch, showing that badgers movements extend both west and east beyond the 500m boundary searches. This latrine (LT24) also falls within the 500m survey area for WUS09.

- 4.2.9 Five latrines were recorded along the bank of the River Granta with obvious crossing points to land to south. This suggests that the River Granta is also a territory boundary.
- 4.2.10 One latrine (LT34 TL48662 50787) with red pellets was recorded significantly further south east of the sett on land south of the river within the Deal Farm badger clan's territory.
- 4.2.11 Additional observations recorded a new, recently excavated sett entrance in the field adjacent to the grass margin close to sett WUS06 on the north side of the hedgerow/ditch on 4 November during a walk-about. Sett entrances along the edge of the grass margin/arable land were very active during the bait marking survey.

Sett WUS09– Deal Farm

- 4.2.12 Sett WUS09 is located in broadleaved woodland along an old disused railway line which forms a boundary between a number of large arable fields. The sett is located on the southern edge of the woodland at its eastern end. The sett comprised 6 sett entrances, of which only two were considered to be active due to fresh spoil and a defined path through the vegetation. A further disused annexe sett was recorded on the northern bank of the woodland edge at TL 48411 50954 previously recorded by WYG. Other setts associated with WUS09 were all inactive at the time of the survey.
- 4.2.13 A total of thirty latrines/dung pits were recorded during the 250 and 500m surveys. Most were used although no fresh activity was noted at two latrines (LT32 and LT38).
- 4.2.14 Pellets were recorded at five separate latrine sites (LT32, LT34, LT4, LT47 & LT54) between 20 September and 9 October 2020. Grey pellets were recorded in three of the latrines with red pellets recorded in two latrines (LT34 & LT32). Both grey and red pellets were recorded in LT32 (TL48260 51213) along the south bank of the River Granta where there was a well-used crossing point. Two latrines with grey pellets were recorded adjacent to a drainage ditch to the south east of the sett.
- 4.2.15 One of these latrines (LT40 TL48571 50701) was regularly used, with grey pellets recorded on seven occasions throughout the survey period. Badger crossings over the drainage ditch were observed leading towards woodland to the east.
- 4.2.16 Badgers are also clearly moving across the scheme towards the River Granta and across fields to the sewage works where further latrines were recorded but no pellets were observed.

- 4.2.17 An additional observation noted in June 2020 during bat activity/tree surveys noted a badger walking along the grass margin south of the River Granta along with badgers socialising, indicating potential possible territory demarcation along the river and core use.

Sett OUS07 and OUS07A - identified in 2020 - Cheveley Farm

- 4.2.18 Sett OUS07 is located in an area of semi-natural broadleaved woodland in the banks of a pit, adjacent to the A11 with at least three active sett entrances and at least 11 sett entrances identified as partially active or disused. It was clearly a larger, active main sett at one time. The lack of latrines and used latrines found during the bait marking surveys has made it difficult to assess where the badgers are moving through the landscape.
- 4.2.19 A previously unrecorded active annexe sett with three sett entrances (OUS07A) was also present along the fenceline at TL 52036 49894. Plantation broadleaved woodland abuts the woodland along the Highway embankment and to the north of the semi-natural woodland. A 6m grass margin and arable land is present along the woodland boundary to the west. Badger pathways were noted along this margin, through the woodland and across the margin heading west to broadleaved woodland (W10) and a hedgerow (H37 - see Capita Habitat Report).
- 4.2.20 A total of 8 latrine sites were recorded during the scoping surveys, other ecological surveys and latrine checks in the 250m and 500m survey areas.
- 4.2.21 Green pellets were found in latrines/dung pits at two separate locations (LT63 (TL52088 50195) and LT69 (TL51812 50059). Pellets were first recorded on 25 September 2020. No green pellets were recorded in the other latrines or dung pits although all were being used, with fresh deposits observed during the survey period, but not regularly.
- 4.2.22 The bait marking in this area was restricted to 14 days due to landowner/occupier restrictions. However, permission was granted by the estate to collect marker flags, left in the woodland area which had not been collected previously on 14 October. Five of the latrines within the 250m boundary were checked on this occasion (LT62-LT68), 5 days after baiting ceased. Only latrine LT63 had fresh droppings.

5 Interpretation of Results

The results of the bait marking survey are shown on the plans in Appendix A-C.

Overall, badger activity associated with the main sett WUS06 and its annexe setts WUS07 and WUS08 was widespread with latrines recorded along the main access farm track and the banks of the River Granta. Several latrines were well used although not all had red pellets in them. These boundaries are likely to be territory boundaries with several latrines recorded along both boundaries. Significant amounts of foraging were recorded along both sides of the hedgerow and ditch east and west of the setts and the field margins adjacent to the woodland and River Granta. Well-worn pathways across the hedgerow/ditch, across the field to the south of the hedgerow/ditch and over the river were observed. Badger movements through the scheme extended beyond the 500m boundary survey area to the west and east of the main sett.

Badger activity at sett WUS09 was less when compared to activity levels around sett WUS06, although badger pathways were present and foraging was evident. Clearly there is an interaction between badgers from this badger clan and the badgers from WUS06 with evidence of badgers from WUS06 using the territory of WUS09 and high levels of activity to the south west to Deal Grove Woodland; potentially suggesting a main sett being present outside the 500m survey boundary indicated in both WYG Badger Survey Report 2020 and Capita's surveys. WUS09 was described as well-used in the WYG report (2020) but this does not seem to be the case now with numerous disused sett entrances or partial-used holes observed. The above results suggest that WUS09 is either a subsidiary to WUS06, or that the clan has reduced its use of this sett in favour of another main sett constructed outside the survey boundary.

Activity at sett OUS07 within woodland W11 was low overall with the sett described as a main sett showing only limited activity, although there were several disused or partially-used sett entrances scattered through the woodland. Despite all bait being taken, very little evidence was recorded in the small number of latrines recorded within 500m of the sett. It is therefore considered that although the sett may have been a more active main sett in the past, its use is restricted potentially due to fragmentation and isolation by existing roads.

A new, previously, unrecorded sett identified in summer 2020 in this woodland, OUS07A, showed some signs of activity and is assessed as an annexe sett to OUS07. Activity was evident between these setts and along field margins on the west of the woodland.

Based on the survey results, in the absence of mitigation, some sub-optimal foraging habitat (arable land and 6m grass margins) will be lost during the construction phase. One badger clan associated with WUS06 and its annexe sett WUS07 are likely to be affected since the sett will be lost to the development. It is therefore likely that these setts will need to be closed under a Natural England licence and relocated to a new artificial sett.

The construction of the proposed route will cause severance of badger territories, not only at this sett but also setts WUS09 and OUS07 where bait marking surveys have been undertaken which clearly show movements across the scheme. In addition, other badger clan territories seem likely to be equally negatively affected by severance where the route cuts through their territories, resulting in possible negative indirect impacts, to badger clans throughout the scheme footprint. Numerous pathways and evidence of latrines/dung pits and pathways leading to annexe and outlier setts and favoured foraging areas will almost certainly result in increased risks of injury or death caused by road traffic incidents, especially during the winter months when it is dark in late afternoon/early evening when buses may still be operating.

6 References

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Appendices

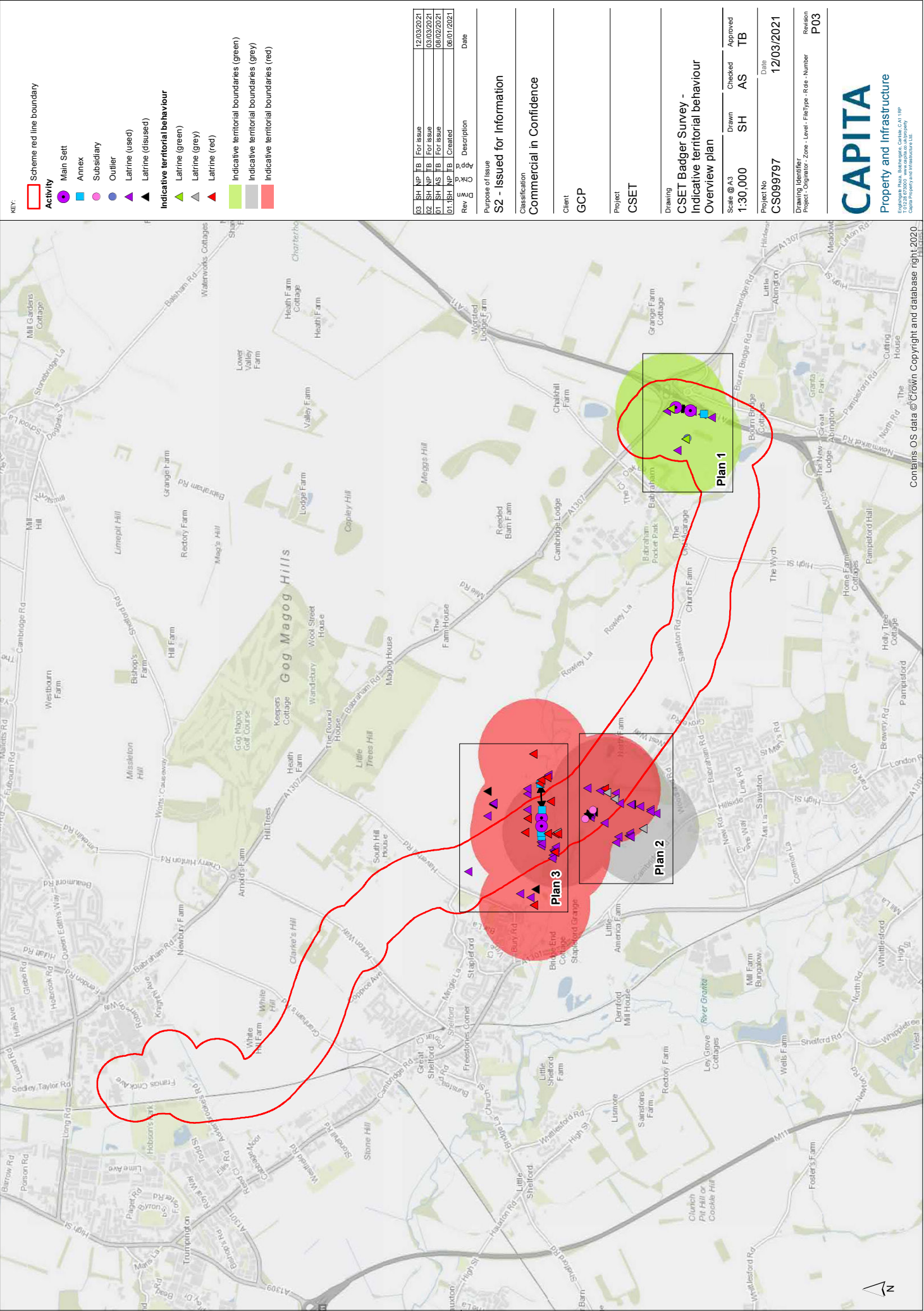
Appendix A – Bait Marking Survey Results

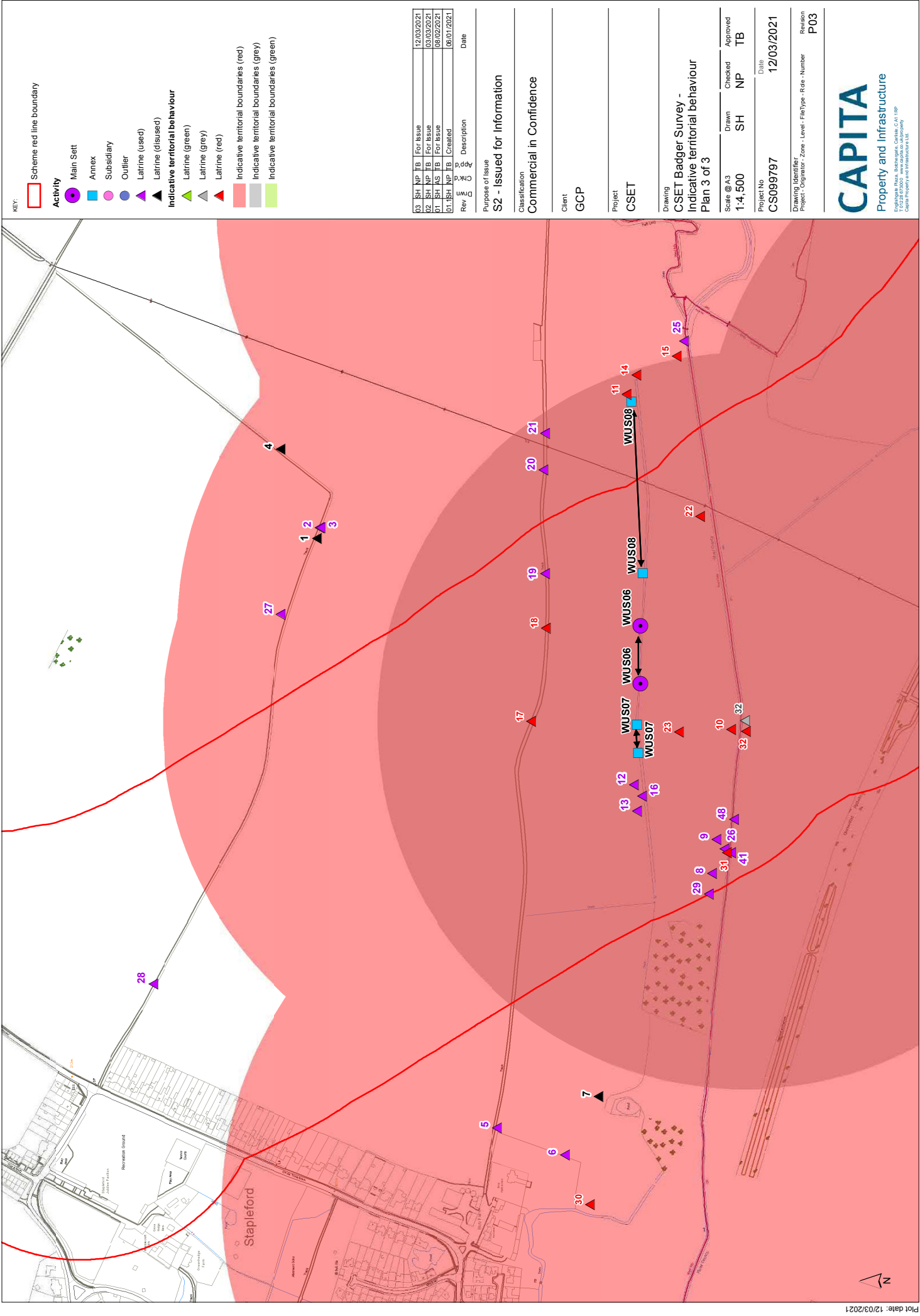
Appendix A. Full Results of Badger Bait Marking

Activity Survey - Record of Activity at Latrines Associated with Sett WUS06 (Red Markers) - Bury Farm																				
Key: F/NP - Fresh dung, no pellets F/R - Fresh dung, red pellets O/R - Old dung, red pellets F/G - Fresh dung, grey pellets O/NP - Old dung, no pellets			Date (2020)																	
			September										October							
			14	18	19	23	24	25	26	28	29	30	1	3	5	6	7	8	9	
Latrine ref	NGR	Activity Level																		
LT1	TL4852251796	Disused																		
LT2	TL4853751792	Used						F/NP												
LT3	TL4853751791	Used						F/NP												
LT4	TL4864351845	Disused																		
LT5	TL4772151551	Used					F/NP													
LT6	TL4768451459	Used					F/NP	F/NP												
LT7	TL4776351413	Disused																		
LT8	TL4806751259	Used						F/NP	F/NP											
LT9	TL4811351253	Used						F/NP	F/NP											
LT10	TL4826251233	Used						F/NP	F/NP							F/NP		F/R		
LT11	TL4871851375	Used	F/R	O/R				F/R	F/NP	F/R		F/NP				F/R	F/R	F/NP	F/R	
LT12	TL4818751365	Used							F/NP											
LT13	TL4815251361	Used						F/NP	F/NP											
LT14	TL4874451362	Used					F/R			F/NP		F/NP		F/R		F/NP	F/R	F/NP	F/NP	
LT15	TL4876951307	Used													F/R				F/R	

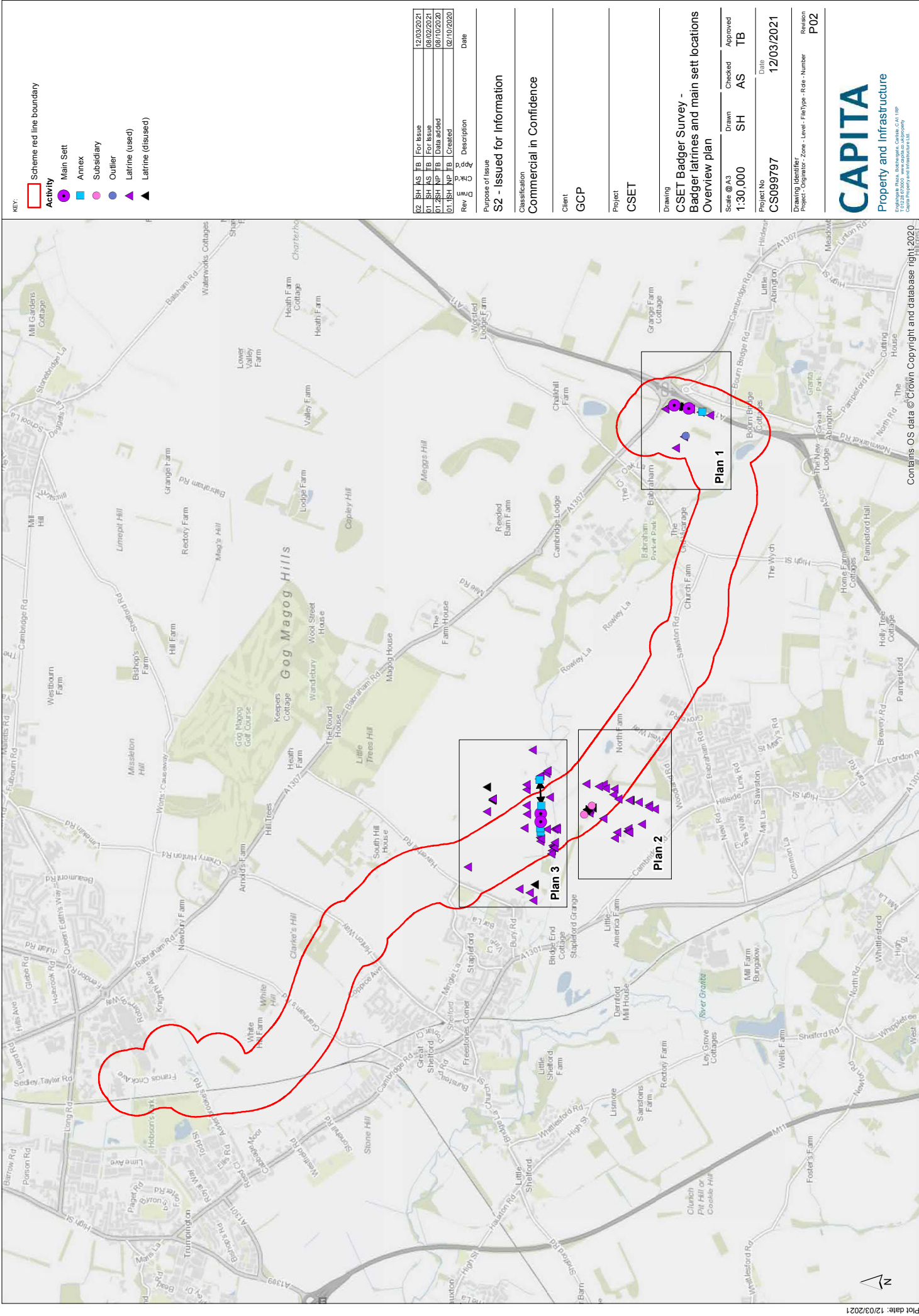
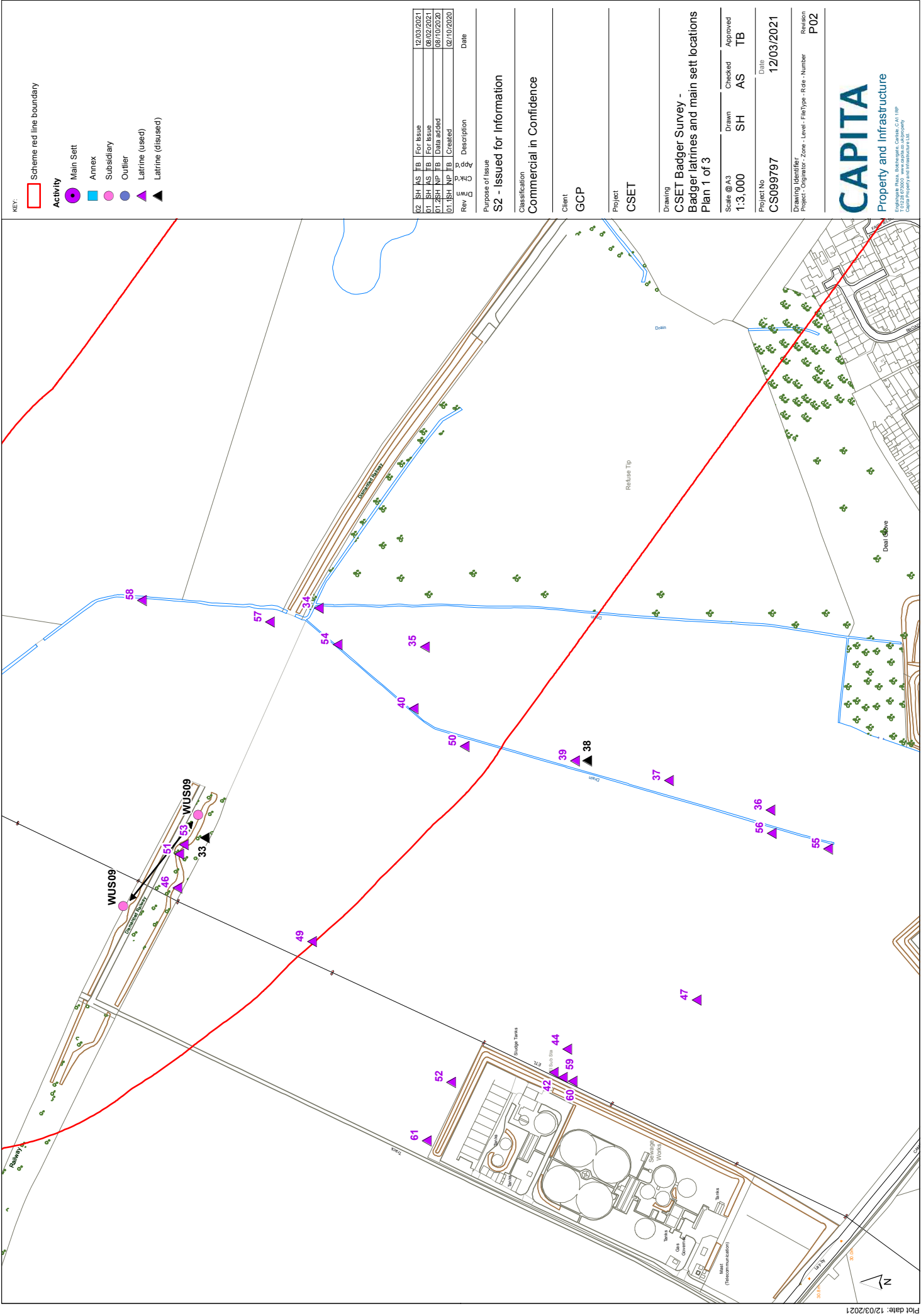
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Appendix B – Badger Territory Plans





Appendix C – Badger Activity Plans



Appendix D – Photographic Record

OUS07	
	
General embankment which houses the sett	OUS07 Disused entrance
	
OUS07 Disused entrance	Fresh spoil with flattened smooth entrance
	
Spoil outside with badger hair	Continued view
	
Badger hair found in spoil	

WUS06: Main sett	
	
Active entrance on ditch bank	Fresh spoil around WUS07
	
Fresh spoil around WUS07	Fresh excavation at ditch base (WSU07)
	
Extension of WUS06 into the ditch basin	Extension of WUS06 into the ditch basin
	
Latrine LT7, with associated path	Dung pit on field margins (LT16)

WUS09 Subsidiary	
	
Active Sett within WUS09	Active Sett within WUS09
	
Partially used Sett	Heavy path to Deal Woodland

Capita Property and Infrastructure Ltd
Capita Blackburn Business Centre
CastleWay House
17 Preston New Road
Blackburn
BB2 1AU

Tel +44 (0)1254 273000
Fax+44 (0)1254 273559



Cambridge South East Transport Strategy (CSET)

Factual Badger Report



For Greater Cambridgeshire
Partnership

June 2020

Confidential – Report Not to be Shared in Public Domain

WYG, Executive Park, Avalon Way, Anstey, Leicester, LE7 7GR

Tel: 0116 234 8000

Email: ecology@wyg.com

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Prepared by:	<i>E. Cumberland</i>	Thomas Cumberland Assistant Ecologist
Checked By:	<i>D. Goddard</i>	David Goddard MCIEEM Senior Ecologist
Verified By:	<i>E. Sanders</i>	Elizabeth Sanders MCIEEM Principal Ecologist

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Executive Summary

Contents	Summary
Site Location	The site comprises a linear route which extends from the Cambridge Biomedical Campus in Cambridge, through to the A11 beyond the village of Babraham. The site is centred at TL 48499 51169. The most north-western point is TL 45829 55102. The most easterly point is TL 53005 49788.
Proposals	Phase 2 of the Cambridge South East Transport (CSET) project proposes a new off-road public transport route linking the Cambridge Biomedical Campus via Great Shelford, Stapleford and Sawston to a new travel hub near the A11/A1307/A505 with connections to Babraham, the Babraham Research Campus and Granta Park.
Existing Site Information	Three reports relating to the site and immediate environs were consulted. These being the constraints report by WYG along with two reports by Plowman Craven were used to inform this report.
Scope of this Survey(s)	A badger walkover survey was conducted to establish the presence / absence of badgers on site. The site was surveyed for evidence of badger setts and badger activity such as paths, latrines, footprints, hair, bedding or signs of foraging. All evidence found was then mapped, the results of which can be found on Figures 3 and 4.
Results	<p>Within the site boundary the following badger setts were identified:</p> <ul style="list-style-type: none">• Five main setts;• One subsidiary sett;• Three annex setts;• Fourteen outlier setts;• Thirteen disused setts and;• One sett with unknown status. <p>Details of foraging, latrines and other evidence of badgers is provided in Section 3.3 and on Figure 4.</p>



Glossary

Badger Act	Protection of Badgers Act 1992
CIEEM	Chartered Institute of Ecology & Environmental Management
CRoW Act	Countryside and Rights of Way Act 2000
DEFRA	Department for the Environment, Food and Rural Affairs
EcIA	Ecological Impact Assessment
Habitat Regulations	Conservation of Habitats and Species Regulations 2017 (as amended)
HAP	Habitat Action Plan
HPI	Habitat(s) of Principal Importance
MCIEEM	Member of Chartered Institute of Ecology & Environmental Management
Natura 2000 site	A European site designated for its nature conservation value
NE	Natural England
NERC Act	Natural Environment and Rural Communities Act 2006
NPPF	National Planning Policy Framework
PEA	Preliminary Ecological Appraisal
SAC	Special Area of Conservation
SAP	Species Action Plan
SPA	Special Protection Area
SPI	Species of Principal Importance
W&CA	Wildlife & Countryside Act 1981 (as amended)



1.0 Introduction

1.1 Background

WYG was commissioned by Greater Cambridgeshire Partnership in August 2019 to undertake a badger *Meles meles* survey at the proposed route for Cambridgeshire South East Transport Strategy (CSET) site starting at Cambridge Biomedical Campus through to the A11 beyond the town of Babraham (hereafter referred to as the 'site'), to identify potential ecological constraints to the development that may be imposed by the presence of badgers. This follows the completion of a constraints report by WYG (2019) which identified badgers as a potential constraint to the proposed development.

This report was prepared by WYG Assistant Ecologist Thomas Cumberland and the conditions pertinent to it are provided in Appendix A.

1.2 Site Location

The site comprises a linear route which extends from the Cambridge Biomedical Campus in Cambridge, through to the A11 beyond the village of Babraham. The site is centred at TL 48499 51169. The most north-western point is TL 45829 55102. The most easterly point is TL 53005 49788.

The survey area generally falls across a predominately arable landscape, interspersed with residential and commercial land, with areas of semi-natural habitat including woodland and grassland. It also partially incorporates a total of five sites designated for nature conservation, comprising a single statutory site and four non-statutory sites. The wider landscape consists of agricultural land and the villages of Stapleford, Sawston and Babraham.

1.3 Development Proposals

Phase 2 of CSET is a project to create a segregated public transport route from the A11 (near Babraham) to the Cambridge Biomedical Campus (CBC). There are three potential route corridors, but only one is being considered for additional surveys at present. This route corridor is called Strategy 1 and is largely across open arable land.

1.4 Purpose of the Report

The purpose of the survey was to provide up-to-date records of badger activity within the survey area, to identify potential ecological constraints to the development.

The scope of work comprised:

- Identification of any badger setts within the survey area;
- Identification of any signs consistent with badger activity within the survey area; and
- Assess the status of the badger setts and the level of badger activity within the survey area.

The information contained within this report provides the locations of badger setts and evidence which was recorded during the survey occasions.



2.0 Methodology

2.1 Desk Study

2.1.1 Previous Reports

The following previous reports relating to the site and immediate environs were consulted:

- WYG, (2019), Cambridge South East Transport Strategy (CSET): Constraints report.
- Plowman Craven, (2018), Cambridge South East Transport Study Phase 2: Strategy 1.
- Plowman Craven, (2019), A1307 Haverhill to Cambridge: Badger Survey.

2.1.2 Online Resources

A search for relevant information was made on NBN Atlas <https://nbnatlas.org/> returning records of badger.

Note that the use of some NBN Atlas data is limited (e.g. commercial use of data provided under a CC BY-NC licence is not possible) therefore we may not be able to report full details of those records in such cases.

2.2 Habitat Assessment

An assessment of the site's habitats was carried out as part of the Phase 1 Habitat Assessment (Plowman Craven, 2018). The habitats onsite and connecting habitats in the wider landscape have been valued for their importance for foraging badgers. Table 1 summaries the habitat types and their foraging importance for badgers and is based on the abundance of worms in different habitats (Natural England, 2014) and the potential accessibility of worms to foraging badgers.

The Phase 1 habitat survey produced by Plowman Craven (2018), indicated suitable foraging habitat for badger within the site boundary. Broadleaved woodland, grassland and hedgerows were identified as primary foraging habitats for badger.

Upon the recent completion of a constraints report conducted by WYG (2019), the majority of the site was identified as consisting of arable land with associated field margins and hedgerows. Throughout the site, small areas of broadleaved woodland have also been recorded, providing further primary foraging habitat for badgers.

Areas of habitat where sett creation could be undertaken include field margins, hedgerows, woodland blocks, ditches and steep embankments.

Table 1: Badger Foraging Habitat Value

Foraging Habitat Value	Habitat Type
Primary Importance	Field margins. Gardens or allotments. Arable fields. Short grazed or mown grassland i.e. improved grassland.



Foraging Habitat Value	Habitat Type
	Amenity / golf course. Broadleaved woodland.
Secondary Importance	Pine woodland. Set aside or rough grassland (not frequently grazed by livestock). Scrub. Wet woodland. Riparian habitats. Heathland. Mire.

2.3 Badger Survey

A badger survey was conducted within the site boundary on 16th and 17th January 2020 by WYG Associate Ecologist Victoria Thomas MCIEEM and WYG Assistant Ecologist Thomas Cumberland. The survey was completed on 26th and 27th February 2020 by WYG Senior Ecologist David Goddard MCIEEM and Thomas Cumberland. All areas of the site within the redline boundary were investigated where access was granted, including those parts that are not expected to be affected directly by the works but may be indirectly impacted upon.

The site was surveyed for evidence of badger setts and badger activity such as paths, latrines, footprints or signs of foraging. Methodologies used and any setts recorded were classified according to the published criteria (Harris, Cresswell & Jefferies, 1989).

The following signs of badgers were searched for: setts, footprints, paths, footprints, dung pits and latrines, hairs and foraging evidence. A description of the signs recorded is provided in Appendix D.

2.4 Limitations

Figure 2 shows the areas of land where access was not permitted during the survey occasions. The majority of the land not surveyed was residential dwellings with associated gardens and commercial buildings. The residential and commercial buildings are not considered to be a limitation to the survey effort due to their limited potential to support badgers. A parcel of land which was not surveyed, shown on Figure 2 is located to the south-east of the site. This comprises one large arable field with a steep bank located on the fields north-eastern boundary. This field boundary is considered to be optimal for badger sett creation and foraging. Access to this field is not considered to be a limitation as all of the proposed routes are north of this field. Other areas of no access as shown on Figure 2 are as a result of access being refused or are private residential dwellings or commercial operations.

WYG were commissioned to survey only the land within the site's red line boundary defined by the Greater Cambridgeshire Partnership. Habitats outside of the site boundary and where access was not granted were not surveyed. This is deemed as a limitation to the survey effort as suitable habitats for badger adjacent to the site are present.

The details of this report will remain valid for a period of **six months** (CIEEM, 2019). Beyond this period, if works have not yet been undertaken, it is recommended that a review of the validity of the



evidence found is undertaken. Note that the evidence found within this report should be reviewed (and reassessed if necessary) should there be any changes to the red line boundary or development proposals which this report was based on.

3.0 Results

3.1 Desk Study

3.1.1 Previous Survey Reports

A review of three previous reports relating to the development provided details of known badger setts within the site and within the original survey areas covered by the Plowman Craven reports (2018 & 2019).

WYG (2019)

The constraints report conducted by WYG (2019), identified habitat across the site suitable for badger sett creation, foraging and ranging. Incidental evidence recorded during this survey was documented and is shown in Appendix F of the constraints report.

Plowman Craven (2018)

A preliminary ecological appraisal conducted by Plowman Craven (2018) identified two badger setts which were recorded in the original proposed survey area. The report also identified the presence of suitable habitat on site for badgers.

Plowman Craven (2019)

A report produced by Plowman Craven (2019), identified a dead badger and a badger sett within the Preliminary Ecological Appraisal (PEA) survey boundary. The survey boundary associated with the PEA conducted by Plowman Craven is located approximately 5.3 km east of the survey boundary upon which this report is based. The evidence is not applicable for this report but is worth noting that badgers are identified as being present to the east of the survey boundary.

3.1.2 Incidental Evidence

Whilst conducting other surveys across the site, evidence of badgers has been recorded across the site. Badger setts, dung pits, latrines and a dead badger have all been found during previous surveys.

3.1.3 Online resources

A search of NBN Atlas returned 15 records of badgers including and up to 2 km of the site boundary. Two of these records are located within the sites red line boundary with the remaining records being located outside the site boundary. The closest record outside of the site boundary is located 189 m north of the red line boundary.

3.2 Habitat Assessment

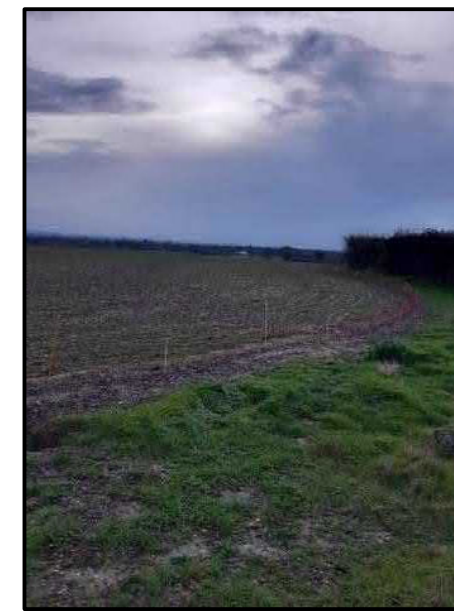
3.2.1 Habitats description

The majority of the site contains arable farmland with pockets of broadleaved woodland which are considered to be primary foraging habitat for badgers, see Table 1 above. The area associated with Addenbrookes hospital, the furthest point north of the survey boundary is predominantly commercial



buildings which is not optimal badger habitat. Overall, the majority of the site has optimal quality habitat for badgers. The site provides areas suitable for badger sett creation as well as providing ample excellent foraging habitats for badgers, see photograph 1 below. The nine ponds within the site boundary were wet during the badger survey and are therefore considered to provide an important water source for badgers. The River Granta flows through two sections of the site boundary (see Figure 1 and photograph 2 below). The River Granta is considered a valuable water resource for badgers within the survey area.

Photograph 1: Site Habitat



Photograph 2: The River Granta



3.2.2 Connectivity Off-Site

The site is surrounded by arable fields and pockets of broadleaved woodland, characteristic of the rural landscape in which the site boundary lies within. The field margins across the site provides important wildlife corridors for badgers to access land off-site. Aerial imagery of the surrounding areas, adjacent to the site boundary shows small areas of woodland which provide optimal wildlife corridors which would allow movement to and from the area by badgers.

3.3 Field Surveys

3.3.1 Badger Setts

A total of 15 active badger setts showing signs of 'current use' along with nine badger setts showing signs of 'occasional use' were recorded within the survey area. Whilst 13 badger setts within the survey area which were recorded as being disused at the time of the survey. The classification, likely status, total number of entrances and number of well used entrances for each of these setts is summarised in Table 2 below. Table 2 below should be read in conjunction with Figure 3 which shows the sett locations. The points on Figure 3 show the locations of the entrances associated with each sett. Some entrances are grouped together on the same point due to the minimal distance between each entrance.



Table 2: Badger sett results – see Figure 3 for locations

Sett No.	Sett Status	O.S. Grid Reference	Total No. of entrances (No. entrances well used) / Description	Other Badger Evidence
Well Used Sett (WUS)				
WUS01	Outlier	TL 46306 53693	1 (1) / The sett comprises of one well used entrance.	No other evidence was found around the sett due to dense vegetation.
WUS02	Main Sett	TL 47569 53007	14 (10) / The sett comprises of ten well used sett entrances on the corner of the arable field. The sett also comprises four entrances which evidence indicates they are occasionally used.	Badger hair and footprints were found at the entrances to the sett. Badger pathways were also found leading into the large arable field adjacent to the sett.
WUS03	Outlier of WUS02	TL 47775 52889	1 (1) / The sett comprises of one well used entrance.	A clear pathway leading in the direction of sett WUS02.
WUS04	Subsidiary of WUS02	TL 47636 52551	3 (3) / The sett comprises of three well used entrances which are a subsidiary of WUS02.	Evidence of badger hair and footprints are present around the sett entrances. A large spoil mound is present next to one of the sett entrances.
WUS05	Outlier	TL 48424 51829	1 (1) / The sett comprises of one well used entrance in the middle of a hedgerow on the site boundary.	Evidence of fresh digging and footprints were present at the entrance. Bedding was also present

Sett No.	Sett Status	O.S. Grid Reference	Total No. of entrances (No. entrances well used) / Description	Other Badger Evidence
				outside of the sett entrance.
WUS06	Main Sett	From TL 48310 51366 to TL 48388 51361	27 (17) / The sett comprises of 17 well used entrances stretching approximately 80 meters. A further ten occasionally used entrances are located along the ditch.	Pathways are present along the entire length of either side of the bank. Evidence of fresh digging and latrines are also located along the ditch.
WUS07	Annex of WUS06	TL 48258 51364	6 (4) / The sett comprises of four well used entrances. The sett also comprises of one occasionally used entrance and one disused entrance. The sett is an annex of WUS06.	Pathways are present along the entire length of either side of the bank. Evidence of fresh digging and latrines are also located along the ditch.
WUS08	Annex of WUS06	TL 48547 51353	13 (4) / The sett comprises of four well used entrances. The sett also comprises of four occasionally used entrances and five disused entrances. The sett is an annex of WUS06.	Pathways are present along the entire length of either side of the bank. Evidence of fresh digging and latrines are also located along the ditch.
WUS09	Main Sett	TL 48404 50956	9 (8) / The sett comprises of eight well used entrances. The sett also comprises of one occasionally used entrance.	The sett includes evidence of fresh excavation of three of the eight well used setts. Badger hair and footprints were also present in three well used entrances.



Sett No.	Sett Status	O.S. Grid Reference	Total No. of entrances (No. entrances well used) / Description	Other Badger Evidence
WUS10	Outlier	TL 48654 51044	4 (2) / The sett comprises of two well used entrances and two dis-used entrances.	Evidence of fresh latrines were found next to the sett entrances along with fencing where badgers have pushed through and made a hole.
WUS11	Outlier	TL 51833 50038	2 (1) / The sett comprises of one entrance which is well used. One entrance is assessed as being occasionally used.	Latrines were found on the corner of the hedgerow where it meets the patch of woodland.
WUS12	Main	TL 51720 48953	7 (4) / The sett comprises of four well used entrances along a dry ditch to the north of the field. The sett also comprises three entrances which were assessed as occasionally used.	Badger latrines and pathways were found throughout the grassland field and the ditch where the entrances were located.
WUS13	Main	TL 51957 49522	10 (9) / The sett comprises of nine well used entrances along with one occasionally used entrance. The sett is located on a steep bank adjacent to the A11.	Evidence of badger latrines and worn pathways were identified around the sett location.
WUS14	Outlier	TL 52905 50103	1(1) / The sett comprises of one well used entrance which is located on the western side of the hedgerow.	Evidence of fresh digging and sett creation is present around the entrance. Badger footprints were also found at



Sett No.	Sett Status	O.S. Grid Reference	Total No. of entrances (No. entrances well used) / Description	Other Badger Evidence
				the entrance to the sett.
WUS15	Outlier	TL 52025 49268	5 (3) / The sett comprises of three well used entrances also comprising two occasionally used setts.	Evidence of badger digging is present next to the sett.
Occasionally Used Sett (OUS)				
OUS01	Outlier	TL 46572 53523	3 (2) / The sett comprises of two well used entrances and one occasionally used sett.	Evidence of badgers were found with small spoil mounds at the entrance of the holes. Pathways leading south-west were also identified.
OUS02	Outlier	TL 46997 53297	2 (0) / The sett comprises of two occasionally used entrances which are located within the hedgerow.	Evidence of pathways into the sett are present between the entrances and the arable filed margin.
OUS03	Outlier	TL 49838 49968	1 (0) / The sett comprises of one occasionally used entrance.	The entrance has a large bare earth spoil mound surrounded by vegetation.
OUS04	*Status unknown, see limitations sections	TL 50686 49412	11 (1) The sett comprises of one well used entrance along with ten occasionally used entrance.	Evidence of badger pathways along the bankside were found leading to and from sett entrances.
OUS05	Outlier	TL 51979 49069	1 (0) / The sett comprises on one	Evidence of pathways



Sett No.	Sett Status	O.S. Grid Reference	Total No. of entrances (No. entrances well used) / Description	Other Badger Evidence
			occasionally used entrance.	leading away from the sett entrance was found during the survey occasion.
OUS06	Annex of WUS13	TL 51686 48944	2 (0) / The sett comprises of two occasionally used entrances which are connected via a grassland field to WUS13.	The sett comprises of strong badger pathways which lead into the adjacent woodland.
OUS07	Outlier	TL 52419 49825	4 (0) / The sett comprises of three occasionally used entrance and one disused entrance. The sett is in the centre of the woodland.	The evidence at the sett consists of some recent digging activity along with pathways connecting the entrances.
OUS08	Outlier	TL 50939 49251	1 (0) / The sett comprises of one occasionally used entrance which is located on the northern side of the bank.	The entrance displayed no signs of current activity however, pathways were present leading away from the entrance.
OUS09	Outlier	TL 50875 49282	1 (0) / The sett comprises of one occasionally used entrance which is located on the northern side of the bank.	The entrance displayed no signs of current activity however, pathways were present leading away from the entrance.
Dis-Used Sett (DUS)				
DUS01	Disused	TL 46572 53302	1 / The sett comprises of one disused sett which is located within the small	The sett entrance was deemed to be



Sett No.	Sett Status	O.S. Grid Reference	Total No. of entrances (No. entrances well used) / Description	Other Badger Evidence
			woodland patch in between the hedgerow separating the arable fields.	collapsed at the time of the survey.
DUS02	Disused	TL 46571 53293	2 / The sett comprises of two disused entrances which are located at the start of the ditch in which three well used setts were found.	Snuffle holes and digging activity were present close to the two entrances along a strong badger pathway. Both entrances were deemed to be inactive at the time of the survey despite activity along the ditch.
DUS03	Disused	TL 49198 50753	1 / The sett comprises of one disused entrance located along the hedgerow along the area of no access.	The entrance was deemed to be collapsed at the time of the survey. Evidence of latrines were located east of the sett entrance.
DUS04	Disused	TL 50497 49553	3 / The sett comprises of three disused entrances.	The entrances were heavily covered in vegetation with all potential evidence covered by vegetation.
DUS05	Disused	TL 50847 49313	1 / The sett comprises of one disused entrance which is located along the bank of the field margin.	No badger evidence was found near the sett entrance.
DUS06	Disused	TL 51152 49113	2 / The sett comprises of two disused entrance	No badger evidence was

Sett No.	Sett Status	O.S. Grid Reference	Total No. of entrances (No. entrances well used) / Description	Other Badger Evidence
			which is located along the bank of the field margin.	found near the sett entrance.
DUS07	Disused	TL 51876 49935	1 / The sett comprises of one disused entrance in a patch of woodland separating two arable fields.	No badger evidence was found near the sett entrance.
DUS08	Disused	TL 51935 50344	1 / The sett comprises of one disused entrance which is located next to old electrical works.	No badger evidence was found near the sett entrance.
DUS09	Disused	TL 51925 48720	3 / The sett comprises of three disused badger entrances.	No badger evidence was found near the sett entrance.
DUS10	Disused	TL 51901 48971	4 / The sett comprises of four disused entrances.	No badger evidence was found near the sett entrance.
DUS11	Disused	TL 52038 49173	1 / The sett comprises of one disused entrance.	No badger evidence was found near the sett entrance.
DUS12	Disused	TL 52320 49923	5 / The sett comprises of five disused entrance.	No badger evidence was found near the sett entrance.
DUS13	Disused	TL 52419 49825	4 / The sett comprises of four disused entrance.	No badger evidence was found near the sett entrance.

* The status of the setts were unknown due to the inaccessibility to survey surrounding habitat suitable for sett creation.

3.3.2 Badger Activity

Evidence confirming or indicating badger activity and foraging was recorded across the site. Strong badger paths were notably recorded between setts WUS06, WUS07 and WUS08, indicating that these three setts are associated with each other. Badger foraging was recorded throughout the arable fields and woodland blocks on site.

Several strong badger paths and snuffle holes were also noted along the hedges within the site.

Figure 4 shows the evidence of badger activity on site including pathways, feeding signs, latrines and other notable signs.

3.4 Other Mammals Recorded

Rabbit *Oryctolagus cuniculus* evidence is widespread throughout the site, with evidence predominantly located around arable field margins and hedgerows.

Fox *Vulpes vulpes* evidence is widespread throughout the site with evidence predominantly located within the blocks of broadleaved woodland.

Fallow deer *Dama dama*, roe deer *Capreolus capreolus* and muntjac deer *Muntiacus reevesi* were all seen and recorded on site during previous surveys conducted on site.



4.0 Relevant Legislation

4.1 National Badger Legislation

4.1.1 Legislation

Badgers and their setts are protected under the Protection of Badgers Act 1992 (UK legislation), which makes it illegal for any person to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct an entrance to a badger's sett, or to disturb animals whilst within a sett. Further details are provided in Appendix B.

In addition, the likelihood of disturbing a badger sett, adversely affecting badgers' foraging territory or links between them, or significantly increasing the likelihood of road casualties amongst badger populations, are capable of being material considerations in planning decisions (National Planning Policy Framework).

4.1.2 Guidance for Developers

An assessment of the impacts the development will have on badgers is required as part of a planning application along with any badger licence application as required. Natural England Standing Advice recommends that the following impacts should be considered:

- Damage to setts;
- Loss of setts;
- Loss of foraging areas; and
- Disturbing badgers while they're occupying setts with noise, lights, vibration, fires or chemicals.

Whilst badger foraging grounds and commuting routes are not legally protected, it may be necessary to provide mitigation measures so badgers to have safe access to foraging and watering areas. Further surveys may be required to determine if a sett is active, the significance of the sett, to estimate territory boundaries and to identify the location for mitigation measures necessary.

Potential impacts on badgers will need to be addressed within the development through avoidance reduction of negative effects, mitigation measures to reduce the impacts and where necessary compensation measures to offset any remaining negative impacts for badgers.

Works within 20-30 m of any sett entrance have the potential to affect a sett (Natural England, 2011). Works which would otherwise cause an offence under current legislation may in some cases be permitted under licence from the relevant statutory authority, which in this case is Natural England. Licences are usually only valid between July and November inclusive in any year.

Natural England require 30 working days to process a licence application and sett exclusion will take a minimum of three weeks, from gate installation. Daily monitoring of the sett being closed is recommended to check that no badgers are left trapped within the sett, that the gates remain free-swinging, and to check that badgers are not digging back in around the sett.



5.0 Summary

The results of the badger presence/absence survey are given below, all sett are within the site boundary:

- Five main setts were identified.
- One subsidiary setts were identified.
- Three annex setts were identified.
- Fourteen outlying setts were identified.
- Thirteen disused setts were identified.
- One sett with unknown status.

Foraging and commuting routes were widespread across the site with the majority of pathways and evidence located along arable field margins and on the edges of woodland.



6.0 References

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- WYG (2019) *Cambridgeshire South East Transport Strategy (CSET): Constraints Report*.

Please note that the legislation which is relevant to this report is not included in the list above, but details are included in Appendix B below.

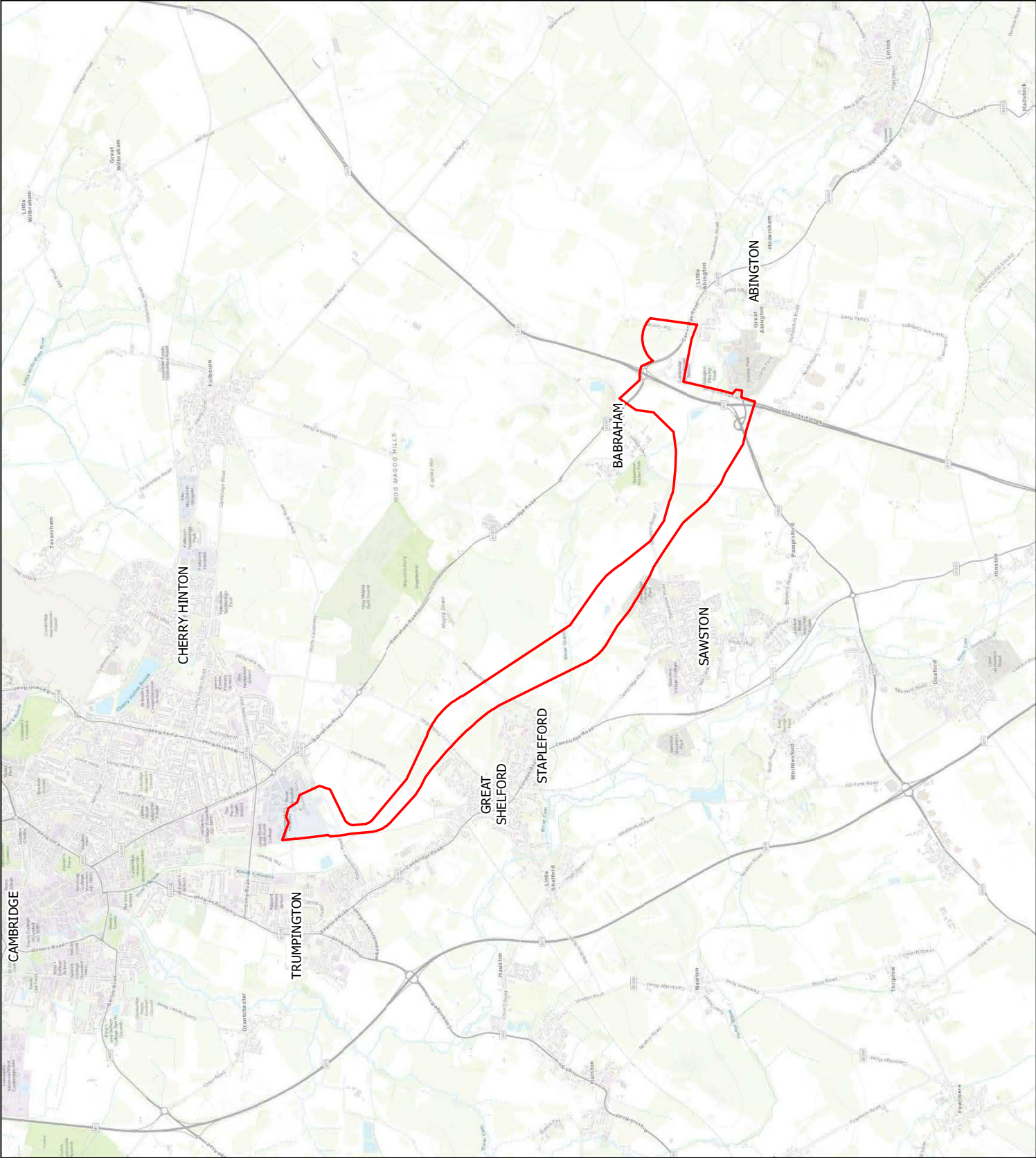
FIGURES

Figure 1 – Site Location Plan

Figure 2 – No Access

Figure 3 – Badger Set Results

Figure 4 – Badger Activity Results



Rev	Date	Notes
A	12/11/19	Initial map production

Legend

Site boundary





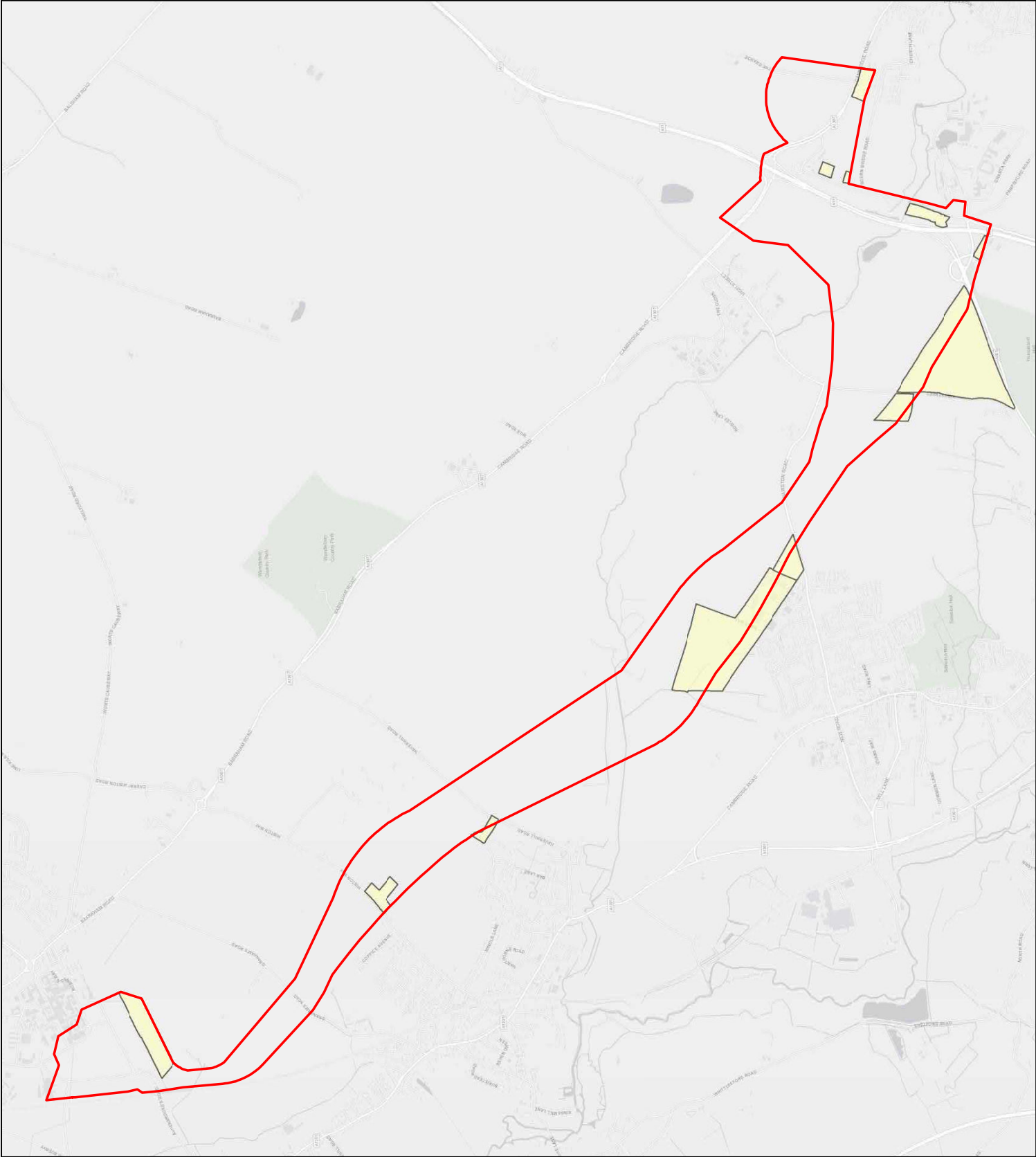
Site Location Plan

CSET & CSWTS Cambs Highways
Greater Cambridgeshire Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:50,000	A113521	Figure 1	A

Drawn by:	Drawn date:	Approved by:
Ben Blowers	12/11/2019	Rachel Sore

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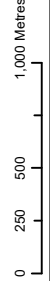


Rev	Date	Notes
A	11/03/20	Initial map production

Legend

Site boundary

Areas with no access

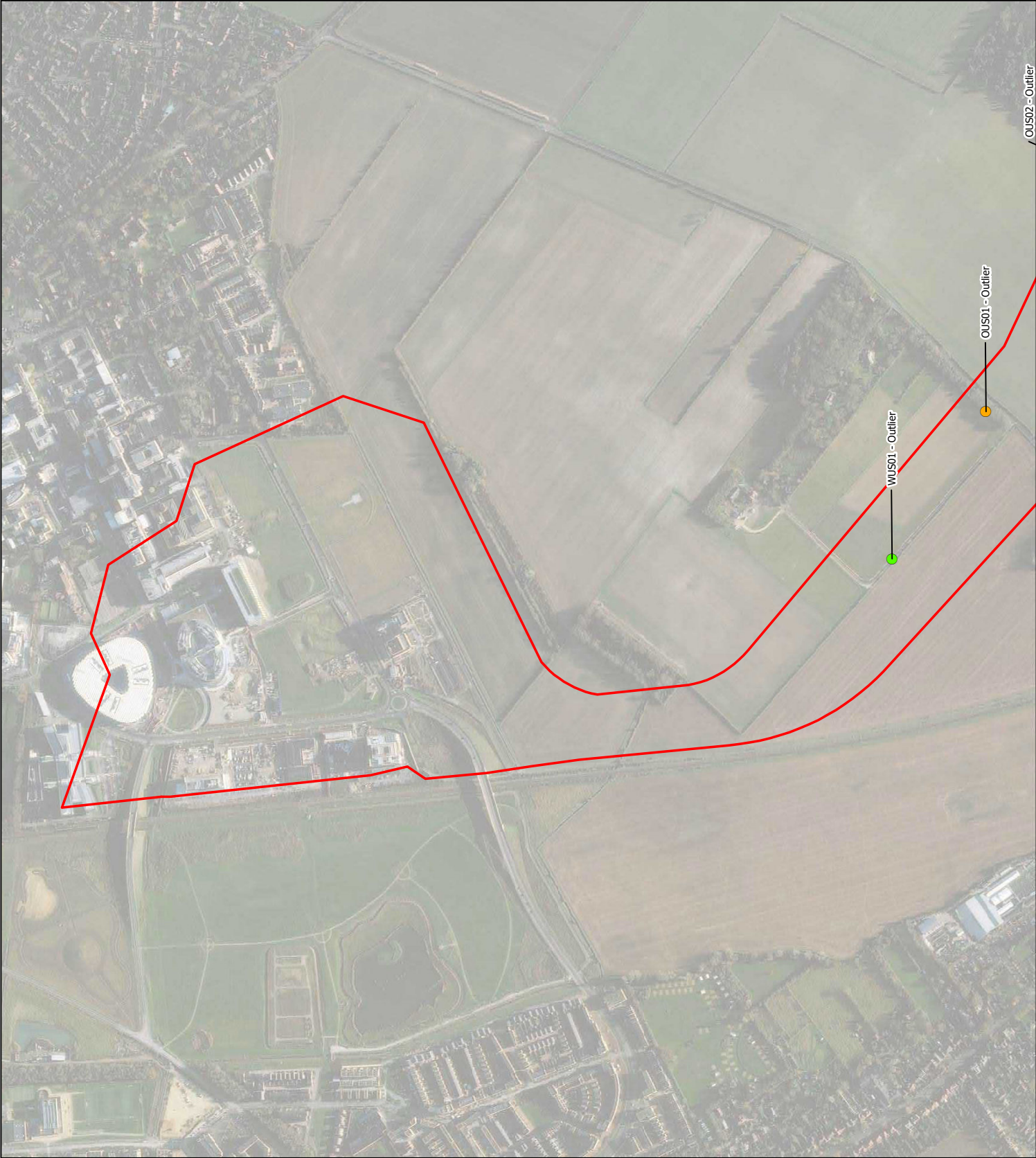
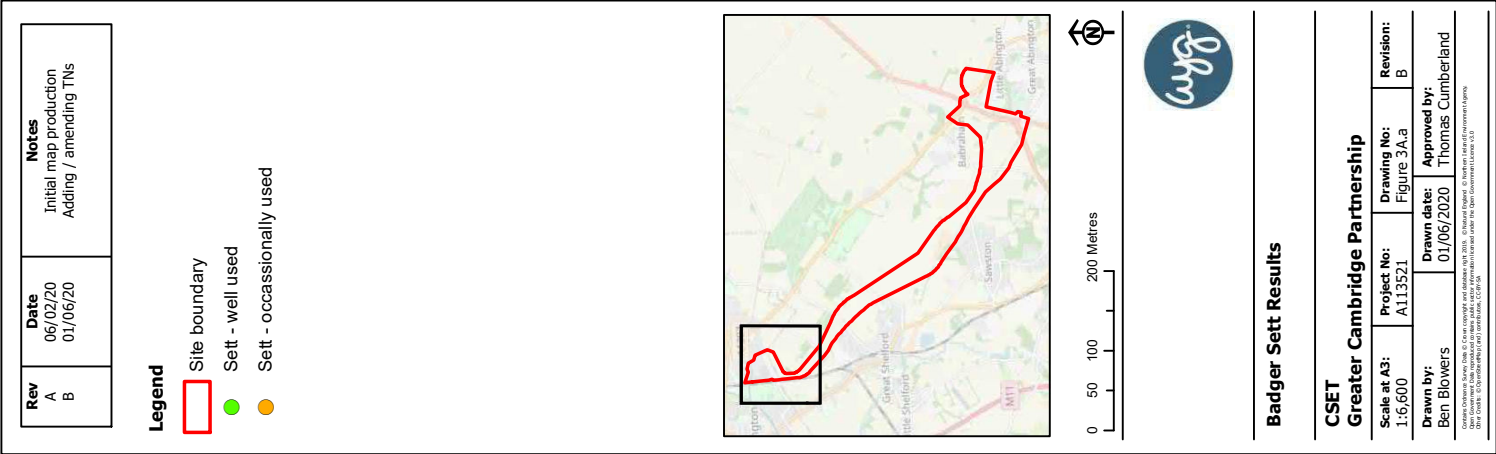
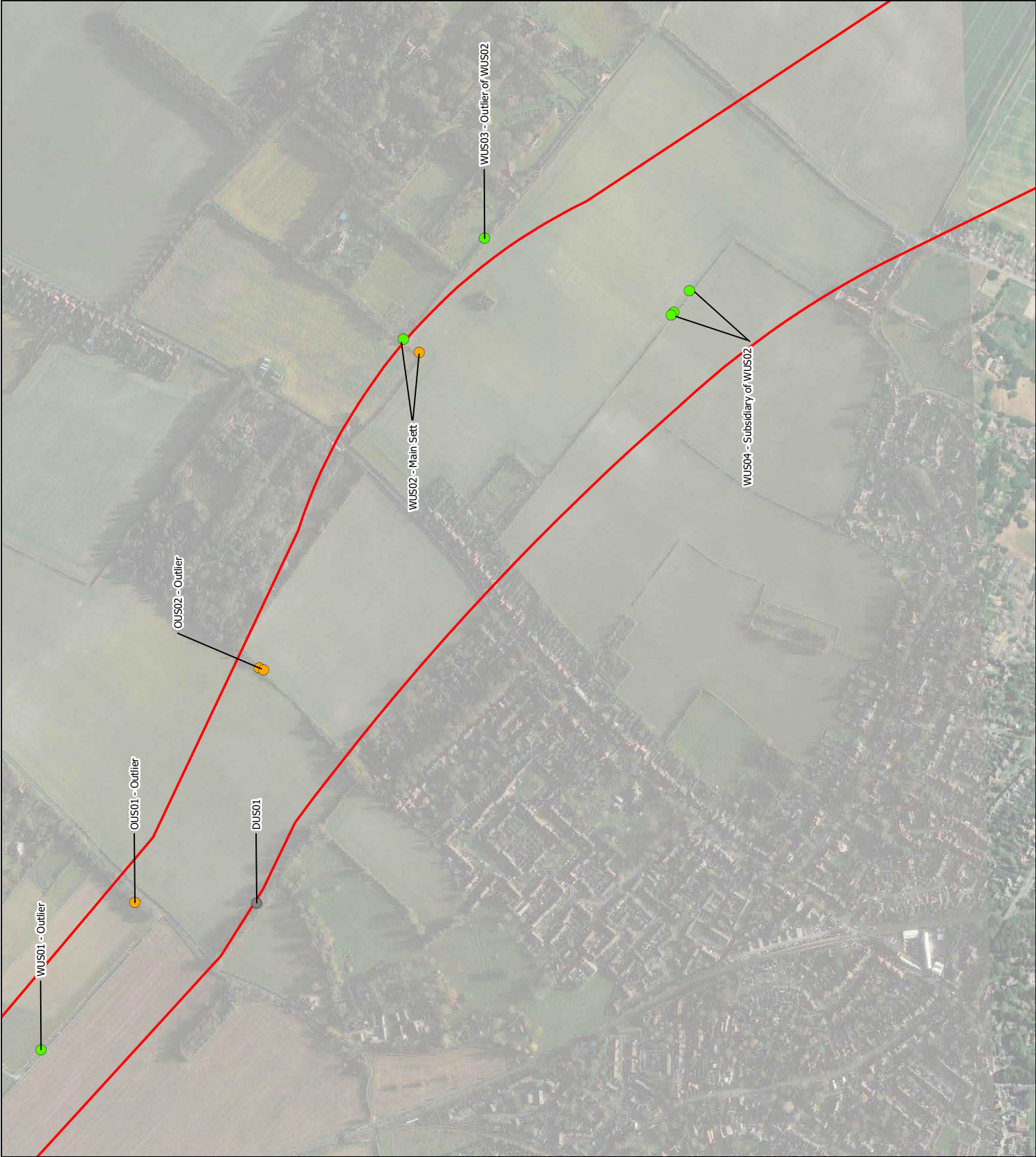
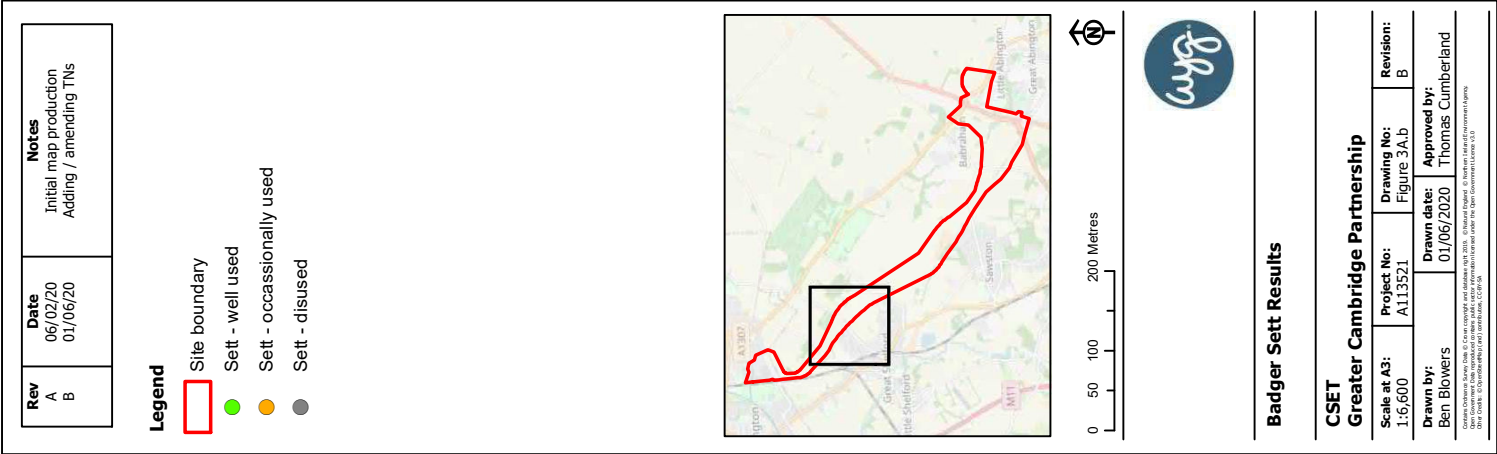

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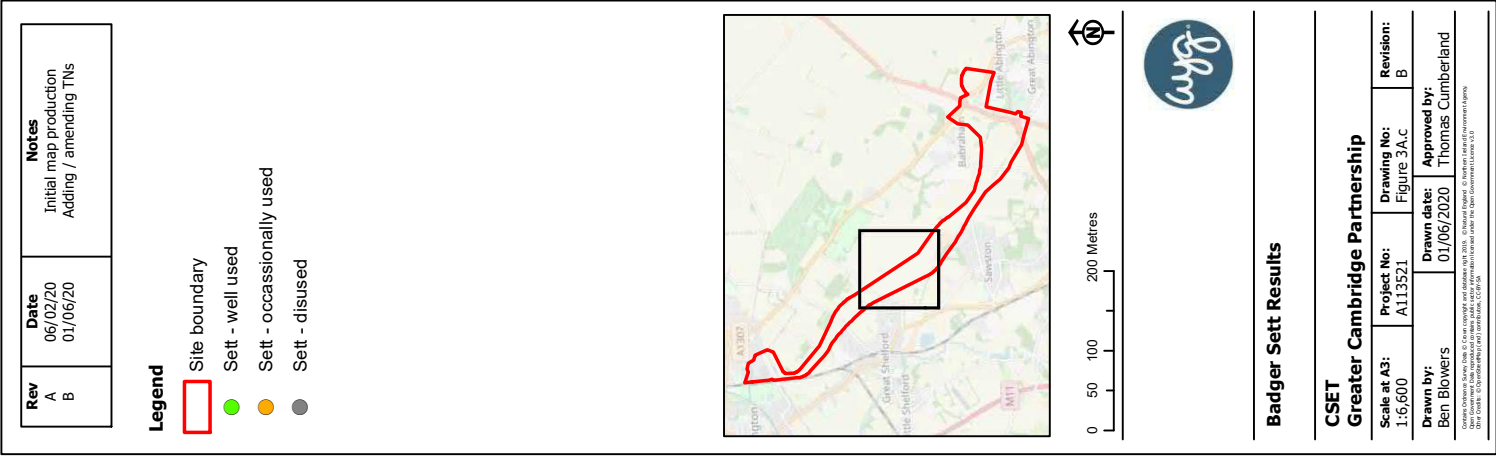
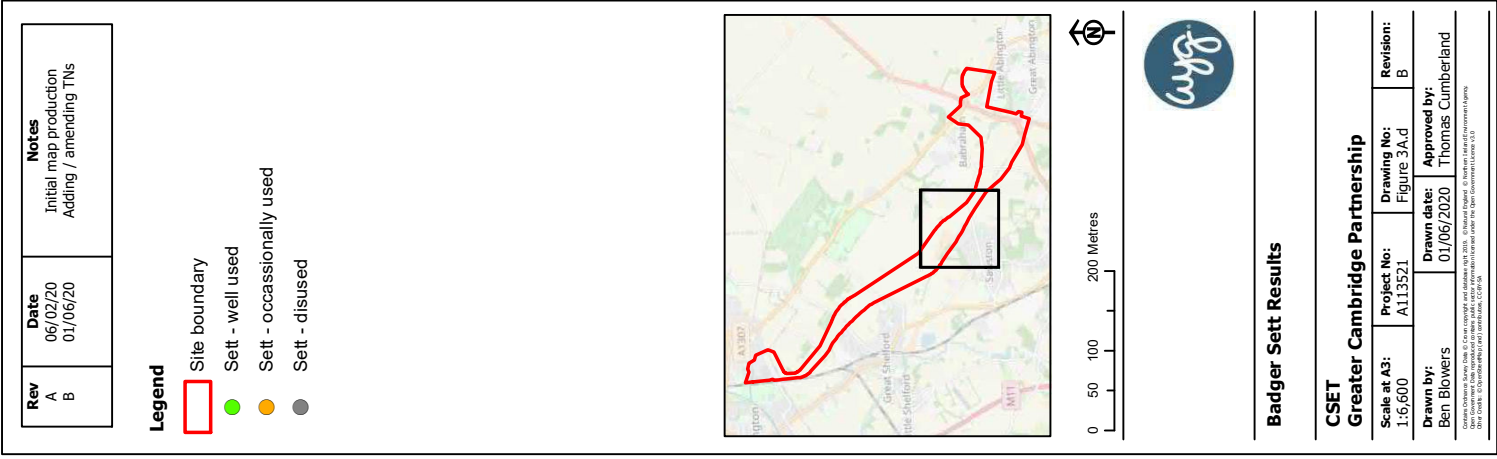
CSET & CSWTS Cambs Highways
Greater Cambridgeshire Partnership

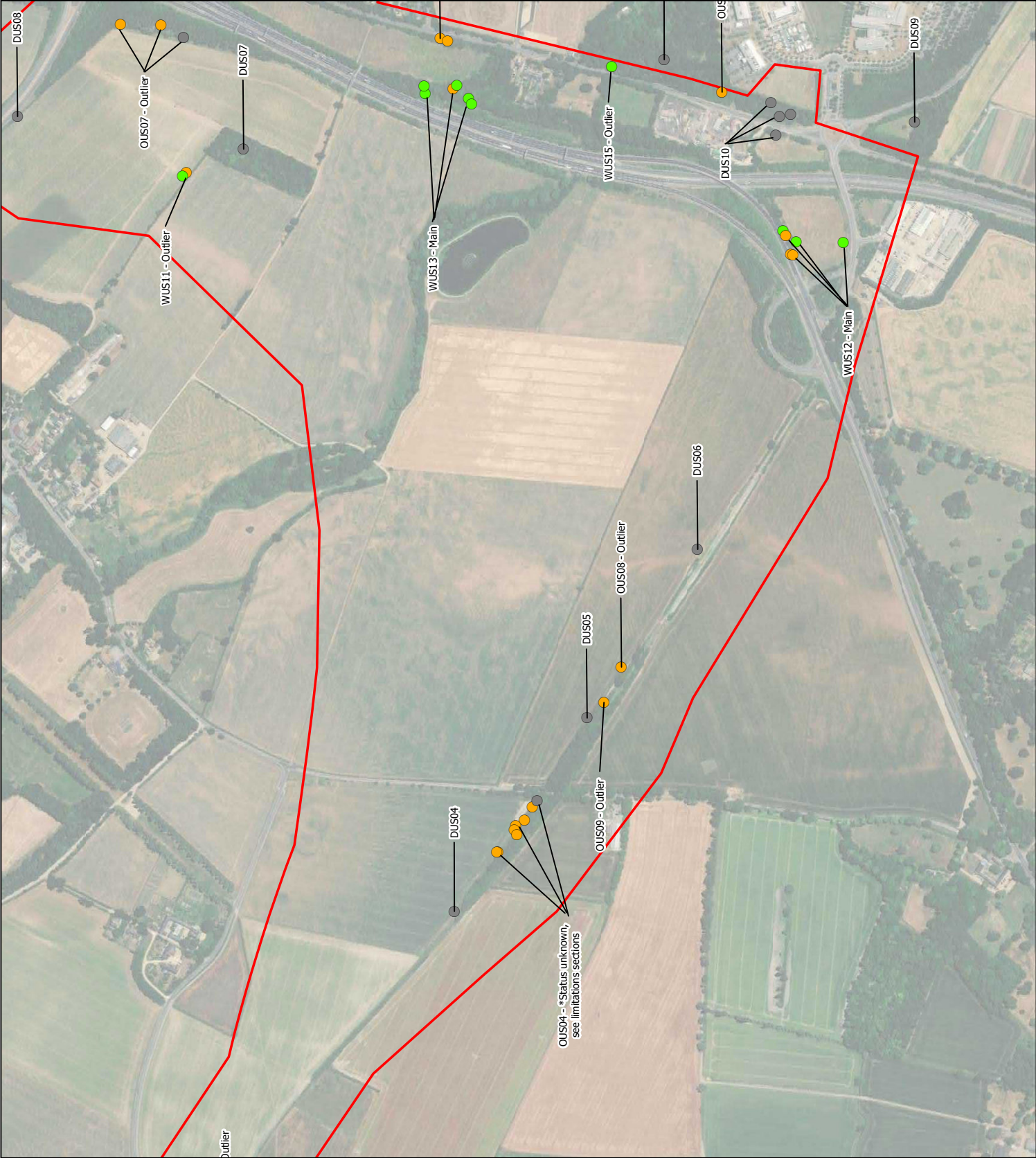
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1:25,000	A113521	Figure 2	A

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Rev	Date	Notes
A	06/02/20	Initial map production
B	01/06/20	Adding / amending TNs

Legend

- Site boundary
- Sett - well used
- Sett - occasionally used
- Sett - disused

Badger Sett Results

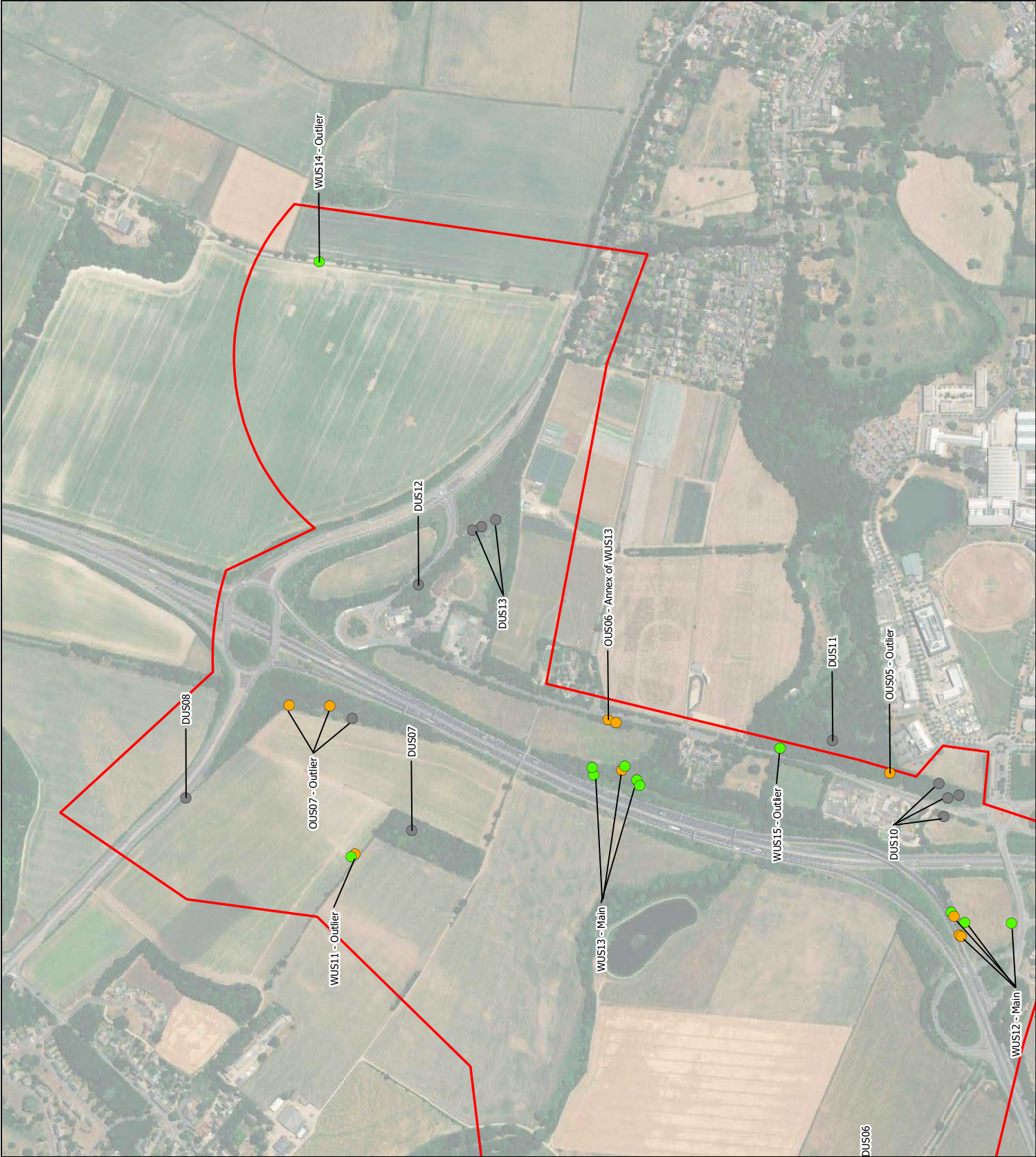
CSET

Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,600	A113521	Figure 3A.e	B

Drawn by:	Drawn date:	Approved by:
Ben Blowers	01/06/2020	Thomas Cumberland

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Rev	Date	Notes
A	06/02/20	Initial map production
B	01/06/20	Adding / amending TNs

Legend

- Site boundary
- Sett - well used
- Sett - occasionally used
- Sett - disused

Badger Sett Results

CSET

Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,600	A113521	Figure 3A.f	B

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Appendix B – Key Legislation

Badger Legislation

Protection of Badgers Act 1992
<p>The main legislation protecting badgers in England and Wales is the Protection of Badgers Act 1992 (the 1992 Act). Under the 1992 Act it is an offence to:</p> <ul style="list-style-type: none">• Wilfully kill, injure, take a badger (or attempt these);• Cruelly ill-treats or digs for a badger;• Interfere with a badger sett by, damaging a sett or any part thereof;• Destroying a badger sett;• Obstructing access to entrance of a badger sett;• Causing a dog to enter a badger sett;• Disturbing a badger whilst occupying a sett;• Selling or possess a live badger (or derivative);• Marking or ringing a badger. <p>The 1992 Act defines a badger sett as: “any structure or place which displays signs indicating current use (Natural England, 2009b) by a badger”.</p> <p>In Scotland, the Badger Act 1992 has been amended by the Wildlife and Natural Environment (Scotland) Act 2011 to include some minor amendments mostly relating to updating terminology.</p>
Wild Mammals (Protection) Act 1996
<p>This Act offers a form of protection to all wild species of mammals, irrespective of other legislation, and focussed on animal welfare, rather than conservation.</p> <p>Unless covered by one of the exceptions, a person is guilty of an offence if he mutilates, kicks, beats, nails or otherwise impales, stabs, burns, stones, crushes, drowns, drags or asphyxiates any wild mammal with intent to inflict unnecessary suffering.</p> <p>Its application is typically restricted to preventing deliberate harm to wildlife (in general) during construction works etc.</p>



Appendix C – Badger Sett and Evidence Terminology

Setts

The classification of holes as active, partially used, or disused, follows Harris, Cresswell & Jefferies (1989). **Active setts** are clear of any debris or vegetation, and will have some of the following features, well-worn paths, spoil mounds, footprints, fresh bedding outside the entrance and / or footprints leading in. **Partially used** holes are considered to not show signs of current use (e.g. have vegetation growing across the entrance), but could easily be reused if required. **Disused** setts are partially or completely blocked, with substantial excavation required to allow reoccupation or the sett is heavily used by rabbit or fox.

Main setts are the most important sett(s) within the territory of a badger group, where breeding takes place. They tend to be large, with five or more entrances and large spoil heaps and to be used throughout the year.

Annexe setts also have many well used entrances, and tend to be 50-150 m from the main sett, connected by well-worn paths, but may not be used all year round.

Subsidiary setts are not usually connected to the main sett by obvious paths, and may have any number of entrances.

Outlier setts tend to have only one or two holes and are used occasionally. There may be no obvious path to the main sett.

A sett in **current use** includes evidence of field signs indicating the presence of badger at a sett. Where evidence of current use is found the sett is active.

A sett showing **no signs of current use** does not necessarily mean it is not in use by badger a precautionary approach for this assessment should be made i.e. further monitoring may be required involving motion sensor cameras to confirm the sett is not in use by badgers.

Determining Territories

The location of setts and latrines are used to identify the boundaries of the territories and the badgers’ foraging areas. The extent of the territory depends on the value of the foraging ground, for example: a badger group in a poor quality ground may occupy up to 183 ha, and one in good foraging as little as 15 ha (information taken from www.badgers.org.uk).

Territories which are in current use tend to have tracks running around the boundaries. In agricultural areas these will usually follow field boundaries. Hedges are prime foraging areas for badgers and tracks are often found adjacent to them. Badger territories have not been marked for this assessment however where strong badger paths and latrines are located between two main setts it is considered highly likely this is a territorial boundary between setts.

Badger Evidence

Dung Pits and Latrines

Badgers generally defecate into a shallow 'scrape' in the soil called a dung pit. These may be solitary, or grouped together in one area (usually between five and 10 dung pits), in which case they are termed a latrine. Latrines are often situated in the far corner of a clan's territory or on the border with another clan's territory. Solitary dung pits may also be located on clan boundary lines, or closer to the sett, in particular a maternity sett.

Paths and Hairs

Badger hair (from the back of the animal) is much coarser and angular compared to rabbit and fox hair and generally much darker in colour. During the site survey where potential badger pathways were noted, low hanging branches and fences were searched for signs of badger hair. The presence of badger hair can be used to confirm use of a path by badgers.

Footprints

During the site survey all muddy and silty areas were checked for signs of badger footprints. Where these were found, the number and relative size of the prints were noted.

Bedding

Badgers use bedding to provide a layer between themselves and the wet soil and to insulate their nesting chambers. Badgers collect bedding (usually long grass / hay) into a large ball and take it into their sett. Unused bedding can be found on route leading to a badger sett or use bedding (usually crushed and containing badger hair) excluded from a sett can be found near the entrances to a sett. The presence of bedding at or near a badger sett is a good indication of a recent activity at a sett.

Badger earth and Spoil Mounds

During sett construction, the excavated soil is piled at the entrance to a sett. Over time the soil becomes well-trodden and smooth as badgers trample over the spoil mound. The size of the mound and the compacted or freshness of the spoil mound is an indication of the level of activity at the sett and the significance (status) of the sett.

Appendix D – Target Notes

Target Note	Grid Reference	Photograph(s)	
Well Used Sett			
WUS01	TL 46306 53693		
WUS02	TL 47569 53007		



Target Note	Grid Reference	Photograph(s)	
WUS03	TL 47775 52889		
WUS04	TL 47636 52551		



Target Note	Grid Reference	Photograph(s)	
WUS05	TL 48424 51829		
WUS06	From TL 48310 51366 to TL 48388 51361		

Target Note	Grid Reference	Photograph(s)	
			
			
			

Target Note	Grid Reference	Photograph(s)	
WSU07	TL 48258 51364		
WUS08	TL 48547 51353		
			

Target Note	Grid Reference	Photograph(s)	
WUS09	TL 48404 50956		
WUS10	TL 48654 51044		
WUS11	TL 51833 50038		

Target Note	Grid Reference	Photograph(s)	
WUS12	TL 51720 48953		
			
WUS13	TL 51957 49522		

Target Note	Grid Reference	Photograph(s)
		
		
WUS14	TL 52905 50103	

Target Note	Grid Reference	Photograph(s)
WUS15	TL 52025 49268	
Occasionally Used Sett		
OUS01	TL 46572 53523	
OUS02	TL 46997 53297	



Target Note	Grid Reference	Photograph(s)
OUS03	TL 49838 49968	
OUS04	TL 50686 49412	



Target Note	Grid Reference	Photograph(s)
OUS05	TL 50875 49282	

Target Note	Grid Reference	Photograph(s)
OUS06	TL 50939 49251	
OUS07	TL 51979 49069	
OUS08	TL 51686 48944	

Target Note	Grid Reference	Photograph(s)
OUS09	TL 52419 49825	
Dis-Used Setts		
DUS01	TL 46572 53302	
DUS02		



Target Note	Grid Reference	Photograph(s)
DUS03	TL 49198 50753	
DUS04	TL 50497 49553	
DUS05	TL 50847 49313	



Target Note	Grid Reference	Photograph(s)
DUS06	TL 51152 49113	
DUS07	TL 51876 49935	
DUS08	TL 51935 50344	



Target Note	Grid Reference	Photograph(s)
DUS09	TL 51925 48720	
DUS10	TL 51901 48971	
DUS11	TL 52038 49173	



Target Note	Grid Reference	Photograph(s)
DUS12	TL 52320 49923	
DUS13	TL 52419 49825	



ecology@wyg.com

WYG Environment Planning Transport Limited.

Registered in England & Wales Number: 3050297
3 Sovereign Square, Sovereign Street, Leeds LS1 4ER

Date 02-11-2021

Ms Andrea Evans
Mott MacDonald
Stoneham Place
Stoneham Lane
Southampton
Eastleigh
SO50 9NW

Dear Andrea

Cambridge South East Transport (CSET) – North Farm Badger Survey Technical Note 2021

This letter formalises the results of the Badger Activity Survey conducted at North Farm on 4th August 2021 which was not accessible during the main suite of surveys in 2020.

1. BACKGROUND

- 1.1 Capita Ecologists were commissioned by the Greater Cambridgeshire Partnership to undertake a badger activity survey at North Farm and its surroundings where the Cambridge South East Transport (CSET) route is proposed to go through.
- 1.2 This report details the badger survey which has been carried out to provide further baseline ecological information to inform the impact avoidance and mitigation measures and ultimately the design of the scheme.

2. LEGISLATION AND POLICY

- 2.1 Badgers receive protection in the UK as a result of both legislation and planning policies. This section outlines the primary legislation protecting badgers. All of the information below is relevant to this badger report and to the work proposed at the development scheme.

Legislation

- 2.2 Badgers are protected under the Protection of Badgers Act (1992) which makes the following actions illegal:
 - To wilfully kill, injure, take or possess a badger
 - The reckless and/or intentional cruelty of a badger
 - Interference with a badger sett by damaging or destroying it
 - Obstruction of access to, or any entrance of a badger sett; and
 - Disturbance of a badger when it is occupying a sett.

The Natural Environment and Rural Communities Act 2000

- 2.3 Section 40 of NERC Act 2006 places a statutory duty on public bodies, such as local authorities, that “every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.

Planning Policy

- 2.4 National Planning Policy is set out by the National Planning Policy Framework (NPPF July 2021) combined with the guidance document Planning for Biodiversity and Geological Conservation: A Guide to Good Practice” (ODPM 2005).
- 2.5 Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to ‘improve biodiversity’ (paragraph 8c).
- 2.6 References to biodiversity net gain elsewhere in the new NPPF (such as paragraph 175d) support the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protect, and enhance biodiversity promoting conservation, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006), ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006). The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 174b).
- 2.7 Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF (paragraph 175) which promotes Local Planning Authorities to assess if significant harm would occur to biodiversity and decide accordingly.

3. METHODOLOGY

Badger Activity Survey

- 3.1 Capita ecologists surveyed the site and the surrounding area for field signs of badger. Common field signs for badger include mammal paths, latrines, sett entrance holes, paw prints, hairs, and foraging snuffle holes.
- 3.2 If any field signs were found they were inspected and their grid reference recorded.
- 3.3 The survey was undertaken by Ann Sherwood, a Senior Ecologist and Full member of CIEEM with over 35 years of experience. She has managed large scale habitat and species monitoring programmes and designed protected species mitigation. She has extensive experience with badgers where she has held numerous development and damage licences including closing setts, working on live setts and designed mitigation for badgers. Ann was assisted on the survey by Mark Johnson, an Assistant Ecologist with four years’ experience.

4. LIMITATIONS

4.1 All reasonable effort was made to search the survey area thoroughly and systematically for signs of badgers. However, due to the time of year, latrines and other field signs may have gone unrecorded due to the dense vegetation. The area of land to the south-west of North Farm was inaccessible due to dense vegetation.

5. RESULTS

5.1 The survey has been split into 2 distinct areas: North Farm and Cambridge United Football Club to the south.

5.2 A plan showing the setts identified during the survey is provided in Appendix A.

North Farm

WUS16

5.3 A single active hole was discovered on the south bank of the ditch (Photo 1) at TL 48725 50893. Recently excavated bedding material from the hole was also present (Photo 2). Two further holes were found in close proximity. One on the south bank with a large soil heap TL 48750 50886, another in partial use at TL 48745 50888.



Photo 1 & 2. Active hole on southern bank of ditch with excavated bedding.

WUS17

5.4 An extensive area of at least 10 holes covering 10-12 metres was located on the south bank on the ditch at TL 48812 50867 (Photo 3). Areas of bare ground, spoil heaps and well used pathways along and down from the top of the bank were also visible. The dense vegetation may be concealing further holes in this location. Only one of these holes appeared to be active, all the rest are considered to be used occasionally.



Photo 3. Extensive area of holes on south bank of ditch.

5.5 Five holes were discovered within the field margin at TL 48805 50867, adjacent to the ditch/hedgerow (Photo 4 & 5). No hairs or paw prints were found within the entrances. They appear to be used occasionally.



Photo 4 & 5. Holes present at edge of North Farm grassland.

5.6 A well-used pathway was visible along the northern boundary at TL 48789 50869, as well as some leading into the ditch (Photo 6 and 7).



Photo 6 and 7. Well used pathways leading to the ditch and along northern boundary.

5.7 The size and shape of these holes are indicative of a badger sett as opposed to other mammal activity (rabbit), which was also noted on site.

OUS10

5.8 An active hole was discovered along the field margin on the north side of North Farm ditch/hedge at TL 49001 50818. No prints or hairs around the entrance (Photo 8).



Photo 8. Active hole along field margin.

Cambridge United Football Club

5.9 The surveying of North Farm’s southern boundary was initially restricted by dense foliage along the boundary fence. Access was therefore sought for the adjacent site under redevelopment by Cambridge United Football Club.

DUS14

5.10 A single hole was discovered on the north bank of the ditch at TL 48799 50740, immediately south of North Farm. This hole was considered to be old and disused as it was full of leaf litter with cobwebs covering the entrance and no fresh spoil or bedding evident.

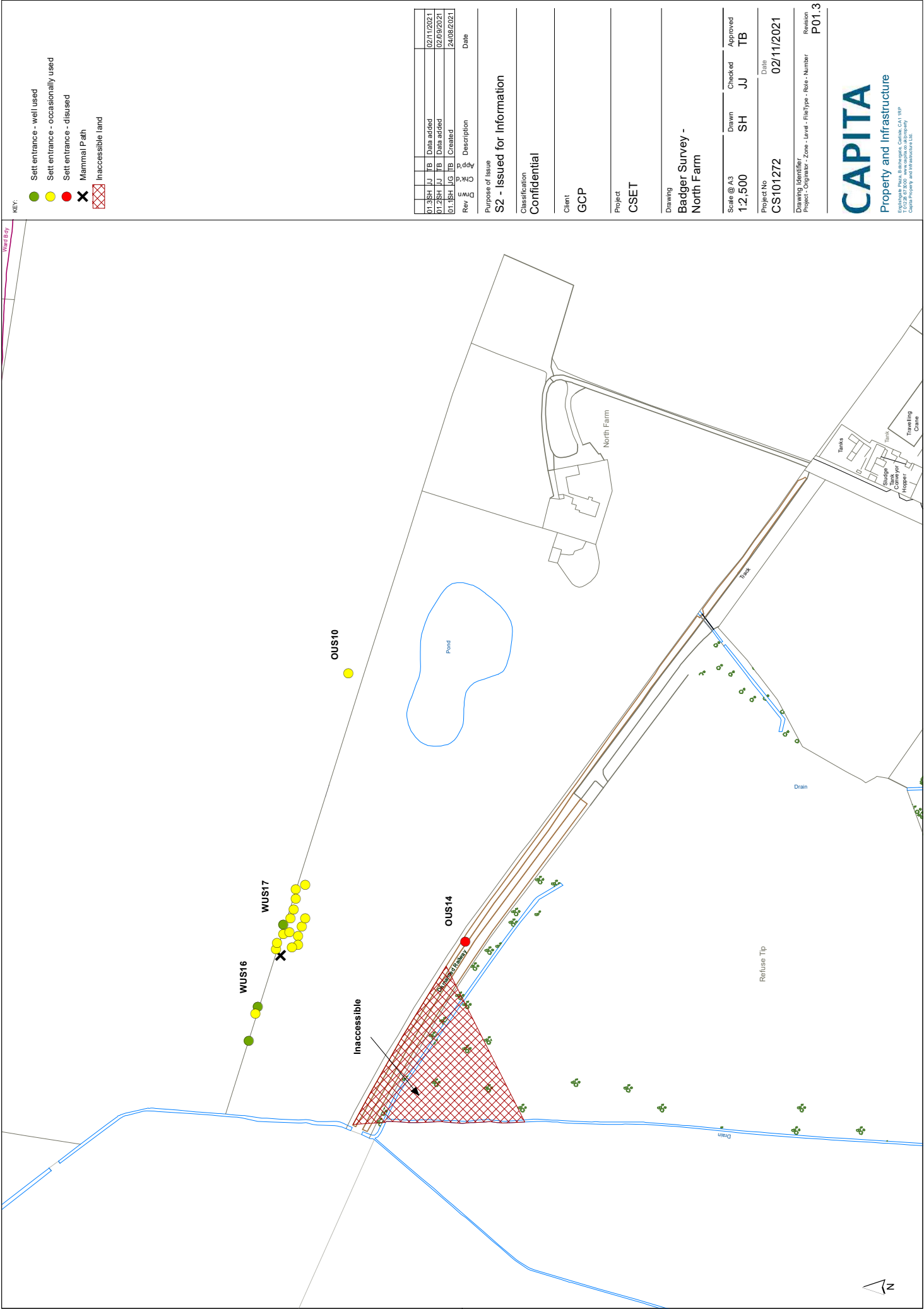
6. INTERPRETATION

- 6.1 The holes located in the north-west of North Farm form two badger setts (WUS16 and WUS17). These are believed to be annex setts but due to the number of holes, WUS17 may be a main sett and WUS16 an annex of that main. However, due to the lack of any significant activity this doesn't seem very likely. Further surveys would be required to establish which they are. However, the setts are well beyond the 30m from the proposed route widely regarded as the buffer zone that should be given to a badger sett to avoid damage and disturbance. They should therefore remain unaffected by the proposed route.
- 6.2 The single active hole to the north of North Farm (OUS10) is likely to be an outlier sett and again is well beyond 30m from the proposed route and so should remain unaffected by the proposed route.
- 6.3 The single hole to the south of North Farm was inactive at the time of survey (DUS14) and there was no other badger activity recorded in close proximity to it. It is therefore considered to be a historic outlier sett.
- 6.4 Prior to any works commencing on-site a pre-construction badger surveys should be undertaken to identify any changes in the baseline condition relating to badgers and any implications for development activities. The findings of this survey are time limited and if works do not commence within six months it is recommended further surveys will be required as badger usage can frequently change.
- 6.5 All ground works associated with construction of the new access road will be over 30m from the WUS16/17 and OUS10 which will avoid the risk of any direct impacts on badgers and their setts. Measures should however be employed to minimise the risk of injury and disturbance to badgers and their setts that may occur during road construction.

Yours sincerely

Mark Johnson
Assistant Ecologist

Peer Reviewed:
James Johnston, ACIEEM
Principal Ecologist





Greater Cambridgeshire Partnership

Cambridge South East Transport (CSET) Phase 2

Badger Activity Survey Report



Greater Cambridgeshire Partnership

Cambridge South East Transport (CSET) Phase 2

Badger Activity Survey Report

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WSP

8 First Street
Manchester
M15 4RP

WSP.com



Quality control

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Prepared by	Caroline Smallthwaite Ecologist
Signature	
Checked by	Neil Page MCIEEM Principal Ecologist
Signature	
Authorised by	Tabatha Boniface CEnv MCIEEM Technical Director
Signature	
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Appendix A
Survey Plan and Badger Sett Locations
Appendix B
Badger Territory Plans

Appendix A
Survey Plan and Badger Sett Locations
Appendix B
Badger Territory Plans



1 Summary

WSP Real Estate & Infrastructure's (WSP RE&I) Ecologists were commissioned by the Greater Cambridgeshire Partnership to undertake badger activity surveys to map the territorial extents of three clans within the footprint of the proposed Cambridge South East Transport Phase 2.

The surveys have been carried out in 2022 to provide an update of baseline ecological information previously undertaken in 2020. CSET is now moving forward towards planning submission and as such update surveys have been commissioned to supplement information submitted with the planning application to update the baseline information and assess current impacts of the scheme and land take associated with both construction and operation.

This report describes the methods and results of the badger bait marking survey, badger field surveys and provides plans of additional badger activity and locations of setts across the Scheme footprint.

The construction of the proposed route will directly impact the main and annexe setts at Cheveley Farm (OUS07), Bury Farm (WUS06) and Deal Farm (WUS09), and indirectly impact the main sett at North Farm (WUS17) which is only 40 m from the proposed scheme.

As a result of these impacts the construction will result in the need to close sett WUS06 (Main Sett), Annex Setts WUS06 and WUS07, OUS07 Main sett and Annex setts and WUS09 (Subsidiary Setts). If this impact cannot be avoided, a licence from Natural England will be necessary prior to commencement of works on Site. The setts at Bury Farm appear to have the highest level of activity, with main setts linking to several entrances with large spoil heaps marked with latrines. Bury Farm is potentially the original natal clan and Deal and North Farm clans have arisen through dispersal of badgers which is the process by which a badger moves from one family clan to a different family clan on a permanent basis.

Furthermore, construction would also cause severance of badger territories, not only at these setts, but also where bait marking surveys have clearly shown movements across the scheme. In addition, based on the survey results from 2021 and 2022, foraging habitat (arable land, woodland and grass margins) will be lost during the construction phase.

Other badger clan territories seem likely to be equally negatively affected by severance where the route cuts through the territories of WUS09, WUS16 and WUS17, resulting in possible negative indirect impacts, to badger clans throughout the scheme footprint including movement between OUS07 and WUS11.

Further mitigation will be required to ensure that fragmented clans can continue to function as a unit, and it is likely that badger underpasses will be required.



This report should not be made publicly available, in any form, as it risks allowing the location of badger setts to be identified and these are frequently subject to badger baiting activities. Requests for such information should not be met, except where the request originates from a person, or organisation, with a bona fide interest in badgers.

2

Introduction



2 Introduction

2.1 Background

WSP Real Estate & Infrastructure's Ecologists were commissioned by the Greater Cambridgeshire Partnership in July 2022 to undertake badger activity surveys. These surveys were undertaken in relation to the development of Phase 2 of the Cambridge South East Transport (CSET) Project.

The aim of this report is to summarise the results of the bait marking and field surveys conducted between Trumpington to Babraham in 2022, to provide an update on the presence of badger, characterise setts identified and use bait marking to identify the territories of the clans using the area to be affected by CSET.

2.2 Project Description and Purpose of the Scheme

- The Scheme forms part of the wider Transport Strategy for Cambridge and South Cambridgeshire (TSCSC) was adopted by Cambridgeshire County Council on 4 March 2014 and ensures that local councils plan together for sustainable growth and continued economic prosperity in the area.
- The strategy will provide a plan to cope with the rising population and increase in demand on our travel network by shifting people from cars to other means of travel including cycling, walking and public transport. The strategy contains details of the major schemes proposed in the short, medium, and longer term. The programme will be regularly reviewed given the extent of growth and development in the area.
- The Cambridge Southeast Transport (CSET) Project aims to create a vital link to ease congestion, offer sustainable travel choices, connect communities, and support growth in the Southeast of Cambridge. CSET would form part of the Cambridgeshire Autonomous Metro, providing high quality, frequent and affordable public transport.
- CSET Phase 2 comprises a segregated public transport route from the A11 (near Brabham) to the Cambridge Biomedical Campus (CBC). This would include new bus route and walking, cycling and equestrian links.
- The CSET project offers better public transport and active travel options for the A1307 and A1301 area. It would improve journey times, reliability and link communities and employment sites in the area southeast of Cambridge.

2.3 Legislation and Policy

Badgers receive protection in the UK as a result of both legislation and planning policies. This section outlines the primary legislation protecting badgers. All of the information below is relevant to this badger report and to the work proposed at the development scheme.

Legislation

Badgers are protected under the Protection of Badgers Act (1992) which makes the following actions illegal:

- To wilfully kill, injure, take or possess a badger
- The reckless and/or intentional cruelty of a badger
- Interference with a badger sett by damaging or destroying it
- Obstruction of access to, or any entrance of a badger sett; and
- Disturbance of a badger when it is occupying a sett.

The Natural Environment and Rural Communities Act 2006

Section 40 of NERC Act 2006 places a statutory duty on public bodies, such as local authorities, that "every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity".

Environment Act 2021

The Environment Act makes provisions and opportunities for recovering or enhancing biodiversity, in terms of habitats and species, in the strategy area, the priorities, in terms of habitats and species, for recovering or enhancing biodiversity (considering the contribution that recovering or enhancing biodiversity can also make to other environmental benefits), and proposals as to potential measures relating to those priorities within the local area. No priorities have yet been drafted but referral to priority species and habitats is concurrent with that of the Section 40 of the NERC 2006 Act, in which recovery plans are drawn up and implemented.

2.4 Planning Policy

National Planning Policy is set out by the National Planning Policy Framework (NPPF February 2019) combined with the guidance document Planning for Biodiversity and Geological Conservation: A Guide to Good Practice" (ODPM 2005).

Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to 'improve biodiversity' (paragraph 8c).

References to biodiversity net gain elsewhere in the new NPPF (such as paragraph 175d) support the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protect, and enhance biodiversity promoting conservation, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006), ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006). The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 174b).

Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF (paragraph 175) which promotes Local Planning Authorities to assess if significant harm would occur to biodiversity and decide accordingly.

2.5 Personnel and Quality Assurance

All ecologists employed by WSP RE&I adopt best practice working methods in undertaking surveys including the Chartered Institute of Ecology and Environmental Management's (CIEEM) code of professional and all fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior staff and appropriately licensed ecologists.

The surveys were led by Principal Ecologist, Sean Ripley, Ecologist, Caroline Smallthwaite and assisted by Ecologist, Mark Johnson.

Sean has seven years' experience in professional ecological consultancy. In his role he is involved in mentoring, resourcing, quality assurance and line management of the ecology team. He is adept in the coordination and management of complex projects, delivering technical initiatives (in line with World Bank Standards) in geographical locations across United Kingdom, Eastern Europe, Asia, South America, Africa. He is involved in technical and commercial project management including full or partial co-ordination of schemes ranging from small scale to larger Ecological Impacts Assessments (EcIA) as well as inter-disciplinary collaboration to influence design and support EIAs to ensure biodiversity is safeguarded throughout development. He has led ecological projects for environmental compliance and due diligence across linear infrastructure (transmission lines and railways) development and construction, monitoring, renewable energy sectors (hydropower, Solar PV and Wind Power Plants) and conservation boards.

Caroline Smallthwaite holds a Master's degree in Biological Recording and is a CIEEM Graduate Ecologist with over seven years' experience in ecology and conservation and ten years in the arboricultural sector. She has been involved in a variety of projects from large road projects to flood alleviation schemes. She has undertaken badger surveys for other major road schemes. Her experience spans a range of ecological receptors and key skills including the provision of ecological advice to councils regarding legislative requirements for planning applications including reviewing third part ES. Other skills include Phase 1 Habitat surveys, botanical NVC (National Vegetation Classification) (including invasive species surveys) and badger and otter surveys. She holds a Natural England Science & Education Great Crested Newt Licence.

Mark Johnson is an Ecologist with five years' experience working within professional ecological consultancy. He is familiar with the majority of badger field signs and has previously assisted with undertaking badger surveys on CSET (previous surveys in 2020), HS2, Milesplit Cemetery, and Tipton and Swan Brook.

3

Methods



3 Methods

The surveys and report were carried out to identify territorial boundaries of the badger clans associated with three main setts WUS06, WUS17, OUS07 and OUS07A (Bury, North and Cheveley Farm) and Annex Setts WUS07 and WUS08 and Subsidiary Sett WUS09.

In addition, badger activity maps and sett location maps include details of observations made from September to November 2022.

3.1 Desk-based Study

Biological Records provided by Cambridgeshire and Peterborough Environmental Records centre (CPERC) in October 2022 covering a 5 km radius of the scheme were reviewed.

3.2 Field Survey

Badger surveys were undertaken in accordance with current best practice methodology set out in Harris et al. 1989. Habitats within the survey site and up to 30 m of the site boundary were walked surveying for field signs indicating the presence of badgers, including setts, runs/pathways, latrines/dung pits, footprints, foraging signs (e.g. snuffle holes), guard hairs caught on fences and scratching posts.

A walkover survey was undertaken on two consecutive days (28 and 29 November 2022) to determine impact on badger sett and licence requirements. A 30 m buffer alongside the proposed scheme was surveyed to provide an update on the condition and to understand the current use of the setts. All new setts within the 30 m buffer were recorded and located on the badger sett location maps (Appendix A).

Badger Bait Marking

Background Information 2022

A scoping survey was undertaken a few days prior to the bait marking exercise to revisit the known latrine sites identified in the 2020 badger survey and to identify any new latrine sites that had been created since then. A systematic survey for latrines began by following badger paths from the main sett, along with walking all boundaries within 500 m.

The methodology used for the bait marking surveys is outlined below and followed the general methods detailed in Delahey et al. 2000.

Bait was comprised of a ratio of dry bait (peanuts, oats and peanut butter) and mixed with syrup and treacle in a 10:1 ratio of bait to pellets. A different spoon was used for each bucket of bait to avoid cross-contamination. Standard plastic pellets designed for badger bait marking exercises were used with a different colour/s for each of the three setts surveyed. Bait colours used correspond to the three setts as detailed in Table 3-1 below:

Table 3-1 – Pellet colour corresponding to Sett designation for four sites (2022)

Pellet Colour	Sett	Farm
Green	WB11	Cheveley
Red	WUS09	Deal Farm
Grey	WUS06	Bury Farm
Purple	WUS16	North Farm

Bait was placed inside active sett entrances and in close proximity to active setts on the following dates: 15, 16, 30 September and 3 October 2022. While baiting in the morning increases the risk of non-target species eating the bait, this was not always practicable based on Gamekeeping activity and associated access restrictions. Wherever possible, bait laying was alternated between the sites so that all sites had bait laid in the late afternoon. The bait stations were well-hidden and it is considered unlikely that these were taken by non-target species, especially bait laid inside sett entrances.

At one sett (WUS06), its known active annexe setts (WUS07 and WUS08) were also baited because the setts were almost indistinguishable from one another. Numerous sett entrances distributed along the whole hedge-line plus well-worn pathways linking the setts together made it obvious that the three setts belonged to the same badger clan and annexes were within the 30 m radius from WUS06. Therefore, the methods have not deviated from best practice (Delahay et al. 2000), however, it is acknowledged that badger activity could have been influenced by the presence of food within annexe locations.

Where there were no obvious safe places to hide the bait, the bait was put down at active or seemingly active holes to ensure that badgers took up the bait at the sett. Elsewhere bait was placed in depressions and covered with rocks, stones, bricks and sticks or whatever was available, wherever possible, to prevent other mammals eating the bait. The bait was placed along well-worn pathways and obvious badger crossing points through fence lines at regular intervals.

Approximately 25 to 30 bait points were applied per sett, with roughly 50 to 100 ml (up to half a cup) per bait point. Latrine checks commenced on 20 September, 3 and 4 days after pre-baiting, therefore all setts were baited to the minimum standard as detailed in best practice (Delahay et al. 2000).

A systematic walkover survey was undertaken, paying particular attention to linear features such as ditch banks, hedgerows, land boundaries such as the River Granta, as well as crossing points such as foot bridges or through fence lines, and visual landmarks such as bunds and telegraph poles.

All droppings were broken apart using a stick and spread on the ground and checked thoroughly for pellets. Care was taken to avoid treading on dung pits/latrines as this can disrupt their use and cause anomalous results. All results were recorded daily to provide reliable data for territorial analysis. This included noting whether bait had been taken, checking all known latrines daily and reporting any fresh deposits and noting if pellets were present. The locations of the latrines/dung pits were all marked using a global positioning device. Photographs were taken of any relevant findings.

Searches/checks were undertaken along all boundaries within 250 m of the main setts daily. Where latrines were identified just outside of the 250 m buffer (see mapping), these were also inspected. All latrines along boundaries within 500 m of the main sett were conducted once a week.

3.3 Survey Limitations and Assumptions

Although bait marking surveys is recommended to be undertaken in late February to late April when territory marking is most intense, they can also be conducted between early September and mid-October. The initial surveys for the CSET Phase 2 scheme were conducted in September and/or October 2020 and the surveys were updated in September/October 2022 so fall within this latter period and are considered to provide an accurate reflection of badger activity around the setts surveyed.

A Badger Activity Survey was conducted at North Farm on 4 August 2021 as this area was not accessible during the main suite of surveys in 2020.

Low bait uptake in September was attributed to high temperatures and drought conditions leading to reduced activity.

Despite best attempts to conceal and hide bait under vegetation, logs, stones etc. and placing them along well-used badger pathways and crossing points, it is possible that some bait could have been taken by other animals, although there was no evidence to suggest this (other mammal droppings were recorded throughout the surveys and no pellets or undigested bait were observed). Enough bait points were set throughout the survey and overall, this was not considered to significantly affect the results of the survey.

Some locations had restricted access during the 2022 badger survey including Cheveley Farm, North Farm and Cambridge Football Club.

4 Results

4.1 Desk Based Study

Data obtained from the CPERC identified 173 records of badger within 5 km of the Scheme. 28 records of setts have been identified and are outlined below.

The most recent sett record is from October 2021 and is located approximately 4.5 km south-east of the scheme in Linton (TL 5550 4665). Two further setts were recorded in this area in 2019 at TL 545 454 (approximately 4.8 km from the scheme) and at TL 542 475 (approximately 3 km from the scheme).

A record of a main sett has been identified immediately to the west of the route at Greater Shelford, located to the rear of properties at Trinity Lane, approximately 600 m west of the scheme (TL 4577 5251). An additional main sett was identified in this area (TL 4446 5304), as well as two outlier setts (TL 4480 5268 and TL 4483 5259). These records are from 2014.

A sett record from 2015 was identified immediately adjacent to the scheme along Hinton Way (TL 4753), however, due to the low spatial resolution of the record, it is difficult to pinpoint the exact location of the sett.

Three additional recent setts recorded in 2017 are associated with Trumpington Meadows (TL 433 543), approximately 3 km east of the scheme, however, these are separated by the M11 motorway. A further two setts were recorded in Trumpington in 2014 to the east of the scheme at TL 4435 5342 and TL 4463 5393.

A sett was recorded to the south of the scheme near Sawston in 2018 (TL 4749), however, due to the low spatial resolution of the record it was difficult to pinpoint the exact location of the sett.

Setts recorded prior to 2012 are summarised below:

- Nine records at Fleam Dyke SSSI (TL 552 536) between 2006 and 2008
- Little Shelford, 2007 (TL 447 521)
- Haverhill Road, 2007 (TL 488 529)
- Magog Down, 2008 (TL 488 528)
- Trumpington Meadows, 2008 (TL 4353)
- Cambridge Botanic Garden, 2009 (TL 454 570).

Several of the records relate to road traffic accidents (RTAs) associated with various roads in the vicinity of the scheme, including the A10, A11, A1307, A603, B1368, and M11.

A sett has been confirmed at Whitefields (Uplands) during the Phase 2 surveys conducted between May and October 2020.

4

Results

The sett mentioned above in 'Whitehills woodland' was also confirmed as being present although the sett in woodland adjacent to Graham's Road as disused, but a further active sett was recorded in woodland again at Whitehill Farm. Badger pathways were noted in the woodland by the road and through the hedgerow

4.2 Field Survey Results

Walkover Survey Results 2021 and November 2022

North Farm

A Badger Activity Survey was conducted at North Farm on 4 August 2021 as this area had not been accessible during the main suite of surveys in 2020 and a follow up survey was undertaken on 28 November 2022.

WUS16

In August 2021, a single active hole was discovered on the south bank of the ditch at TL 48725 50893. Recently excavated bedding material from the hole was also present. Two further holes were found in close proximity, one on the south bank with a large soil heap TL 48750 50886, another in partial use at TL 48745 50888.

WUS17

An extensive area of at least 10 holes covering 10-12 metres was located on the south bank on the ditch at TL 48812 50867. Areas of bare ground, spoil heaps and well used pathways along and down from the top of the bank were also visible in August 2021. The dense vegetation may have been concealing further holes in this location. Only one of these holes appeared to be active, all the rest were considered to be used occasionally. Five holes were discovered within the field margin at TL 48805 50867, adjacent to the ditch/hedgerow. No hairs or paw prints were found within the entrances. They appear to be used occasionally. A well-used pathway was visible along the northern boundary at TL 48789 50869, as well as some leading into the ditch in November 2022.

OUS10

An active hole was discovered along the field margin on the north side of North Farm ditch/hedge at TL 49001 50818. No prints or hairs around the entrance in November 2022

Cambridge United Football Club

There was no permissible access to this area throughout the suite of surveys 2020 to 2022.

DUS14

A single hole was discovered in November 2022 on the north bank of the ditch at TL 48799 50740, immediately south of North Farm. This hole was considered to be old and disused as it was full of leaf litter with cobwebs covering the entrance and no fresh spoil or bedding evident.

The holes located in the north-west of North Farm form two badger setts (WUS16 and WUS17). These are believed to be annex setts but due to the number of holes WUS17 may be a main sett and WUS16 an annex of that main sett. The single active hole to the north of North Farm (OUS10) is likely to be an outlier sett.

These areas were re-surveyed in 2022. Access to the main sett and subsidiary setts was restricted by dense bramble and blackthorn. However, there were many field signs with well-established paths located adjacent to the dry ditch and fresh latrines on the margins of the field indicating that the main sett and subsidiary setts are in constant use.



Photograph 1 – North Farm sett located in impenetrable undergrowth

Bury Farm (November 2022)

Main Sett WUS06 is located along the banks of a dry ditch and hedgerow running east to west for around 700 m between arable fields. There are 29 holes in total: 27 are active with high levels of fresh digging, spoil and path networks as well as two partially used sett entrances were recorded along both the northern and southern banks of the ditch associated with this and its annexe setts: WUS07 and WUS08. All previously recorded setts are still highly active with large amounts of spoil, latrines and badger pathways. The majority of the entrance holes were clear of debris/vegetation, except bedding material, and there was fresh spoil outside of many of the setts. There was an abundance of field signs in the location of the main and annex setts with signs of wear consistent with use with the presence of smooth, compacted soil, paw prints and hairs.



**Photograph 2 – Active badger sett
at Bury Farm**

Deal Farm

Sett WUS09 is located in broadleaved woodland along an old disused railway line which forms a boundary between a number of large arable fields. The sett is located on the southern edge of the woodland at its eastern end. The sett comprises 6 sett entrances located in dense blackthorn scrub. All the setts appeared to be in regular use with spoil heaps evident. Fresh latrines were recorded, and well used pathways were clearly evident through the scrub and on the outer margins in the woodland. A further subsidiary sett was recorded on the northern bank of the woodland edge at TL 48352 50986. The entrance hole had some accumulated debris/vegetation and field signs indicating recent use by badgers. It can be assumed that the sett use is potentially seasonal. In addition, it was clearly evident that the badgers are crossing the River Granta. Well used pathways were recorded entering and exiting the watercourse indicating that the badgers from Deal, Bury and potentially North Farm share the same territory.



**Photograph 3 – Subsidiary
Sett**



**Photograph 4 – Clear badger
pathways across the River Granta**

Cheveley Farm

In 2021 the Main Sett OUS07 was found to be located in an area of semi-natural broadleaved woodland in the banks of a pit, adjacent to the A11 with at least three active sett entrances and at least 11 sett entrances identified as partially active or disused.

An active annexe sett with three sett entrances (OUS07A) was also present along the fence line at TL 52036 49894. Plantation broadleaved woodland abuts the woodland along the highway embankment and to the north of the semi-natural woodland. A 6 m grass margin and arable land is present along the woodland boundary to the west. Badger pathways were noted along this margin, through the woodland and across the margin heading west to broadleaved woodland. An outlier sett was recorded in the woodland to the far east of the main road (TL 51824 49910). The entrance hole had some accumulated debris/vegetation and no field signs indicating recent use by badgers.

Access was restricted in November 2022 to the south of the site due to imminent pheasant shooting and again access was limited to the northern edge due to a community of people who had taken up residence in this area. However, any accessible areas were surveyed and setts were recorded that corresponded with the 2021 surveys.



Photograph 5 – Annexe sett within broadleaved woodland close to the highway embankment

Setts in other locations within a 30 m buffer of the Proposed Scheme

An outlier sett was recorded on the outskirts of the hospital grounds (TL 45960 54415) on a highway embankment close to the bridge. The sett appeared disused with no fresh spoil or bedding evident, and it was noted that a large pipe had been placed inside the entrance, presumably in an attempt to prevent access.



Photograph 6 – Outlier sett

Broadleaved Woodland in Stapleford (East of Hinton Way)

Potential annexe setts are located to the south-west of the woodland (TL 47114 53316) close to the proposed scheme. There is possibly a main sett within 50 m although surveying was restricted on the privately owned land to the west, thus preventing confirmation of this fact. There are several entrances, but they did not appear to be in current use. However, there were snuffle signs and a latrine located within 10 m of the setts, indicating that this is within a badger territory. The sett use is most probably seasonal with occasional use.



Photograph 7 – Potential annexe setts

Broadleaved Woodland South of River Granta

A subsidiary sett was recorded TL 4873951121 on the east edge of a block of broadleaved woodland located to the south of the River Granta. The sett appeared to be partially active with evidence of recent use, there were also two inactive setts located in close proximity to this sett. These holes showed no signs of recent use and were partly blocked.

Badger Baiting Marking Results 2022

The surrounding areas around four farms Bury Farm, Deal Farm, Cheveley Farm and North Farm were baited with food to determine the scope of badger activity.

Bury Farm – Sett WUS06

Latrines (LT on the map at Appendix B) were observed at either side of the hedgerow at:

- The northern side of the hedgerow opposite to WUS06.
- In the field margin immediately adjacent to the river.
- LT3 was located 590 m north of the main sett in an arable field.
- Some of the latrines were purple indicating that badgers were crossing the river from North Farm and foraging in the same territory as Bury Farm.

Deal Farm – Sett WUS09

Latrines were observed at either side of the hedgerow at:

- LT38 was located adjacent to the main sett within the woodland.
- Five latrines were located south of the sett in the agricultural field and close to the sewage works.
- One latrine (LT32) was located adjacent to the River Granta.
- The furthest latrine was located south of the site at 508 m.
- Some of the latrine sites had purple pellets indicating that the two clans (Deal and North Farm) are foraging in each other's territory.
- Alternatively, it may also indicate that the setts are encompassing one large natal clan.

Cheveley Farm – Sett WB11

A total of 8 latrine sites had been recorded during the 2020 scoping surveys, six of these were still active in the 2022 surveys.

Latrines were observed within and largely in close proximity to the broadleaved woodland where the main and annexe setts are located:

- LT 62, 63, 64 and 65 were located in close proximity to the main sett within the woodland.

- Two latrines were located east of the sett in the agricultural field.
- The furthest latrine was located south of the site at 417 m.
- Sixteen of the observations were of fresh dung with no pellets while only four had green pellets.

North Farm Sett – WUS16

Sett WUS16 is located in a hedgerow alongside an agricultural field. A total of seven latrine sites were recorded during the 2022 surveys.

Latrines were observed within and outside the hedgerow at:

- LT70 was located adjacent to the River Granta to the south of the river covering a considerable distance of 500 m. No pellets were found in the dung.
- LT A, B, C, D E were located to the east of the main sett, close to the hedgerow line.
- LT C and F contained red and blue pellets indicating that badger/s from the Deal Farm clan were mixing with the badgers from the North Farm Sett. Other latrines were predominantly fresh with no pellets evident.

5

Interpretation & Recommendations



5 Interpretation & Recommendations

Based on the survey results from 2021 and 2022, in the absence of mitigation, badger foraging habitat (e.g. arable land, woodland and grass margins) will be lost during the construction phase. The construction of the proposed route will directly impact the main WUS06 (Bury Farm), and annexe setts at WUS07 and WUS08 (Bury Farm) WUS09 (Deal Farm) and the main sett at OUS07 (Cheveley Farm), North Farm may be indirectly affected through construction and operation as it falls approximately within 30 to 40 m from the proposed scheme and therefore precautionary methods of working will be required. There will also be loss of some core badger territories within 500 m of the main setts that will require some additional compensatory habitat and some screening to reduce likelihood of collision risk near main setts, this can be informed in the landscaping scheme where bait marking surveys have been undertaken and which clearly show movements across the scheme.

Some of the latrine sites at Bury Farm had purple pellets indicating that badgers from North Farm are foraging in that area. The results from the latrines found at Deal and North Farm indicate that they forage in each other's territory. Furthermore, well used pathways were recorded entering and exiting the water course indicating that the badgers from Deal, Bury and potentially North Farm all share the same territory. The results may indicate that the setts are encompassing one large clan.

The setts at Bury Farm appear to have the highest level of activity, with main setts linking to several entrances with large spoil heaps marked with latrines. Bury Farm is potentially the original natal clan and Deal and North Farm clans have arisen through dispersal of badgers which is the process by which a badger moves from one family clan to a different family clan on a permanent basis. Due to relatively low dispersal distances, it seems clear that, at the local level, badgers may be heavily interbred.

As the current proposals will result in the definite loss of the main badger setts at Bury Farm, Deal Farm and Cheveley Farm, the design should be reviewed to see if proposals can be modified to avoid the loss of these setts in the first instance.

If this impact cannot be avoided, a licence from Natural England will be necessary prior to commencement of works on Site. This will need to include a full mitigation strategy including replacement setts, and a reasonable avoidance method statement to management indirect impacts to Main Sett OUS07 and Annex OUS07A and WUS17 (Main) which maybe indirectly impacted during construction and operation.

6 References

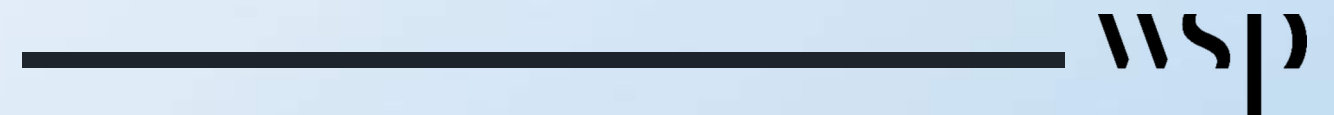
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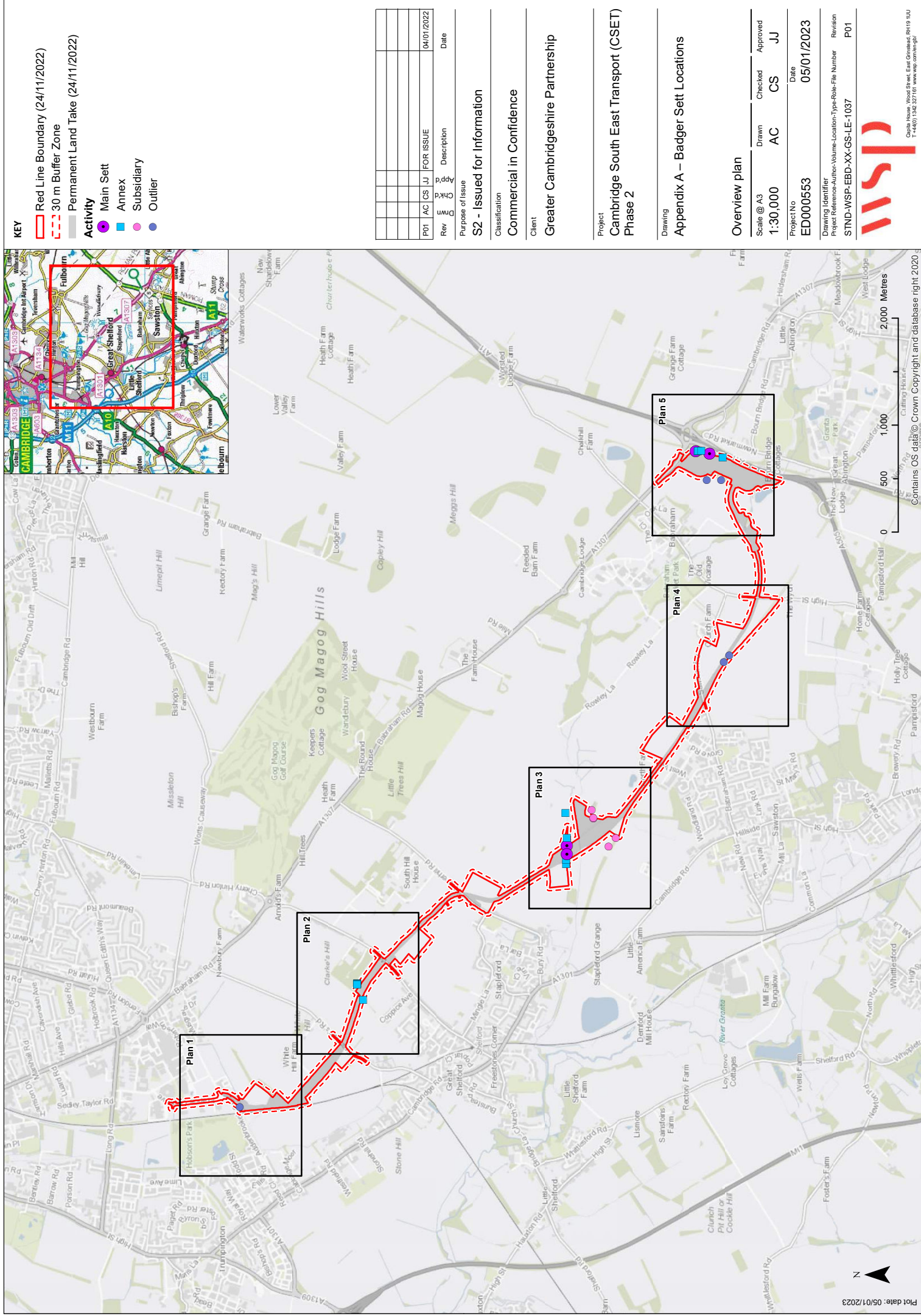
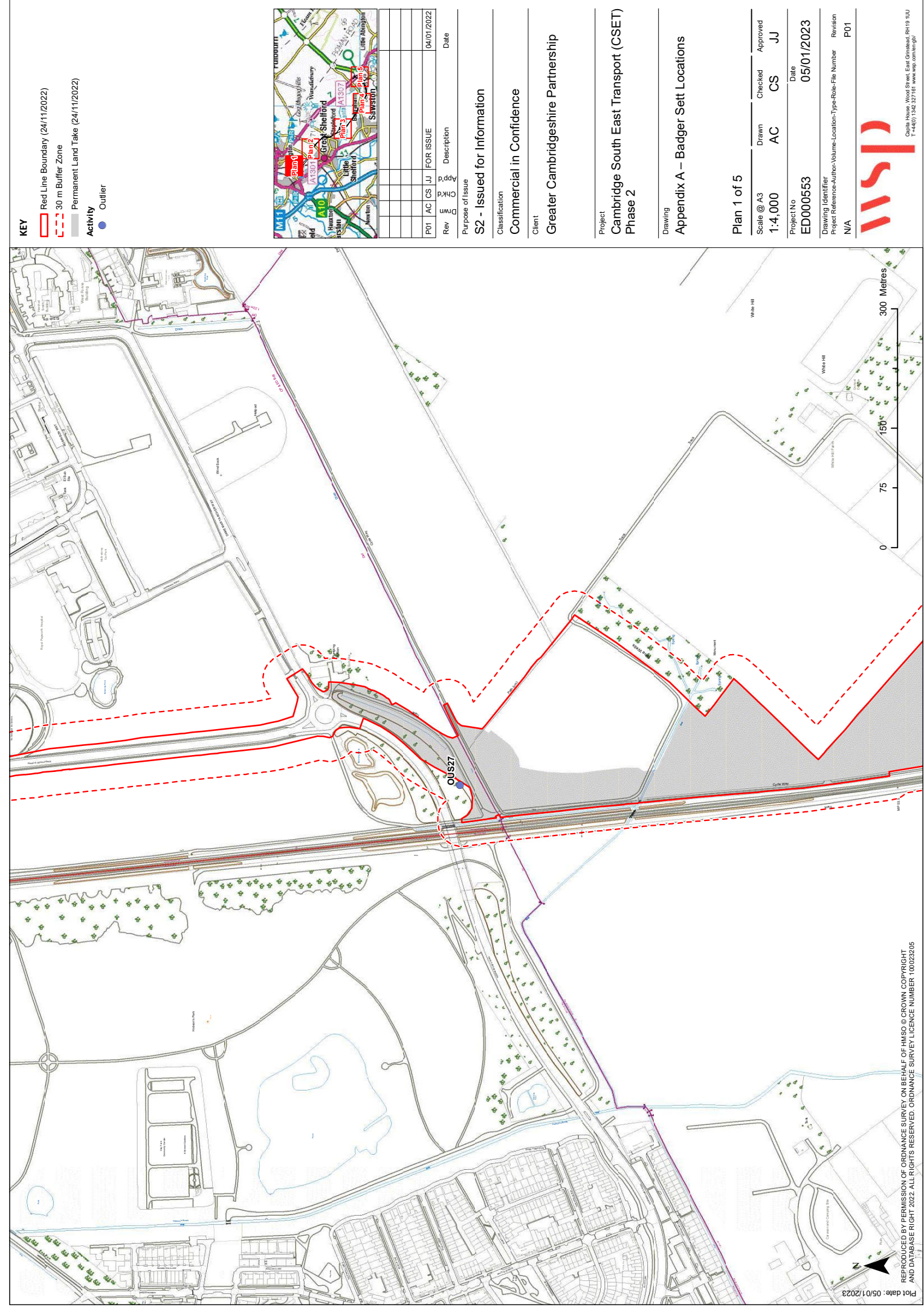
6

References

Appendix A

Survey Plan and Badger Sett Locations



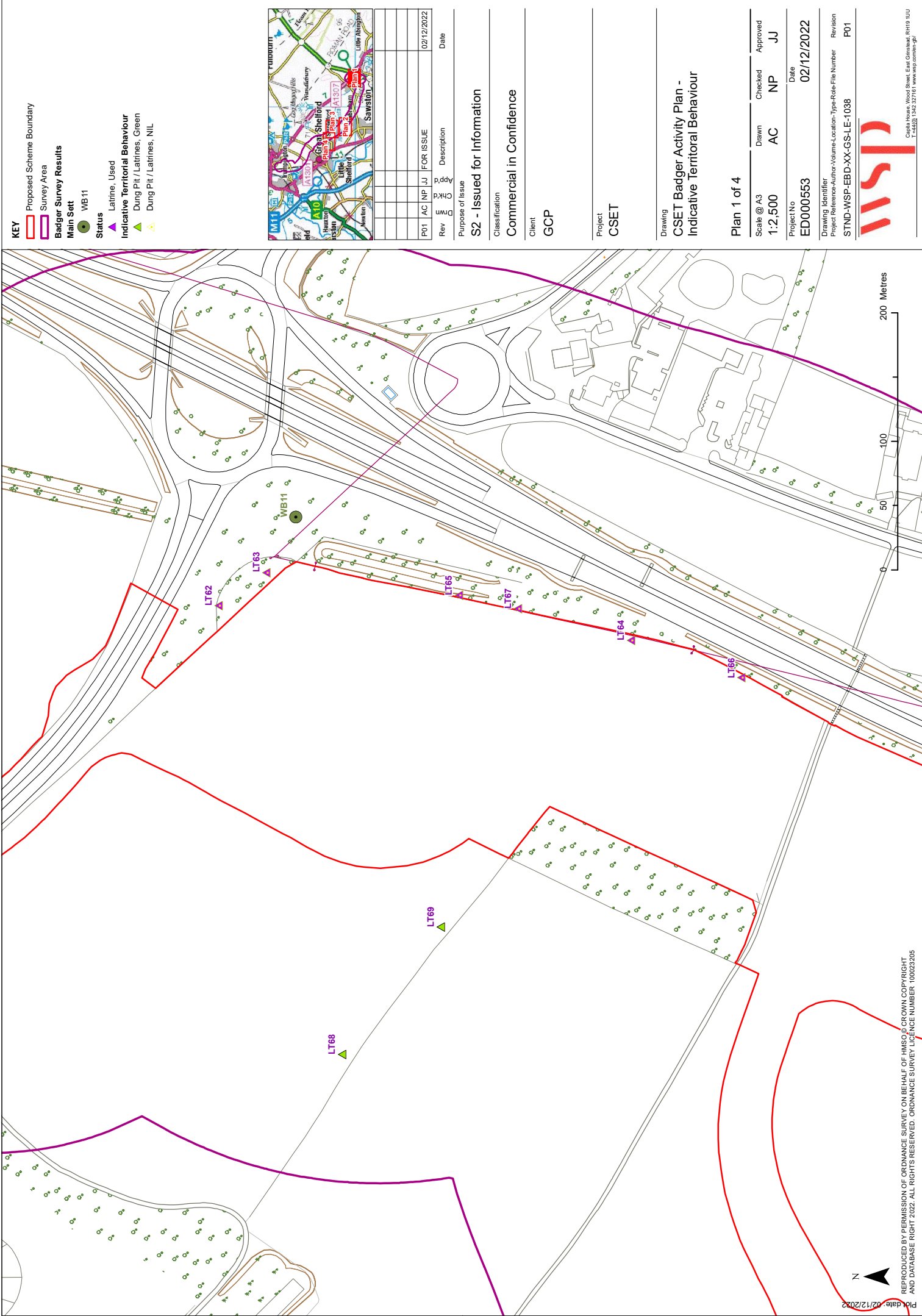


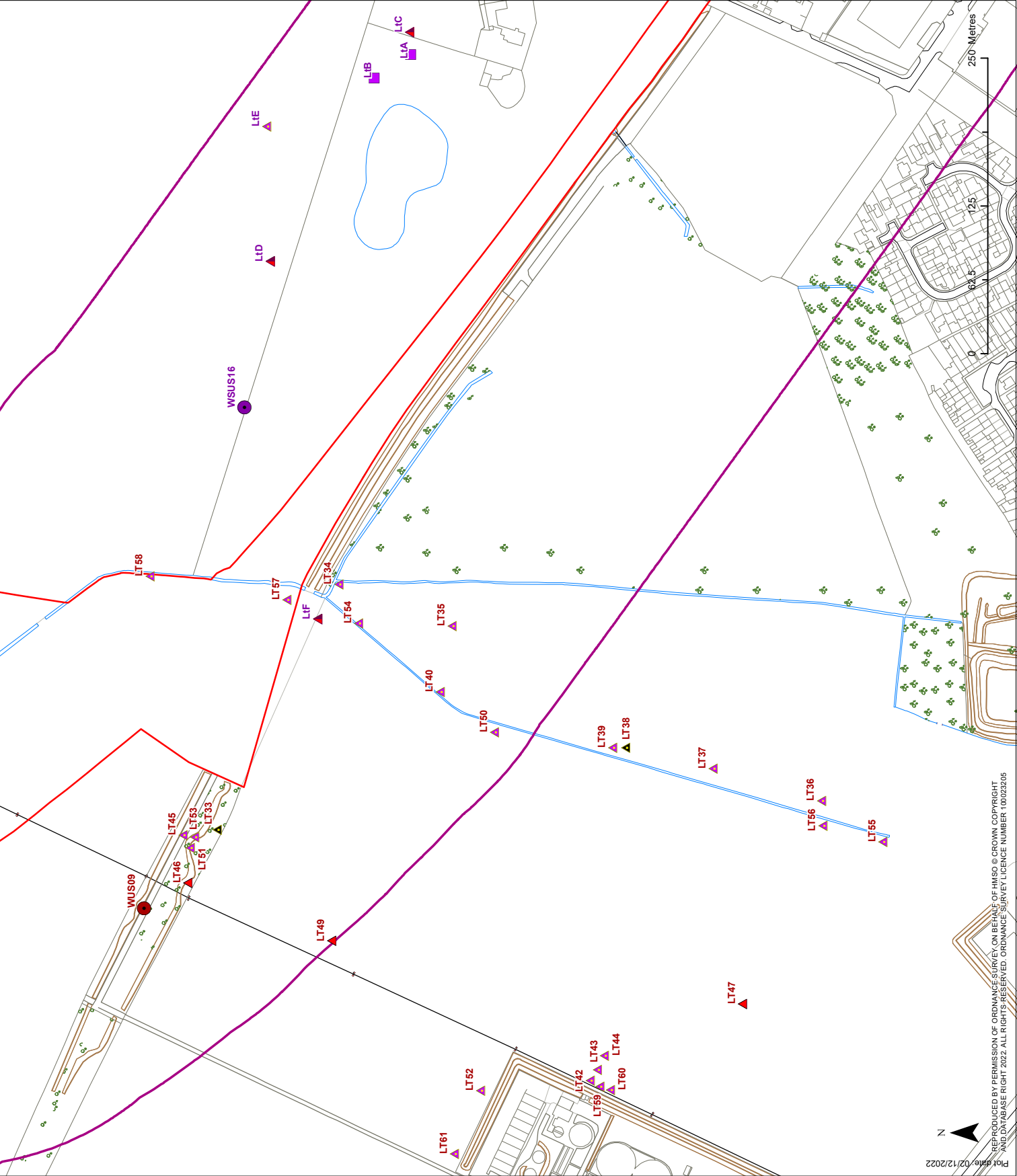
Appendix B

Badger Territory Plans



Confidential





KEY

Proposed Scheme Boundary

Survey Area

Badger Survey Results

Main Sett

WSUS16

WUS09

Status

Latrine, Used

Latrine, Disused

Dung Pit, Used, FNP

Indicative Territorial Behaviour

Dung Pit / Latrines, Red

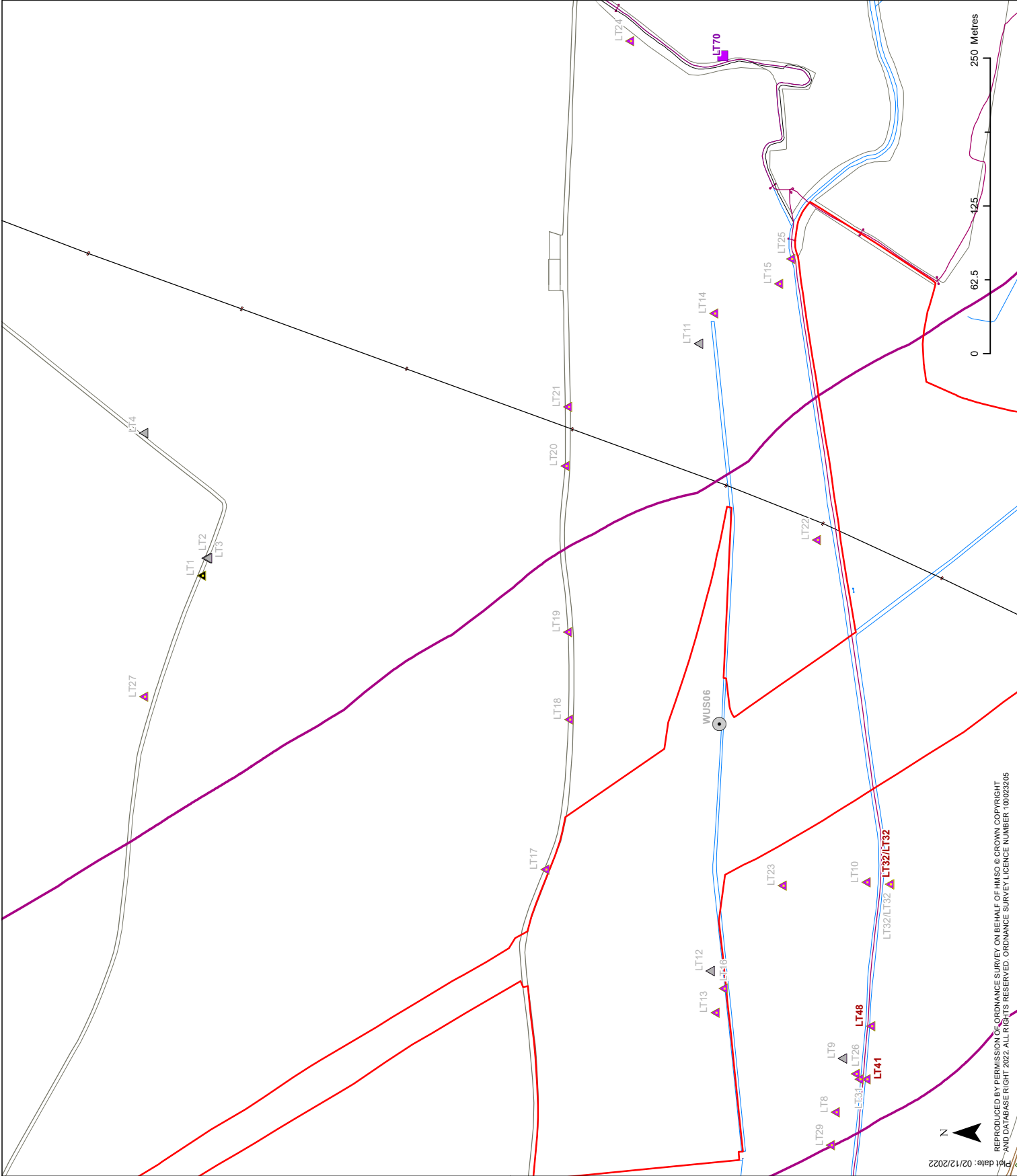
Dung Pit / Latrines, Red / Purple

Dung Pit / Latrines, NIL

P01	AC	NP	JJ	FOR ISSUE	02/12/2022
Rev	Chkd	App'd	Description	Date	
Purpose of Issue					
S2 - Issued for Information					
Classification					
Commercial in Confidence					
Client					
GCP					
Project					
CSET					
Drawing					
CSET Badger Activity Plan - Indicative Territorial Behaviour					
Plan 2 of 4					
Scale @ A3	Drawn	Checked	Approved		
1:3,000	AC	NP	JJ		
Project No	Date				
ED000553	02/12/2022				
Drawing Identifier					
Project Reference-Author-Volume-Location-Type-Role-File Number					
STND-WSP-EBD-XX-GS-LE-1039	P01				

Opella House, Wood Street, East Grinstead, BN19 1UJ

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KEY

Proposed Scheme Boundary

Survey Area

Badger Survey Results

Main Sett

WSUS16

WUS09

Status

Latrine, Used

Latrine, Disused

Dung Pit, Used, FNP

Indicative Territorial Behaviour

Dung Pit / Latrines, Red

Dung Pit / Latrines, Red / Purple

Dung Pit / Latrines, NIL

P01	AC	NP	JJ	FOR ISSUE	02/12/2022
Rev	Chkd	App'd	Description	Date	
Purpose of Issue					
S2 - Issued for Information					
Classification					
Commercial in Confidence					
Client					
GCP					
Project					
CSET					
Drawing					
CSET Badger Activity Plan - Indicative Territorial Behaviour					
Plan 3 of 4					
Scale @ A3	Drawn	Checked	Approved		
1:3,000	AC	NP	JJ		
Project No	Date				
ED000553	02/12/2022				
Drawing Identifier					
Project Reference-Author-Volume-Location-Type-Role-File Number					
STND-WSP-EBD-XX-GS-LE-1040	P01				

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