Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Appendix 8.20: Natural England Ghost Licence Method Statement - Bats

Application Document Reference: 5.4.8.20
PINS Project Reference: WW010003
APFP Regulation No. 5(2)a

Revision No. 01
April 2023

The Conservation of Habitats and Species Regulations 2017

Bats – Method Statement template to support a licence application

The Method Statement will be used to determine the impact of the proposal on the favourable conservation status (FCS) of the species concerned (Regulation 55(9)(b)).
You are strongly advised to refer to the Bat Mitigation Guidelines.
Please use recent photographs to support your application.

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T. 020802 61089

Important advice:

The format below must be used. Please enter text below each heading keeping information as concise as possible.

All maps/figures that will become part of any annexed licence granted must be submitted as separate documents (with the site name and date included on the map/figure. See section I for list – all others may be included within the Method Statement document (e.g. survey maps/figures) if preferred).

A separate work schedule must also be submitted on form WML-A13a-E5a&b to accompany the Method Statement.

A Executive summary

Provide an overview (no more than 1 side of A4) of what works are proposed and how the impacts identified will be addressed in order to ensure no detriment to the maintenance of the population at a favourable conservation status.

The Proposed Development comprises the relocation of the Cambridge Waste Water Treatment Plant (WWTP) from its existing site on land adjoining the north eastern side of the city of Cambridge, to a new location. The relocation will enable South Cambridgeshire District Council and Cambridge City Council's long held ambition to develop a new low-carbon city district on Cambridge's last major brownfield site, known as North East Cambridge. The site is an important component of the First Proposals (preferred options) for the new Greater Cambridge Local Plan that were subject to public consultation in late 2021. The relocation of the existing waste water treatment facility will enable this new district to come forward and deliver 8,350 homes, 15,000 new jobs and a wide range of community, cultural and open space facilities in North East Cambridge.

The works are proposed to begin in 2024 and will initially involve the construction of a Wastewater Transfer Tunnel, Treated Effluent Transfer Pipelines coupled with an outfall to the River Cam, and a transfer pipeline corridor from the Waterbeach New Town development area off Bannold Drove (Waterbeach). Other associated development includes a new access road connecting the Proposed Development to the local road network and the diversion of several rising mains at the site of the existing WWTP to relocate their discharge point from the existing inlet works to the new Wastewater Transfer Tunnel.

Seven day roosts containing low numbers of bats (<5) have been identified through the surveys conducted in 2021 and 2022. After alterations of the Scheme Order Limits, one of the seven roosts now fall outside of the Survey Area (which is 100m from the boundary of the Scheme Order Limits).

1. A roost in a bat box (tree B106-T007, likely a *Pipistrellus* sp.) is outside of the Scheme Order Limits and Survey Area. It was recorded as a confirmed roost during an inspection which found droppings.

The remaining five day roosts (trees) were confirmed through observing single bats (one soprano pipistrelle (*Pipistrellus pygmaeus*) and one common pipistrelle (*Pipistrellus pipistrellus*)) emerging or re-entering. These roosts are considered low conservation value and are considered to be of 'site level' significance. In the absence of mitigation, the proposed works have the potential to cause

disturbance to these roosts through lighting, noise, and vegetation removal (none of the confirmed tree roosts will be felled). The five tree roosts are in trees identified on the Proposed Development as B107-T006 an ash, G041-T006 an oak, R838-T002 an ash, R838-T004 an oak and Y039-101 an ash, (Figure C6).

Mitigation measures put in place will ensure that there will be no long-term impacts upon individual day-roosting common pipistrelles or soprano pipistrelles during the proposed works, or impact to the favourable conservation status of the species recorded roosting. These measures will include avoidance of works during the hibernation period adjacent to the two trees with large thermal mass, G041-T006 and R107-T006, sensitive lighting schemes for both construction and operation, and acoustic screening to mitigate noise/vibration disturbance

The Proposed Development will also include woodland creation and new hedgerow linkages, which is a suggested action to benefit bat species in the local area. The new woodland habitat creation adjacent to the Low Fen Drove Way Grasslands and Hedges CWS will over time provide new areas for dispersal and foraging. On already established trees, in suitable locations bat boxes will also be installed to provide further opportunities for bat roosting. Where suitable trees are not available, bat boxes on poles will be considered, placed at an appropriate location along a linear habitat feature.

B Introduction

B1 Background to activity/development:

Include a brief summary of:

- Why the activity and a licence are necessary (*e.g. bridge structure repairs are required and will affect a known maternity roost of Daubenton's bats, which will be temporarily lost whilst works are being undertaken; renovation works to an office building will result in the permanent loss of three day roosts of common pipistrelle bats; demolition of an existing hospital to be replaced with flats will result in the loss of a brown-long eared bat maternity roost*).

Under the North East Cambridge Area Action Plan and with support from Homes England, the Existing Cambridge WWTP is being relocated. This relocation allows residential development on brownfield sites, such as where the existing waste water treatment plant is located. This is necessary as the existing waste water treatment works requires a substantial update. This presents the opportunity to relocate and modernise the facility to meet regulatory requirements. To achieve this, the construction of the proposed WWTP, the construction of the Waterbeach Wastewater Transfer Tunnel and the proposed landscape planting are required.

This project has the potential to disturb five day roosts in tree roosts identified during surveys that fall within the zone of impact. Additionally, removal of foraging and commuting habitat in the form of arable vegetation, hedgerows and scattered trees will occur as a result of this project. The result is the requirement for a mitigation licence, which this method statement will support, to ensure legal compliance.

- Construction activities associated with the Waterbeach WRC and the transfer pipeline corridor from the Waterbeach WRC has the potential to disturb a soprano pipistrelle roost of <5 bats, in tree R838-T002 and a *Pipistrellus* sp. roost of <5 bats in tree R838-T004.
- Construction and operational activities associated with the proposed construction compound near to the transfer pipeline corridor from Waterbeach WRC, has the potential to disturb a soprano pipistrelle roost of <5 bats, in tree R838-T002 and a *Pipistrellus* sp. roost of <5 bats in tree R838-T004.
- Construction activities for the transfer pipeline corridor from a pumping station off Burgess Drove, Waterbeach, has the potential to disturb a soprano pipistrelle roost of <5 bats, in three R107-T006.
- Construction activities for the transfer pipeline corridor from a pumping station off Bannold Drove, Waterbeach, has the potential to disturb a common pipistrelle, and pipistrelle species roost, in tree G041-T006.
- Construction and operational activities associated with the Proposed waste water treatment plant have the potential to disturb a soprano pipistrelle roost of <5 bats, in tree Y039-101.

- Construction of the Proposed waste water treatment works has the potential to disturb a soprano pipistrelle roost of <5 bats, in tree 48.

- Include current status of planning permission (if applicable) *e.g. full planning permission with all relevant wildlife conditions discharged; permitted development; demolition with prior notification of demolition issues resolved*. If the proposal is for demolition only of a structure supporting a bat roost/s, please confirm whether there are plans to develop the site in the future and if so when.

Development Consent Order (DCO) and the Secretary of State. This document forms the ghost licence that will be submitted once the DCO is granted by the Secretary of State.

B2 Relationship with other nearby development and cumulative impacts

B2.1 Is the current application part of a larger development project? For example, is it part of a phased or multi-plot housing development that will require more than one bat licence? Enter Yes, No or N/A in the text box below. If yes, note a separate ***master plan*** document will be required.

No

Important Advice: If yes to the above, please note that sections in this Method Statement on impact assessment and mitigation measures must explicitly relate *only* to impacts from the works currently proposed.

A project-wide master plan must detail the overall impact assessment and mitigation and explain where, and why, each of the bat licences will be required. The master plan must be included as a separate document to this application: see http://www.naturalengland.org.uk/Images/WML-G11_tcm6-9930.pdf for details that are to be included in this separate document. The separate master plan is expected to take due regard of the overall project to ensure that in-combination effects are considered, and mitigation and compensation measures are both sufficient and coherent.

If the current development is part of a larger development project, summarise very briefly here how the current application relates to the larger project and how the in-combination effects are considered and mitigation/compensation is sufficient.

N/A

Important Advice: to accompany this Method Statement also include Figure. B2.1 for a Master plan overview - and see section I "Map checklist" at the end of this document.

B2.2 Apart from any mention in B2.1, please inform us of any past or future development or other projects (in the last 5 years or next 5 years) in the vicinity which may have significantly impacted or are likely to significantly impact on the same population/s of bats as this application (e.g. loss of maternity or hibernation roosts). You must make reasonable efforts to establish this, including discussions with your client and the Local Planning Authority – stating below what you undertook. A brief summary of the project/s should be provided including the site name and location, dates and if known the licence reference number(s).

Please note we are not expecting details of every licence/planning permission issued within the vicinity of the site – we are only concerned with projects that have the potential to significantly impact or have impacted on same population of bats (maternity and hibernation roosts). Note: Natural England is aiming to make available licensing records from the last 5 years publically available.

A search of the Greater Cambridgeshire Shared Planning for planning applications was undertaken on the 11/11/2022. One development application was identified adjacent to the Scheme Order Limits to have moderate impacts to bats. On the 26th of January 2022 a Planning application (22/00343/PRIOR) for a Change of Use of Agricultural Buildings to 1 No. Dwellinghouse (Class C3) was received. According to the Parsonage Farm, Low Fen Drove Way, Horningsea, CB25 9AT [NGR: TL 49827 61575] Ecological Impact Assessment Report produced to support this application, the site was considered suitable to support foraging/commuting bats particularly along the northern and eastern boundaries that have suitable habitat present and are also connected to other suitable

foraging/commuting habitats offsite. The Parsonage Farm (Low Fen Drove Way, Horningsea, CB25 9AT [NGR: TL 49827 61575]) Ecological Impact Assessment Report found that the building in application 22/00343/PRIOR is of negligible value to bats. The building in question is located to the north east of the Proposed Development.

Removal of the hedgerow and trees may reduce the suitability of the site for foraging/commuting bats by removing linear features. The site is currently unlit, any increase in lighting will reduce the suitability of the site for foraging/commuting bats through displacement of such behaviours.

Chapter 21 from the Environmental Statement, Cumulative Impacts states that there are no likely significant impacts from cumulative effects. Worst case events in unforeseen, dynamic circumstances may have impacts on bats.

Within 2km of the Proposed Development there were three European Protected Species licence requests for bats. Each was for the destruction or damage of a resting place; they are as follows:

- 2019-39419-EPS-MIT, for the destruction of a common pipistrelle resting place;
- 2020-44885-EPS-MIT, for the destruction of a common pipistrelle resting place; and
- 2018-36109-EPS-MIT, for the damage of a Daubenton's bat resting place.

Important Advice: locations of other bat mitigation sites that may have significantly impacted or are likely to significantly impact on the same population/s of bats as this application must be shown on Figure B2.2.

C Survey and site assessment (also see section 5 of the Bat Mitigation Guidelines)

C1 Pre-existing information on the bat species at the survey site:
Please undertake a historical data search within a 2km search radius and provide a summary of the results of this search. For example, records from local environmental records centres, local bat groups and previous survey work undertaken at the site is all relevant. Please briefly comment on the results in relation to your project/site

- Should no historical records be found from your search please state this – and specify what searches you undertook.
- Note that you must not include records from National Biodiversity Network (NBN) without first obtaining written permission from the relevant Data Provider.

Desk Top Study

A data search for bats within 5km of the Proposed Development was undertaken with records provided by Cambridgeshire & Peterborough Environmental Records Centre in November 2021.

A total of 552 records were returned for bats ranging from 2010 to 2021. Species recorded include:
Common pipistrelle - *Pipistrellus pipistrellus* (135 records)
Soprano pipistrelle - *Pipistrellus pygmaeus* (136 records)
Pipistrelle bat species - *Pipistrellus* (121 records)
Brown long-eared bat - *Plecotus auritus* (8 records)
Unspecified long-eared bat – *Plecotus* species (8 records)
Daubenton's bat - *Myotis daubentonii* (27 records)
Noctule bat - *Nyctalus noctula* (21 records)
Bat unknown species - *Chiroptera* (23 records)
Natterer's bat - *Myotis nattereri* (5 records)
Serotine - *Eptesicus serotinus* (42 records)
Barbastelle - *Barbastella barbastellus* (3 records)
Unknown *Myotis* - *Myotis* species (30 records)
Nyctalus species (1 record)
Nathusius' pipistrelle – *Pipistrellus nathusii* (2 records)

As the above data is considered sensitive, the records are degraded to 1km square resolution.

One Special Areas of Conservation (SAC), designated for bats is located approximately 16km of the Proposed Development to the south-west. This is Eversden and Wimpole Woods SAC known for a colony of barbastelle bats.

C2 Status of the bat species: Detail conservation status at the local, county and regional levels. Please complete the following table, justifying your assessment, and add additional lines where necessary. If the status is unknown then please enter 'unknown'.

Species	**Conservation status assessment**		
	Local	**County**	**Regional**
Soprano pipistrelle	Widespread and common (professional assessment based on survey work and local records).	Widespread and common (Cambridgeshire and Peterborough BAP, 2013).	Widely distributed across the UK (Bat Conservation Trust, 2019).
Common pipistrelle	Widespread and common (professional assessment based on survey work and local records).	Widespread and common (Cambridgeshire and Peterborough BAP, 2013).	Widely distributed across the UK (Bat Conservation Trust, 2019).

* **Please note** *that you can add more rows to the table: right click in any cell choose Insert > Insert rows below.*

C3 Objectives of the survey to inform this proposal: Please complete the following table, entering 'Yes', 'No' or N/A' to indicate the objective of your survey and provide comments/explanation where necessary:

Survey objective	**Yes / No / N-A**	**Comments**
Determine presence / absence of bats	Yes	A preliminary appraisal of trees was undertaken based on standard guidance provided by Collins (2016), English Nature (Mitchell-Jones, 2004) and Joint Nature Conservation Committee (Mitchell-Jones & McLeish, 2004). Ground Level Tree Assessments (GLTA) were undertaken in April 2021 to identify Potential Roosting Features (PRFs) within the Proposed Development. 217 trees were assessed during the surveys. Of the 217 trees, 77 trees had negligible suitability to support roosting bats, 56 had low suitabilty (do not require further survey), 51 trees were assessed as having moderate suitability and 35 trees assessed as having high suitability.

		An at-height PRF inspection (tree climbing survey) was undertaken of all trees with moderate and high roosting suitability within the Scheme Order Limits and within 50m of that boundary. The objective was to use close-up and internal inspections where possible to redefine, if necessary, the roosting suitabilty of trees, to refine survey effort. Due to the Scheme Order Limits being refined, the area of the works was reduced and as a result, 19 trees were selected for dusk emergence and dawn re-entry surveys based upon the current design information avalaible at the time. All survey methodology and impact assessment was within accordance of the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins, 2016).
Determine bat usage of site (e.g. maternity, hibernation, night roosts in various structures (specify)).	Yes	The emergence/re-entry surveys were conducted between May and September (2021 and 2022) with at least two surveys between May and August (2021 and 2022) to inform the status of the roosts. The six trees confirmed as roosts are categorsied as day roosts. Two of these trees, R107-T006 and G041-T006 both have hibernation potential due to their size and thermal mass, which is likely to provide a stable temperature and humidty. However, hibernation surveys are unlikely to be conducted due to the condtion of the tree making climbing surveys unsafe.
Identify foraging, commuting or swarming sites (explain)	Yes	Six bat activity transects were selected across the Proposed Development. These routes were implemented to identify the key foraging, commuting and swarming sites for the bats present. The transects are referred to as transect 1, transect 2, transect 3 and north, middle or south transects. The objectives are described below: Transect 1, at the existing waste water treatment plant, highlighted no obvious commuting routes. The transect shows that the existing waste water treatment site is being used as foraging habitat for bats, mainly common species and Nyctalus species which are likely roosting nearby and are foraging at the existing water treatment works. Transect 2 covers a wide area of the Proposed Development. The Low Fen Drove Way Grasslands and Hedges County Wildlife Site (CWS) and Low Fen Drove Way. This transect was implemented to identify key foraging and commuting routes, as well as any swarming sites where the Proposed waste water treatment plant will potentially be constructed. Transect 3 is located centrally to the Proposed Developmentand runs along part of the PRoW (85/6) and into land parcel G040. This transect incorporates the River Cam and the A14 bridge over the River Cam. The main objectives include; determining the useage of the River Cam by commuting and foraging bats, and to determine how the A14 bridge is used by bats, i.e. whether or not it acts as a swarming site. Additional objectives include determining the use, by bats, of the

		habitat adjacent to the treated effluent discharge outfall to the River Cam. The north, middle and south transects were designed to assesses the foraging, commuting and any potential swarming sites of the transfer pipeline corridor from a pumping station off Bannold Drove, Waterbeach. Given the limited Survey Area around the transfer pipeline corridor, the main objective was to assess the commuting and foraging behaviour of bats. To supplement each of the transect routes, static detectors were deployed. The objective with the static detectors was to determine the relative activity of the species present.
Other (explain)	N/A	

C4 Site/habitat description: Please provide:

- Brief descriptions of the site, including total size of the development site (ha) (most often within the red line planning boundary) and areas of the site with potential value to bats (ha).

The area selected for the proposed relocated Cambridge Waste Water Treatment Plant including Waterbeach transfer pipeline lies to the north-east of Cambridge within the Cambridge Green Belt zone. The area is low lying, predominantly farmland and characterised by arable fields, small sections of woodland, floodplain grazing marsh, hedgerows, ditches, and the River Cam with associated riparian habitats.

The habitat within the footprint of the Proposed waste water treatment plant is of low ecological value, consisting of defunct hedges and arable land. There are other habitats within the Scheme Order Limits that offer higher ecological value. For example, the disused railway line known as Low Fen Drove Way Grasslands and Hedges CWS, which borders the south-east of the Proposed Development. The CWS's qualifying features include linear stretches of calcareous grassland and scrub, and species-rich hedgerows which are of value to bats. The River Cam is located to the west of the Proposed Development boundary and is of high value to commuting and foraging bats. It also aids dispersal to the wider landscape, providing a corridor for commuting bats to agricultural land, waterbodies, woodland, and hedgerows to the north, east and west of the Proposed Development.

The area of land within the Scheme Order Limits boundary is 213.20ha. Of this 213.20ha approximately 7.43ha is of at least moderate value to bats.

- Brief descriptions of the structures on site indicating their roosting suitability (low, moderate or high), differentiating between **those surveyed** and **not surveyed**, with an explanation why. Ensure structures are referenced and consistently indicated on relevant figures and tables.

Appendix A1 shows the trees and their roosting suitability.

- A description of adjacent areas/offsite habitats, specifying any relevance to bats, including descriptions of habitat/s relevant to bat commuting/foraging behaviour.

Adjacent habitats to the Scheme Order Limits are similar in that it is characterised by arable fields, woodland pockets, and hedgerows, and are likely used by commuting and foraging bats. In addition to natural habitats, there are residential buildings within the Waterbeach and Horningsea areas. The River Cam provides high value to commuting and foraging bats. It also aids dispersal to the wider landscape, providing a corridor for commuting bats to agricultural land, waterbodies, woodland, and hedgerows to the north, east and west of the Proposed Development.

Further afield from the Proposed Scheme is the Eversden and Wimpole Woods SAC, designated for a colony of barbastelle bats. The Proposed Scheme will not have a negative impact on this designation.

The distance between the two sites is approximately 16km. The core sustenance zone for a barbastelle is 6.47km (weighted average radius). As a result, the colony present at Eversden and Wimpole Woods SAC are not likely to forage within the Proposed Development. However, this does not completely preclude them. Barbastelle bats can range as far as 20km from their roosts to forage and although unlikely this places the Proposed Scheme within range due to urban barriers such as roads and Cambridge city.

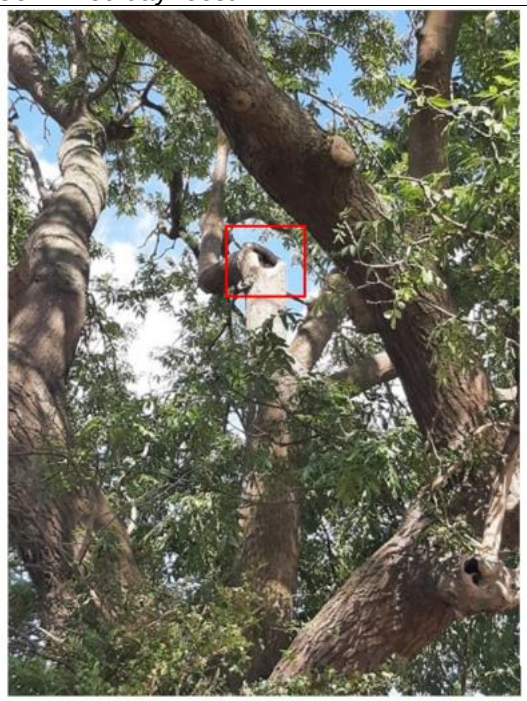
- Please also include annotated (cross reference the structures) and dated photographs (showing both internal and external survey areas) as these are very useful as an assessment aid. These can be inserted below or submitted as a separate (referenced) document.

N/A – No structures surveyed.

Trees:
Please refer to the following documents:
Appendix H1: Bat Survey Report 2022 - Figure 1 for a list of all trees from the study area (Scheme Order Boundary +100m) with moderate or high suitability for roosting bats.

The table below shows the five confirmed tree roosts within 100m of the Scheme Order Limits.

Description	Photograph
Tree Y039-101: Confirmed day roost	
This tree is a mature ash (*Fraxinus excelsior*) set within a dry ditch. Features within the tree include callus rolls which face both south and north-east. Roost Status: One feature (see highlighted) was confirmed as a day roost for one soprano pipistrelle. Tree Y039-101 can be found to the east of the Proposed Development, at grid reference TL 50021 60798.	 Photograph taken on 08/04/2021 by Jake Collins

Tree R838-T002: Confirmed day roost	
This tree is a mature ash (*F. excelsior)* situated on a field boundary. The tree has a diameter at breast height (DBH) of 0.7m. At 6m in height there is woodpecker hole facing north. Roost Status: Confirmed day roost for common pipistrelle bats. One bat was observed returning to roost. This tree roost is located in the north of the Proposed Development adjacent to the Waterbeach WRC, at grid reference TL 50398 66430.	 Photograph taken on 07/07/2022 by Jake Collins
Tree R838-T004: Confirmed day roost	
This tree is a pedunculate oak (*Quercus robur*) situated within a field boundary to the south of the existing Waterbeach water recycling centre. The tree has a DBH of 1.2m. The features noted during the inspection included multiple cavities in the rotting trunk. Bat droppings were found within. Bat presence confirmed. Roost Status: Confirmed day roost for *Pipistrellus* sp. This tree roost is located in the north of the Proposed Development adjacent to the Waterbeach WRC, at grid reference TL 50395 66355.	 Photograph taken on 07/07/2022 by Jake Collins

Tree R107-T006: Confirmed day roost	
This tree is a standalone ash (*F. excelsior*) with a DBH of 0.6m. The tree had a rotten trunk cavity with a split from 1m in height to 6m in height. The tree also had several dead/snapped limbs at 3m in height facing south-east. Loose bark was noted at 2m in height facing south-east. Bat droppings were found in the rotten trunk cavity at about 1m in height on the right-hand side. This right-hand side looks in use whilst the left-hand side appears to be cobwebbed. Bat presence confirmed. Roost Status: Confirmed day roost (see highlighted) for one soprano pipistrelle bat. This tree is located to the east of Bannold Drove, at grid reference TL 50478 65319.	 Photograph taken on 07/07/2022 by Jake Collins
Tree G041 – T006	
This tree is a pedunculate oak. The tree has a DBH 1.3m. Three features suitable for roosting bats were noted on the tree and included loose bark on all sides and a woodpecker hole at approximately 5.5m in height. There is also a ground cavity at the base with a large entrance of approximately 50cm. However, this doesn't extend upwards and had cobwebs within. This tree is located to the east of Horningsea and is a confirmed roost for one *Pipistrellus* species. The grid reference is TL 49553 62493.	 Photograph taken on 07/10/2022 by Ryan Swift

C5 Field survey(s):

Surveys must be up to date and have been conducted within the current or most recent optimal season. Where a site/structure/tree has demonstrable hibernation potential appropriate surveys must be carried out. Surveys must be undertaken in accordance with the most up to date edition of the Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists – Good Practice Guidelines* and the *Bat Mitigation Guidelines*.

C5a Justification for surveys that deviate from the best practice guidelines: Please provide full justification below if your surveys deviate from the aforementioned best practice guidelines, confirming how you have obtained a full appreciation of the bat species roosting at the site, and of the type and status of roosts they use on site and in the context of the immediate surrounding area. **Please note that inadequate survey information is likely to cause delays to your licence application and may result in a Further Information Request.**

Surveys undertaken in 2021 and 2022 were conducted in line with BCT Good Practice Guidelines (Collins, 2016). Recent guidance relating to the use of night vision aids for emergence surveys released by the BCT in May 2022 was not followed because the scope and methodology of the surveys had been previously agreed (Bat Conservation Trust, 2022).

Biological records obtained from third parties and presented in the desk study do not represent a full and complete species list for the area. They are mostly given by individuals on an ad hoc basis, often meaning there are areas of deficiency in the data for example where access is restricted and/or where survey specialisms are required.

Aspects of the Proposed Development, for example the incoming sewer tunnel may have impacts on trees that have potential to support roosting bats. Design features such as the location of the incoming sewer tunnel were not available when the shortlist of trees for emergence/re-entry surveys was created. As a result, some trees may require future surveys.

Some trees are unsafe to climb due to the features present. These include, but are not limited to, ivy cover, hazard beams, split limbs, bark inclusion, rot, and unsafe ground conditions. Where trees requiring further survey were identified as being unsafe to climb, and other means of access such as use of Mobile Elevated Working Platform was not possible, they were subject to appropriate emergence/re-entry surveys in line with the Bat Conservation Trust Good Practice Guidelines (Collins, 2016)

Access was not permitted to Biggin Abbey structures. As such no assessments or surveys of these structures were carried out. Given that the work taking place at the closest point to Biggin Abbey is a cut and cover pipeline, the denied access is not considered to be a major limitation.

Due to the length of two of the transects, one at the existing waste water facility (Cambridge) and one around PRoW 85/6 and adjacent land parcels (Figures A6.6, 6.7, 6.8, in the Bat Technical Appendix) activity transects fell short of the recommended duration in the Bat Conservation Trust Good Practice Guidelines (Collins, 2016).

During May 2021 and August 2021 at the River Cam static detector location (TL 48410 61610), despite being deployed for at least 5 nights, only collected 3 nights worth of data from each month. Likewise, during August and September at the Proposed Development static detector location (TL 49846, 61223) only four nights of data was collected from each month. This was due to high instances of bat calls or other noise, filling the memory cards or running the batteries low, leading to power failure.

Between the end of the ground level appraisals and the start of the emergence/re-entry surveys, tree 22 was felled. Tree 22 was initially appraised as having a moderate suitability to support bats. As a result, the surveys planned for this tree could no longer take place. Tree 22 was inspected at ground level post-felling. It was found to have negligible suitability. No further action was required
The results taken from bat detector recordings are biased towards bats that use louder echolocation calls. Therefore, quiet species such as brown long-eared bats may be under recorded due to the

limited recording range of the equipment. This is an unavoidable limitation for all surveys using bat detectors, the implications of which have been considered when analyzing the results.

During bat call analysis there were several limitations. There is often a considerable overlap in the call parameters of the species within the *Myotis* genus. This means that members of this genus can sometimes only be identified as far as *Myotis* sp. This is also the case for some of the calls from Pipistrellus and *Nyctalus* species. The overlap in call parameters of Pipistrellus species will often lead to difficulty distinguishing common pipistrelle calls from those of Nathusius' pipistrelle, as well as soprano from common pipistrelles in some instances. In some instances, during call analysis, bats from acoustically similar groups (i.e., Serotine and *Nyctalus*) calls were only identified as Nyctaloid. Likewise, where calls could not be identified to species level within the *Nyctalus* genus, the call was left as '*Nyctalus*'.

Calls recorded on any type of detector are not directly indicative of a number of bats. This is especially the case when static automatic detectors are utilized. A handheld detector has the advantage of the surveyors' observations, which can be used to provide an indication of the number of individual bats. Bat passes or bat calls may represent one or a small number of individuals that are continually and frequently passing/calling within detection range of the static detector.

Bat droppings used to confirm the presence of roosting bats in two of the trees on the Waterbeach Pipeline were not used for DNA to determine species. The bat box on tree B106-T007 rendered the droppings inaccessible. The single bat dropping found in tree R838-T004 was crushed to determine whether it was from a bat or other mammal, no more droppings were found during searches of this roost.

During two attempts to survey P041-T004 there were livestock in the field which rendered the survey unsafe. A request to the landowner to move the livestock was made but was not successful.
Due to a malfunction with the handheld bat logger, July data for the middle transect on the Waterbeach Pipeline element was missing the GPS data. As such, the species recorded during this survey cannot be mapped spatially. Due to partial satellite connectivity during the survey in July, spatial data for the south transect is limited, again this resulted in these data not being mapped spatially.

During the final survey (3/3) of G041-T006 a barn owl (*Tyto alba*) distress call was heard overhead, and it was decided that the surveyors should leave to prevent any disturbance impacts on nesting barn owls.

Please refer to Figure C5a for the location map at 1:25,000 scale.

C5b Please complete the following tables and add additional lines where necessary (*right click in any cell outside the grey box area. Choose Insert > Insert rows below)*. Please enter 'N/A' if the table is not applicable to your survey. Please ensure the information is consistent with Figure **C5b** (showing all buildings, structures and habitats that are within the survey area and distinguishing those that were surveyed and those that were not; indicate where surveyors were located):

Visual inspection

Date of each survey visit **(e.g. format 01/06/13)**	**Structure reference / location**	**Equipment used (e.g binoculars, endoscope)**	**Weather –** ***(Include temps, precipitation, Beaufort wind scale etc)***
06/04/2021	T6, T7, T9, T11, T14	Binoculars, handheld tablet for recording	Temperature: 6°C Precipitation: None Wind: 4/12

07/04/2021	T18, T20, T24, T23, T25, T26, T27, T28, T34, T36, T37, T41	Binoculars, handheld tablet for recording	Temperature: 7°C Precipitation: None Wind: 3/12
08/04/2021	T42, T43, T45, T47, T49, T50, T52, T53, T54, G041-01	Binoculars, handheld tablet for recording	Temperature: 13°C Precipitation: None Wind: 4/12
09/04/2021	P020-03, P020-06, P020-07, P020-10, P020-12, O020-01	Binoculars, handheld tablet for recording	Temperature: 10°C Precipitation: Some Wind: 3/12
12/04/2021	Y041-T006	Binoculars, handheld tablet for recording	Temperature: 10°C Precipitation: None Wind: 2/12
13/04/2021	G036-04, G036-05, G036-06, G036-08, G036-08(#2), B847-01, O873-01	Binoculars, handheld tablet for recording	Temperature: 12°C Precipitation: None Wind: 2/12
19/04/2021	O842-88, O842-90, O842-91, G040-02, G040-03, G040-04, G040-05, G040-08, G036-103, Oak (no reference number)	Binoculars, handheld tablet for recording	Temperature: 16°C Precipitation: None Wind: 1/12
22/04/2021	G036-02, G036-11, G036-101, G036-102, G036-102(#2), G036-103, G036-107, G036-108, G036-109, G036-110 (X7)	Binoculars, handheld tablet for recording	Temperature: 14°C Precipitation: None Wind: 2/12
23/04/2021	G843-01, G844-02, G843-03, G843-04, G843-05, G843-06, Y843-03	Binoculars, handheld tablet for recording	Temperature: 16°C Precipitation: None Wind: 2/12
10/05/2021	P844-02, P844-03	Binoculars, handheld tablet for recording	Temperature: 17°C Precipitation: None Wind: 2/12
11/05/2021	G041-T006,	Binoculars, handheld tablet for recording	Temperature: 16°C Precipitation: None Wind: 2/12
23/08/2021	B843	Binoculars, handheld tablet for recording	Temperature: 21°C Precipitation: None Wind: 3/12
24/08/2021	Y041-T001, Y041-T002, Y041-T003, Y041-T004, R108, R107-T001, R107-T002, R107-T003, R107-T004, R107-T005, R107-T006, R107-T007, R107-T008, R107-T009, R107-T010, R107-T011	Binoculars, handheld tablet for recording	Temperature: 23°C Precipitation: None Wind: 2/12
25/08/2021	G025-T001, O040-T001, O040-T0012, O040-T003, O040-T004, O040-T005, O040-T006, O040-T007, O040-T008, O040-T009, O040-T010, O040-T011, O040-T012, O040-T013, O040-T014, P828-01, P828-07, Y838-T003, Y838-T004, Y838-T005, Y838-T011, Y838-T012, Y108,	Binoculars, handheld tablet for recording	Temperate: 18°C Precipitation: Drizzle Wind 2/12 Cloud: 8/8
08/09/2021	P041, P881, R041	Binoculars, handheld tablet for recording	Temperature: 29°C Precipitation: None Wind: 3/12

09/09/2021	P109, G040, G110	Binoculars, handheld tablet for recording	Temperature: 25°C Precipitation: None Wind: 3/12
10/09/2021	R11, O025	Binoculars, handheld tablet for recording	Temperature: 22°C Precipitation: None Wind: 3/12
Comments (to include # of surveyors used for each visit): Two ecologists from Mott MacDonald over several days. Only trees with moderate and high suitability for roosting bats is shown in the above table.			
26/04/2021	R037-01, G036-01, G036-02, Y039-17, Y039-18, Y039-20, Y039-22	Endoscope, rope access, ladder, binoculars, handheld tablet for recording	Temperature: 12°C Precipitation: None Wind: 2/12
27/04/2021	R037-16, R037-101, R037-102, G040-96, G040-97, G040-98, G040-99, G040-101,	Endoscope, rope access, ladder, binoculars, handheld tablet for recording	Temperature: 13°C Precipitation: None Wind: 1/12
Comments (to include # of surveyors used for each visit): Three ecologists from Mott MacDonald over several days. Aerial inspection with endoscope within main site and Waterbeach Pipeline (surveyed later in the year). Only trees with moderate and high suitability for roosting bats is shown in the above table.			

Please provide surveyors names *(including Class Licence registration number if applicable)* and ensure the <u>above</u> table states the number of surveyors used for each survey visit undertaken.

Mott MacDonald Ecologists:
Jake Collins
Ed Day
James Rowland
Ryan Swift
Grace Gardner (since left the employment of Mott MacDonald, but was Class Licence registered)
Dave Byett - 2016-22858-CLS-CLS and 2016-22869-CLS-CLS
Kathy Halsall - 2017-27953-CLS-CLS
Remi Kitazono
Hilary Barter

Dusk survey

Date of each survey visit **(e.g. format 01/06/13)**	**Start and end times and time of sunset**	**Structure reference / location**	**Equipment used (include make of bat detectors and logging equipment)**	**Weather – *(Include start and end temps, precipitation, Beaufort wind scale etc)***
07/06/2021	Start: 21:02 End: 22:47 Sunset: 21:17	T18, T20	Elekon bat logger M+	Start Temp:17ºC End Temp: 13ºC; Rain: 0; Cloud: 2/8; Wind: 1/12
Comments (to include # of surveyors used for each visit): 2 x Mott MacDonald ecologists used				
09/06/2021	Start: 21:03 End: 22:58 Sunset: 21:18	G040-05	Elekon bat logger M+	Start Temp: 22ºC End Temp: 11ºC Rain: 0; Cloud: 8/8 clearing to 0/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
10/06/2021	Start: 21:04 End: 22:54 Sunset: 21:19	G040-08	Elekon bat logger M+	Start Temp: 19ºC End Temp: 14ºC; Rain: 0; Cloud: 0/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				

14/06/2021	Start: 21:03 End: 22:48 Sunset: 21:18	B847-01	Elekon bat logger M+	Start Temp: 21ºC End Temp: 14ºC Rain: 0; Cloud: 8/8; Wind: 4/12
Comments: 2 x Mott MacDonald ecologists used				
15/06/2021	Start: 21:07 End: 22:52 Sunset: 21:22	T42, T43	Elekon bat logger M+	Start Temp:19ºC End Temp: 16ºC; Rain: 0; Cloud: 2/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
16/06/2021	Start: 21:03 End: 22:53 Sunset: 21:22	T47	Elekon bat logger M+	Start Temp: 25ºC End Temp: 11ºC; Rain: 0; Cloud: 3/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists used				
17/06/2021	Start: 21:03 End: 22:53 Sunset: 21:23	T48, T49	Elekon bat logger M+	Start Temp: 18ºC End Temp: 15ºC; Rain: 1 (light); Cloud: 5/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
05/07/2021	Start: 21:05 End: 22:30 Sunset: 21:20	T45	Elekon bat logger M+	Start Temp: 17ºC End Temp: 15ºC; Rain: 1; Cloud: 8/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
06/07/2021	Start: 21:06 End: 22:51 Sunset: 21:21	T48	Elekon bat logger M+	Start Temp: 16ºC End Temp: 13ºC; Rain: 0; Cloud: 6/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
07/07/2021	Start: 20:53 End: 22:52 Sunset: 21:20	G040-01, G040-02	Elekon bat logger M+	Start Temp: 20ºC End Temp: 15ºC; Rain: 0; Cloud: 2/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
08/07/2021	Start: 21:03 End: 22:51 Sunset: 21:21	T50	Elekon bat logger M+	Start Temp: 18ºC End Temp: 16ºC; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
9/08/2021	Start: 20:10 End: 22:05 Sunset: 20:35	O873-01	Elekon bat logger M+	Start Temp: 19ºC End Temp: 14ºC; Rain: 1; Cloud: 8/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
10/08/2021	Start: 20:10 End: 22:05 Sunset: 20:35	T43	Elekon bat logger M+	Start Temp: 18ºC End Temp: 12ºC; Rain: 1; Cloud: 8/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
11/08/2021	Start: 20:15 End: 22:01 Sunset: 20:31	G040-04	Elekon bat logger M+	Start Temp: 22ºC End Temp: 19ºC; Rain: 0; Cloud: 1/8;

				Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
12/08/2021	Start: 20:14 End: 22:00 Sunset: 20:30	G040-03	Elekon bat logger M+	Start Temp: 20°C End Temp: 15°C; Rain: 0; Cloud: 1/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
23/08/2021	Start: 19:51 End: 21:36 Sunset: 20:06	Y039-101	Elekon bat logger M+	Start Temp: 17°C End Temp: 12°C; Rain: 0; Cloud: 2/8; Wind: 4/12
Comments: 2 x Mott MacDonald ecologists used				
24/08/2021	Start: 19:51 End: 21:36 Sunset: 20:06	G036-02	Elekon bat logger M+	Start Temp: 18°C End Temp: 15°C; Rain: 0; Cloud: 7/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
25/08/2021	Start: 19:49 End: 21:34 Sunset: 20:04	G036-102	Elekon bat logger M+	Start Temp: 19°C End Temp: 11°C; Rain: 0; Cloud: 8/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
20/09/2021	Start: 18:37 End: 20:33 Sunset: 18:52	T20	Elekon bat logger M+	Start Temp: 21°C End Temp: 19°C; Rain: 0; Cloud: 6/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
21/09/2021	Start: 18:45 End: 20:30 Sunset: 19:00	T48	Elekon bat logger M+	Start Temp: 19°C End Temp: 11°C; Rain: 0; Cloud: /8; Wind: /12
Comments: 2 x Mott MacDonald ecologists used				
22/09/2021	Start: 18:43 End: 20:37 Sunset: 19:07	G040-04, G040-05	Elekon bat logger M+	Start Temp: 16°C End Temp: 15°C; Rain: 0; Cloud: 4/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
23/09/2021	Start: 18:40 End: 20:25 Sunset: 18:55	G040-08	Elekon bat logger M+	Start Temp: 21°C End Temp: 19°C; Rain: 0; Cloud: 1/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
09/05/2022	Start: 20:23 End: 22:05 Sunset: 20:38	G041-T006	Elekon bat logger M+	Start Temp:19°C End Temp: 18°C; Rain: 0; Cloud: 8/8; Wind: 4/12
Comments: 2 x Mott MacDonald ecologists used				
10/05/2022	Start: 20:30 End: 22:08 Sunset: 20:38	P881-T018	Elekon bat logger M+	Start Temp:17°C End Temp: 15°C; Rain: 0; Cloud: 7/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
11/05/2022	Start: 20:27 End: 22:12	Y041-T006	Elekon bat logger M+	Start Temp:13°C

	Sunset: 20:42			End Temp: 9ºC; Rain: 0; Cloud: 2/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
12/05/2022	Start: 20:30 End: 22:13 Sunset: 20:43	B106 – T001	Elekon bat logger M+	Start Temp:15ºC End Temp: 14ºC; Rain: 0; Cloud: 8/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
23/05/2022	Start: 20:32 End: 22:29 Sunset: 20:59	B106-T006	Elekon bat logger M+	Start Temp: 16ºC End Temp: 10ºC; Rain: 1 (light at the start); Cloud: 7/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
24/05/2022	Start: 20:45 End: 22:30 Sunset: 21:00	P838-T003	Elekon bat logger M+	Start Temp: 17ºC End Temp: 15ºC; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
24/05/2022	Start: 20:30 End: 22:30 Sunset: 21:00	R838-T003	Elekon bat logger M+	Start Temp: 18ºC End Temp: 16ºC; Rain: 0; Cloud: 2/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
25/05/2022	Start: 20:45 End: 22:51 Sunset: 21:01	R838-T001	Elekon bat logger M+	Start Temp: 16ºC End Temp: 15ºC; Rain: 0; Cloud: 3/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
06/06/2022	Start: 21:05 End: 22:46 Sunset: 21:16	G041-T006	Elekon bat logger M+	Start Temp: 15ºC End Temp: 10ºC; Rain: 0; Cloud: 8/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists used				
08/06/2022	Start: 21:02 End: 22:47 Sunset: 21:17	O025-T001	Elekon bat logger M+	Start Temp: 20ºC End Temp: 17ºC; Rain: 0; Cloud: 6/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
13/06/2022	Start: 21:06 End: 22:46 Sunset: 21:21	R107-T006	Elekon bat logger M+	Start Temp: 20ºC End Temp: 13ºC; Rain: 0; Cloud: 3/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists used				
14/06/2022	Start: 21:06 End: 22:52 Sunset: 21:21	R838-T004	Elekon bat logger M+	Start Temp: 20ºC End Temp: 10ºC; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
15/06/2022	Start: 21:07 End: 22:52 Sunset: 21:22	R838-T002	Elekon bat logger M+	Start Temp: 19ºC End Temp: 17ºC; Rain: 0; Cloud: 2/8;

				Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
04/07/2022	Start: 21:08 End: 22:53 Sunset: 21:23	G041-T006	Elekon bat logger M+	Start Temp: 20°C End Temp: 17°C; Rain: 0; Cloud: 2/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
05/07/2022	Start: 21:06 End: 22:52 Sunset: 21:22	Y041-T006	Elekon bat logger M+	Start Temp:20°C End Temp: 18°C; Rain: 0; Cloud: 0/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
21/07/2022	Start: 20:44 End: 22:38 Sunset: 21:04	R838-T004	Elekon bat logger M+	Start Temp: 22°C End Temp: 16°C; Rain: 0; Cloud: 8/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
21/07/2022	Start: 20:53 End: 22:30 Sunset: 21:04	R838-T002	Elekon bat logger M+	Start Temp: 22°C End Temp: 16°C; Rain: 0; Cloud: 8/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
01/08/22	Start: 20:35 End: 22:30 Sunset: 20:48	Y838-T003	Elekon bat logger M+	Start Temp: 26°C End Temp: 22°C; Rain: 0; Cloud: 8/8; Wind: 212
Comments: 1 x Mott MacDonald ecologists used				
01/08/22	Start: 20:35 End: 22:30 Sunset: 20:48	Y838-T005	Elekon bat logger M+	Start Temp: 26°C End Temp: 22°C; Rain: 0; Cloud: 9/8; Wind: 2/12
Comments: 1 x Mott MacDonald ecologists used				

Please provide surveyors names *(including Class Licence registration number if applicable)* and ensure the <u>above</u> table states the number of surveyors used for each survey visit undertaken.

Mott MacDonald Ecologists: Jake Collins Ryan Swift James Rowland Remi Kitazono Claudia Watson Hannah Gillott

Dawn survey

Date of each survey visit (e.g. format 01/06/13).	Start and end time and time of sunrise	Structure reference / location	Equipment used (include make of bat detectors and logging equipment)	Weather – *(Include start and end temps, precipitation, Beaufort wind scale etc)*
08/06/2021	Start: 03:09 End: 04:54 Sunrise: 04:39	G040-01, G040-02	Elekon bat logger M+	Start Temp: 16°C End Temp: 14°C; Rain: 0; Cloud: 4/8; Wind: 3/12
Comments (to include # of surveyors used for each visit): 2 x Mott MacDonald ecologists used				
09/06/2021	Start: 03:08 End: 04:53 Sunrise: 04:38	G040-03	Elekon bat logger M+	Start Temp: 10°C End Temp: 11°C; Rain: 0; Cloud: 4/8 Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
10/06/2021	Start: 03:08 End: 04:43 Sunrise: 04:38	G036-02	Elekon bat logger M+	Start Temp: 19°C End Temp: 20°C; Rain: 0; Cloud: 4/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
11/06/2021	Start: 03:08 End: 04:43 Sunrise: 04:38	G036-102	Elekon bat logger M+	Start Temp: 19°C End Temp: 16°C; Rain: 0; Cloud: 1/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
15/06/21	Start: 03:07 End: 04:52 Sunrise: 04:37	O873-01	Elekon bat logger M+	Start Temp: 16°C End Temp: 12°C Rain: 0 Cloud: N/A; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
16/06/2021	Start: 02:56 End: 04:52 Sunrise: 04:37	T45	Elekon bat logger M+	Start Temp: 15°C End Temp: 15°C; Rain: 0; Cloud: 2/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
18/06/2021	Start: 02:51 End: 04:47 Sunrise: 04:32	T50	Elekon bat logger M+	Start Temp: 16°C End Temp: 12°C; Rain: light; Cloud: 5/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
06/07/2021	Start: 03:16 End: 05:14 Sunrise: 04:56	T47	Elekon bat logger M+	Start Temp: 16°C End Temp: 14°C; Rain: light; Cloud: 2/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
07/07/2021	Start: 03:17 End: 05:01 Sunrise: 04:46	T18, T20	Elekon bat logger M+	Start Temp: 13°C End Temp: 13°C; Rain: 0; Cloud: 4/8; Wind: 4/12
Comments: 2 x Mott MacDonald ecologists used				
08/07/2021	Start: 03:18 End: 05:03 Sunrise: 04:48	T42	Elekon bat logger M+	Start Temp: 16°C End Temp: 14°C; Rain: 0;

				Cloud: 4/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
09/07/2021	Start: 03:19 End: 05:04 Sunrise: 04:49	T49	Elekon bat logger M+	Start Temp: 14ºC End Temp: 11ºC; Rain: 0; Cloud: 6/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
10/08/2021	Start: 04:10 End: 05:55 Sunrise: 05:40	B847-01	Elekon bat logger M+	Start Temp: 14ºC End Temp: 13ºC; Rain: light; Cloud: 1/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
11/08/2021	Start: 04:06 End: 05:51 Sunrise: 05:36	G040-05	Elekon bat logger M+	Start Temp: 16ºC End Temp: 14ºC; Rain: 0; Cloud: 6/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
12/08/2021	Start: 04:08 End: 05:53 Sunrise: 05:38	G040-08	Elekon bat logger M+	Start Temp: 17ºC End Temp: 18ºC; Rain: 0; Cloud: 8/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists used				
21/09/2021	Start: 05:14 End: 06:44 Sunrise: 06:29	T43, T47	Elekon bat logger M+	Start Temp: 11ºC End Temp: 11ºC; Rain: 0; Cloud: 1/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
22/09/2021	Start: 05:15 End: 07:00 Sunrise: 06:45	B847-01, 0873-01	Elekon bat logger M+	Start Temp: 10ºC End Temp: 12ºC; Rain: 0; Cloud: 0/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
10/05/2022	Start: 03:30 End: 05:13 Sunrise: 03:52	G041-T004	Elekon bat logger M+	Start Temp:18ºC End Temp: 14ºC; Rain: Few drops; Cloud: 8/8; Wind: 4/12
Comments: 2 x Mott MacDonald ecologists used				
13/05/2022	Start: 03:37 End: 05:22 Sunrise: 03:52	B106-T007	Elekon bat logger M+	Start Temp:12ºC End Temp: 14ºC; Rain: 0; Cloud: 1/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists used				
24/05/2022	Start: 03:23 End: 05:07 Sunrise: 04:52	R107-T006	Elekon bat logger M+	Start Temp: 12ºC End Temp: 9ºC; Rain: light; Cloud: 8/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
25/05/2022	Start: 03:20 End: 05:06 Sunrise: 04:51	R838-T004	Elekon bat logger M+	Start Temp: 10ºC End Temp: 10ºC; Rain: 0; Cloud: 5/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists used				

26/05/2022	Start: 03:20 End: 05:05 Sunrise: 04:50	R838-T002	Elekon bat logger M+	Start Temp: 12°C End Temp: 11°C; Rain: 0; Cloud: 1/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
08/06/2022	Start: 03:10 End: 04:55 Sunrise: 04:40	P881-T018	Elekon bat logger M+	Start Temp: 15°C End Temp: 13°C; Rain: 0; Cloud: 1/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists used				
09/06/2022	Start: 03:06 End: 04:51 Sunrise: 04:36	Y041-T006	Elekon bat logger M+	Start Temp: 12°C End Temp: 11°C; Rain: 0; Cloud: 1/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
12/05/2022	Start: 03:30 End: 03:55 Sunrise: 05:13	O025-T001	Elekon bat logger M+	Start Temp:7°C End Temp: 6°C; Rain: 0; Cloud: 0/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used. Survey called off as temperature had fallen to 6°C				
15/06/2022	Start: 02:58 End: 04:52 Sunrise: 04:37	R838-T003	Elekon bat logger M+	Start Temp: 13°C End Temp: 14°C; Rain: 0; Cloud: 1/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
16/06/2022	Start: 02:55 End: 04:51 Sunrise: 04:36	R838-T001	Elekon bat logger M+	Start Temp: 13°C End Temp: 14°C; Rain: 0; Cloud: 1/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists used				
05/07/2022	Start: 03:13 End: 05:01 Sunrise: 04:46	P881-T018	Elekon bat logger M+	Start Temp: 14°C End Temp: 12°C; Rain: 0; Cloud: 0/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
06/07/2022	Start: 03:10 End: 04:52 Sunrise: 04:37	B106-T001	Elekon bat logger M+	Start Temp: 15°C End Temp: 15°C; Rain: 0; Cloud: 2/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists used				
07/07/2022	Start: 03:12 End: 05:02 Sunrise: 04:47	O025-T001	Elekon bat logger M+	Start Temp: 18°C End Temp: 14°C; Rain: light; Cloud: 8/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				
20/07/2022	Start: 03:28 End: 05:15 Sunrise: 05:03	R107-T006	Elekon bat logger M+	Start Temp: 24°C End Temp: 22°C; Rain: 0; Cloud: 5/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists used				

21/07/2022	Start: 03:30 End: 05:15 Sunrise: 05:04	R838-T003	Elekon bat logger M+	Start Temp: 21°C End Temp: 17°C; Rain: 0; Cloud: 7/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
22/07/2022	Start: 03:34 End: 05:19 Sunrise: 05:04	Y838-T003	Elekon bat logger M+	Start Temp: 18°C End Temp: 16°C; Rain: 0; Cloud: 8/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				
22/07/2022	Start: 03:34 End: 05:19 Sunrise: 05:04	Y838-T005	Elekon bat logger M+	Start Temp: 16°C End Temp: 16°C; Rain: 0; Cloud: 8/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists used				

Please provide surveyors names *(including Class Licence registration number if applicable)* and ensure the <u>above</u> table states the number of surveyors used for each survey visit undertaken.

Mott MacDonald Ecologists: Jake Collins Ryan Swift James Rowland Remi Kitazono Hannah Gillott

'Other' survey (please specify e.g. trapping, remote, etc)

Date of each survey visit **(e.g. format 01/06/13).**	**Start and end times**	**Structure reference / location**	**Equipment used (include make of bat detectors and logging equipment)**	**Weather –** ***(Include start and end temps, precipitation, Beaufort wind scale etc)***
17/05/2021	Start time: 20:51 End time: 22:56	Transect of Proposed WWTP Transect 2	Elekon bat logger M+	Start Temp:13°C End Temp: 12°C; Rain: 0; rain before survey; Cloud: 6/8; Wind: 2/12
Comments (to include # of surveyors used for each visit): 2 x Mott MacDonald ecologists walking a predetermined route				
18/05/2021	Start time: 20:53 End time: 22:10	Transect of existing WWTP Transect 1	Elekon bat logger M+	Start Temp:14°C End Temp: 13°C; Rain: 1; Cloud: 7/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
18/05/2021	Start time: 20:53 End time: 22:10	Transect of PRoW adjacent to River Cam Transect 3	Elekon bat logger M+	Start Temp:12°C End Temp: 13°C; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				

22/07/2021	Start time: 21:05 End time: 23:52	Transect of existing WWTP Transect 1	Elekon bat logger M+	Start Temp:21°C End Temp: 19°C; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
22/07/2021	Start time: 21:05 End time: 23:53	Transect of PRoW adjacent to River Cam Transect 3	Elekon bat logger M+	Start Temp:23°C End Temp: 21°C; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
29/07/2021	Start time: 20:54 End time: 22:58	Transect of Proposed WWTP Transect 2	Elekon bat logger M+	Start Temp:20°C End Temp: 18°C; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
29/09/2021	Start time: 20:00 End time: 21:10	Transect of existing WWTP Transect 1	Elekon bat logger M+	Start Temp:12°C End Temp: 13°C; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
29/09/2021	Start time: 18:41 End time: 19:45	Transect of PRoW adjacent to River Cam Transect 3	Elekon bat logger M+	Start Temp:12°C End Temp: 13°C; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
04/10/2021	Start time: 18:30 End time: 22:13	Transect of Proposed WWTP Transect 2	Elekon bat logger M+	Start Temp:12°C End Temp: 13°C; Rain: 0; Cloud: 6/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
28/06/2022	Start time: 21:26 End time: 22:59	North transect	Elekon bat logger M+	Start Temp:20°C End Temp: 12°C; Rain: 0; Cloud: 3/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
29/07/2022	Start time: 03:39 End time: 05:24	North transect	Elekon bat logger M+	Start Temp: 10°C End Temp: 14°C; Rain: 0; Cloud: 1/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
03/08/2022	Start time: 03:57 End time: 04:46	North transect	Elekon bat logger M+	Start Temp: 20°C End Temp: 20°C; Rain: 0; Cloud: 6/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
15/06/2022	Start time: 21:00 End time: 23:03	Middle transect	Elekon bat logger M+	Start Temp: 20°C End Temp: 14°C; Rain: 0; Cloud: 1/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				

28/07/2022	Start time: 03:36 End time: 05:21	Middle transect	Elekon bat logger M+	Start Temp: 13°C End Temp: 15°C; Rain: 0; Cloud: 4/8; Wind: 0/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
02/08/2022	Start time: 20:34 End time: 22:19	Middle transect	Elekon bat logger M+	Start Temp: 29°C End Temp: 22°C; Rain: 0; Cloud: 7/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
27.06.22	Start time: 21:25 End time: 23:30	South transect	Elekon bat logger M+	Start Temp: 15°C End Temp: 10°C; Rain: 0; Cloud: 1/8; Wind: 2/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
28.07.22	Start time: 20:40 End time: 22:25	South transect	Elekon bat logger M+	Start Temp: 18°C End Temp: 16°C; Rain: 0; Cloud: 3/8; Wind: 3/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
02.08.22	Start time: 03:35 End time: 04:45	South transect	Elekon bat logger M+	Start Temp: 22°C End Temp: 20°C; Rain: 0; Cloud: 5/8; Wind: 1/12
Comments: 2 x Mott MacDonald ecologists walking a predetermined route				
May - 25/05/2021 – 31/05/2021. July – 22/07/2021 – 30/07/2021. September – 21/09/2021 – 26/09/2021.	N/A - Trigged via bat passes	Existing WWTP (SD1)	Elekon Batlogger A+	N/A – continuous monitoring
Comments: Static detector deployed at same point during the months of May, July and September 2021.				
May – 25/05/2021 – 31/05/2021. July – 22/07/2021 – 26/07/2021. September – 21/09/2021 – 24/09/2021.	N/A - Trigged via bat passes	Proposed WWTP (SD2)	Elekon Batlogger A+	N/A – continuous monitoring
Comments: Static detector deployed at same point during the months of May, July and September 2021.				
May – 28/05/2021 – 30/05/2021. July – 22/07/2021 – 28/07/2021. September – 21/09/2021 – 27/09/2021**.**	N/A - Trigged via bat passes	Underpass of A14/River Cam (SD3)	Elekon Batlogger A+	N/A – continuous monitoring
Comments: Static detector deployed at same point during the months of May, July and September 2021.				

May - 25/05/2021 – 31/05/2021. July – 22/07/2021 – 27/07/2021. September – 21/09/2021 – 26/09/2021.	N/A - Trigged via bat passes	Low Fen Drove Way CWS (SD4)	Elekon Batlogger A+	N/A – continuous monitoring
Comments: Static detector deployed at same point during the months of May, July and September 2021.				

Please provide surveyors names *(including Class Licence registration number if applicable)* and ensure the <u>above</u> table states the number of surveyors used for each survey visit undertaken.

Mott MacDonald Ecologists:
Jake Collins
Ryan Swift
James Rowland
Hilary Barter
Hannah Gillott

Please explain any constraints on the survey/s undertaken (time of year, cold weather, refused access, safety issues preventing access etc – justify as necessary and include evidence where required). If access was refused please provide evidence (letter/email) to demonstrate this.

Constraints to the surveys, specifically around Waterbeach, included access being refused by landowners opposed to the wider proposed development. One field with a standalone tree (P041-T004) was targeted for surveys but had livestock (young bullocks) which posed a significant health and safety risk to the surveyors. Three attempts were made to survey tree P041-T004, but each was unsuccessful. These attempts were made on the following dates: 11/05/2022, 07/06/2022 and 06/07/2022, respectively. Should a roost be present in this tree, and it is not treated as such, it may be subject to minor disturbance from the works, which would be taking place approximately 50m from this tree. A precautionary approach will be taken by way of treating this tree as though it has a roost present. This is suggested as the tree is of moderate suitability for roosting bats. This precautionary approach will be achieved by keeping any work within 50m of this tree limited to essential works only. Should any works take place within 50m of this tree, which occur at night and require artificial lighting, this lighting should be pointed away from the tree as much as is practical under the working requirements. As the works are in land parcel R040 and the tree is in parcel P041, there is a hedge between the working area and tree P041-T004. This will ensure that work will remain at least 50m tree P041-T004 as well as reduce any potential light spill.

Surveys of a known roost in G041-T006 ceased after barn owl chicks were seen in an attached barn owl box during the third visit on 04/07/2022. Barn owls are Schedule 1 birds and require specific licences to disturb which the surveyors did not have (WCA, 1981). They left the area to not risk committing an offence. This tree was able to be confirmed as a roost during the surveys conducted, as an emergence on this survey was recorded. Therefore, the limitation of the survey being called short due to the barn owl chicks does not limit the information gathered. In effect the tree will be subject to the same level of mitigation whether the final 20 mins of survey was completed or not.

For survey results please see Figure C5b, a collection of five maps which show the transect for activity surveys, the trees with moderate and high potential to support roosting ba the trees surveyed with emergence and re-entry methodology, the survey area and the location of the static detectors deployed at the Proposed Development.

Also complete the following:

- If DNA analysis of droppings has been undertaken, please indicate below (Yes, No, N/A) and ensure that **Figure C5b** (if applicable – see below) details the locations where the samples were taken. Where long-eared bats are detected but cannot be identified to species level visually, DNA analysis of any droppings will be needed where grey long-eared bats may be present.

N/A

- Please confirm that a walk over survey/check has been carried out within 3 months *prior* to application submission by a suitably experienced ecologist to ensure that conditions have not changed since the most recent survey was undertaken. Provide details of any changes to conditions and habitats and/or structures on site since the surveys were undertaken.

Date of walkover survey/check	Not yet completed. TBC
Details of any changes to conditions and habitats and/or structures, if there are no changes please insert 'None'	Not yet completed. TBC

C6 Survey results: Summarise your findings in the tables below and cross reference to **Figure C6** (which must also include flight lines, access points, dimensions of existing roosts etc). If you did not undertake a specific survey type please add N/A to the relevant table/s. Raw data is to be appended to the Method Statement (including sonograms, DNA analysis results etc).

Roost t*ypes to be referenced as:* *Day, Night, Feeding Perch, Transitional, Satellite, Maternity, Hibernation confirmed, Foraging Area, Commuting Route, Swarming Site, Other*. See end of document for "Definitions" of these roosts.

When completing "**Notes/observations" include** reference *to direct observations, extent and age of droppings, presence of field signs, emergence or re-entry, echolocation analysis. Also include DNA results if applicable and include nil results)*

Visual inspection results

Date (e.g. format 01/06/13)	**Species and numbers**	**Roost type** *(to be consistent with the above listed types)*	**Structure reference** *(consistent with relevant figures and other text)*	**Roost location**	**Access points (include # of them)**	**Dimensions of existing roosts or explanation of where the roost is (as appropriate)**
09/11/2021	Unknown species and numbers. Confirmed by droppings. Characteristics of the droppings are consistent with *Pipistrellus* sp.	Unknown but considered day.	B106-T007	Bat box	1	Approximately 3.5m high on the southwest aspect.
Notes/observations: Likely *Pipistrellus* species.						
09/11/2021	Unknown species and number of bats at the time of this survey due to confirmation by droppings.	Day (hibernation suitability due to thermal mass of tree)	R107-T006	Rotten trunk/loose bark	1+	Southeast facing, 1 – 6m in height.
Notes/observations: Likely *Pipistrellus* species.						

09/11/2021	Unknown species and number of bats at the time of survey, due to confirmation by the presence of droppings.	Day	R838-T004	Trunk cavity	2	50x35x40cm cavity with an opening to the sky of 25cm diameter. Dry with crevices and areas to shelter.

Provide further (brief) comments/explanation if required:

N/A

Dusk survey results

Date (e.g. format 01/06/13)	**Start and end times**	**Species and numbers**	***Roost type*** *(to be consistent with the above listed types)*	**Structure reference** *(consistent with relevant figures and other text)*	**Roost location**	**Access points (include # of them)**	**Dimensions of existing roosts or explanation of where the roost is (as appropriate)**
24/08/2021	Start: 19:51 End: 21:36	Soprano pipistrelle - one bat.	Day	Y039-101	Callus roll	South facing callus roll at 5m in height.	Dimensions not known. Roost within hedgerow.
Notes/observations:							
06/07/2021	Start: 21:06 End: 22:51	Common pipistrelle – two bats.	Day	48	Callus roll	North-east facing callus roll at 4m in height.	Dimensions not known. Roost within small woodland block outside scheme boundary. Roost was not able to be inspected with an endoscope.
Notes/observations:							
13/06/2022	Start: 21:06 End: 22:46	Soprano pipistrelle – one bat.	Day (hibernation suitability due to thermal mass of tree)	R107-T006 (previously identified during visual inspection on 09/11/2021)	Rot/trunk cavity and loose bark	1 – 6m in height and facing southeast.	Dimensions not known. Tree was not safe to climb and endoscope.
Notes/observations:							
04.07.2022	Start: 21:08 End: 22:53	*Pipistrellus* species – one bat observed. Likely up to five bats.	Day (hibernation suitability due to thermal mass of tree)	G041-T006	Loose bark above owl box.	Roughly at 5m height and above the owl box.	Internal dimensions of the feature not known.
Notes/observations:							

Provide further (brief) comments/explanation if required:

N/A

Dawn Survey results

Date (e.g. format 01/06/13)	**Start and end times**	**Species and numbers**	**Roost type** *(to be consistent with the above listed types)*	**Structure reference** *(consistent with relevant figures and other text)*	**Roost location**	**Access points (include # of them)**	**Dimensions of existing roosts or explanation of where the roost is (as appropriate)**
26.05.22	Start: 03:20 End: 05:05	Common pipistrelle – one bat visually confirmed. Very likely more, based upon activity.	Day	R838-T002	Branch cavity at 5m high facing southwest.	1	No internal survey conducted. Cavity opening is approximately 20cm by 30cm.
Notes/observations:							

Provide further (brief) comments/explanation if required:

N/A

'Other' results – please specify.

Date (e.g. format 01/06/13)	**Species and numbers**	**Roost type** *(to be consistent with the above listed types)*	**Structure reference** *(consistent with relevant figures and other text)*	**Roost location**	**Access points (include # of them)**	**Dimensions of existing roosts or explanation of where the roost is (as appropriate)**
Notes/observations:						

Provide further (brief) comments/explanation if required:

N/A

C7 Interpretation/evaluation of survey results (also see the Bat Mitigation Guidelines section 5.8 and Figure 4 for conservation significance of roost type): Please complete the following table:

Structure reference *(ensure consistency with other text and Figures)*	**Species**	**Count / estimate of number of individuals**	**Roost location**	**Site status assessment (e.g. maternity, feeding roost, swarming site, hibernation confirmed etc)**	**Conservation significance of roost**
G041-T006	*Pipistrelle* species	<5	TL 49553 62493.	Day roost, hibernation potential.	Site
R107-T006	Soprano pipistrelle	<5	TL 50485 65318	Day roost, hibernation potential	Site

R838-T002	Common pipistrelle	<5	TL 50405 66432	Day roost	Site
R838-T004	*Pipistrelle* species. Characteristics of the droppings are consistent with *Pipistrellus* sp.	<5	TL 50397 66359	Day roost	Site
Y039-101	Soprano pipistrelle	<5	TL 50021 60798	Day roost	Site

If hibernation roost(s) were not identified in the survey, please indicate the hibernation roost potential of the site and/or structure(s) which will be impacted by the proposal by ticking the relevant box.	☐ **High** ☒ **Medium** ☐ **Low**

Provide details on the assessment and rationale of the hibernation roost potential.

Where a site/structure/tree has hibernation potential and/or hibernation roosts have been confirmed, Natural England expects any works which may impact on hibernating bats, or their roosts, to be undertaken outside of the hibernation period.

None of the tree roosts identified as a result of this project will be felled. Two of the confirmed roosts have the potential for bats to hibernate in them due to the large thermal mass and the confirmed roosting species present. These two trees are G041-T006 and R107-T006, as listed above. Any works within 100m of these two trees will need to be done so outside of the hibernation period, which typically runs from November to February.

Provide further (brief) comments / explanation if required:

N/A

Important Advice:

Survey maps that must be included in this section of the Method Statement, or as separate documents if preferred, are listed in *section I "Map checklist" at the end of this document.*

Insert survey figures, photographs etc below here if not submitting them as separate documents

D Impact assessment <u>in absence of mitigation or compensation for each species / roost type</u>

(also see section 6 of the Bat Mitigation Guidelines). Where appropriate you must take into consideration cumulative impacts of your proposals on the bat species and populations identified in your survey in each section.

Guidance on quantifying roosts for the purpose of licensing: *To be considered the same roost, the locations need to have the same **functional** and **qualitative** (e.g. physical) characteristics, be used by the **same species** for the **same purpose** (e.g. day roosting) and be within the **same building / structure**. If the physical characteristics are different (e.g. one roost is in external crevices in the wall and the other is in the roof void against internal timbers) then they should be considered different roosts - because they offer bats different roosting opportunities. If the physical characteristics are similar and provide the same functional characteristics, used by the same species for the same purpose (e.g. transitional roost) but with different individual roosting locations within the overall building / structure, that could be considered one transitional roost. If two species are using an area which provides the same characteristics, for the same function, it is still two roosts - as there are two species.*

D1 Initial impacts: The impact/s of activities undertaken on site pre-development and during works must be considered and explained. **Consider disturbance** (such as human presence, noise, vibration, dust, lighting, access obstruction due to scaffolding and plastic sheeting etc), **temporary damage and temporary loss of roosts and injuring/killing.**

E.g. Unsupervised contractor removing roof tiles has the potential to crush 3 common pipistrelle bats using the roof tiles as day roosts. Major negative impact at a site level; Demolition of an extension to a building will take place adjacent to a maternity roost of common pipistrelle bats situated under the soffit board of the retained building. Potential for significant disturbance if demolition works are undertaken during the maternity period through vibration, noise and dust. Medium negative impact on a local level.

None of the five confirmed roosts are going to be lost/destroyed by the Proposed Development. Permanent construction works include the new waste treatment plant which will remove hedgerows, arable fields, individual trees, ditches, and small areas of roadside vegetation (semi-mature trees and scrub) for the access roads and transfer pipeline corridors. This will lead to short-medium term disturbance. Potential disturbance on the six known roosts will occur because of:

- Construction activities associated with the Waterbeach WRC and the transfer pipeline corridor from the Waterbeach WRC has the potential to disturb a soprano pipistrelle roost of <5 bats, in tree R838-T002 and a *Pipistrellus* sp. roost of <5 bats in tree R838-T004. The disturbance from this element of the Proposed Development to these roosts will be a temporary low impact, at the site level.

- Construction and operational activities associated with the proposed construction compound near to the transfer pipeline corridor from Waterbeach WRC, has the potential to disturb a soprano pipistrelle roost of <5 bats, in tree R838-T002 and a *Pipistrellus* sp. roost of <5 bats in tree R838-T004. The disturbance from this element of the Proposed Development to these roosts will be a temporary low impact, at the site level.

- Construction activities for the transfer pipeline corridor from a pumping station off Bannold Drove, Waterbeach, has the potential to disturb a soprano pipistrelle roost of <5 bats, in three R107-T006. The disturbance from this element of the Proposed Development to these roosts will be a temporary low impact, at the site level if conducted outside of the hibernation period.

- Construction activities for the transfer pipeline corridor from a pumping station off Bannold Drove, Waterbeach, has the potential to disturb a common pipistrelle, and pipistrelle species roost, in tree G041-T006. The disturbance from this element of the Proposed Development to these roosts will be a temporary low impact, at the site level if conducted outside of the hibernation period.

- Construction and operational activities associated with the Proposed waste water treatment plant have the potential to disturb a soprano pipistrelle roost of <5 bats, in tree Y039-101. The disturbance from this element of the Proposed Development to these roosts will be a temporary low impact, at the site level.

Disturbance mechanisms include, but are not limited to:

- Close working proximity to the tree roosts.
- Temporary lighting for the construction compounds.
- Vehicle movements and plant use.
- The noise, dust and vibration associated with any construction activities.
- Operational lighting.
- Operational noise.

The proposed vegetation removal will not sever any commuting or foraging habitat that are known to be used by barbastelle bats. Barbastelle bats have been recorded commuting along the Low Fen Drove Ways Grasslands and Hedges CWS. A single call has also been recorded in Horningsea and another in the area of the A14 near where the road intersects the River Cam.

There is the potential for bats to be roosting in trees that have not been identified as roosts and therefore will not be subject to the same mitigation as they would if they were a known roost. This would potentially lead to bats being disturbed. The disturbance mechanisms listed above, and other mechanisms associated with the construction and operational activities have the potential to cause disturbance to roosting bats within tree features. As some aspects of the works are being undertaken at night (underground pipeline requiring 24hr operation), there is potential for commuting and foraging bats to be disturbed by the works lighting. These disturbances would have a low impact to bats at the site level.

The proposed vegetation removal to make way for the proposed treatment plant will sever commuting or foraging habitat for low numbers of common species of bats. There will be a short-term reduction in vegetation in the area, however overall proposed landscape vegetation including woodland glades and neutral grasslands will increase vegetation cover and thereby foraging and commuting habitat. Temporary adverse impacts on foraging or commuting habitat is anticipated.

During operation, once all plantings have established as part of the landscape master plan there is likely to be a beneficial effect on bats due to provision of additional habitats for commuting and foraging, and additional enhanced linkages across the local landscape. There is unlikely to be any operational impacts on the bat roosts identified.

Figure D shows the Impact plan drawings, as well as the proximity to Non Statutory Designations.

Confirm number of roosts to be damaged:
No roosts will be damaged from the works of the Proposed Development.

D2 Long-term impacts: Consider and explain the impacts of the proposed works on the different species populations at a site, local, regional, and national level**.**

D2.1. Roost modification: e.g. changes to roosts/access points, new entrances (including human access e.g. for servicing/maintenance etc), change in size of roost space, changes in air flow, temperature and humidity, light etc. Please detail the access points into each roost and the type/s of roosts which will be modified.
E.g. Non-mitigated changes to the roof structure, which requires replacing, will lead to the modification of 3 access points into a common pipistrelle maternity roost which will result in bats being unable to enter or exit the roost. Moderate negative impact on a local level.

No roost will be impacted directly. Long term impacts will be beneficial to bat assemblages at the site, local and regional level due to the amount of landscape planting undertaken through this project. Anglian Water are committed to achieving 20% biodiversity net gain.

Confirm number of roosts to be modified:
No roosts will be modified as a result of the Proposed Development.

D2.2. Roost loss: Loss or deterioration of roosting sites, access points, habitat, etc must be considered. Please detail the access points into each roost and types of roost/s which will be lost.
E.g. Demolition of building reference X in June will lead to the loss of a night roost in the porch used by 1 lesser horseshoe bat and the loss of a maternity brown-long eared bat roost in the loft space. This will lead to the death and/or injury of bats including dependent young and permanent destruction (loss) of both roosts. Moderate negative impact at a site level for lesser horseshoe bats and moderate negative impact at a local level for brown-long eared bats.

No roosts are to be directly impacted as part of the works.

Confirm number of roosts to be destroyed:
No roosts will be destroyed and lost as a result of the Proposed Development.

D2.3. Fragmentation and isolation: Will the proposed works results in these impacts? E.g. loss of linear features such as hedges, tree lines, increased lighting, severance of flight lines by roads/rail lines, separation of breeding/hibernation sites from feeding grounds, etc.
E.g. In addition to the removal of common pipistrelle day roosts in trees along the proposed road, removal of hedgerows, shown on Figure D, and the construction of the new road will fragment a significant commuting and foraging route for a lesser horseshoe maternity roost. This may cause a reduction in the long term success of the breeding colony of lesser horseshoes by restricting existing foraging range or killing bats on the road. Potentially major negative impact at a site and local level.

Construction of the Proposed waste water treatment plant will require the removal of species-poor hedgerows that provide foraging and commuting habitat for low numbers of bats. Some immature trees will also be lost as part of the Proposed Development through the construction of the access roads, transfer pipeline corridor, and footpaths surrounding the site. The effect of the reduced species-

poor hedgerow and immature trees will have a marginal negative impact on bats at the site level only. These negative impacts will be temporary as in time the vegetation will return.

Bats, including barbastelle have been identified as using the Low Fen Drove Way Grasslands and Hedges CWS as a commuting route. Lighting from the construction and operational phases of the Proposed Development has the potential to disturb the bats that use the CWS for commuting and foraging. Reducing the quality of this commuting route will likely have negative impacts on how bats are able to move through the landscape. Control measures are in place to reduce the impacts of lighting on the Low Fen Drove Way Grasslands and Hedges CWS. These include lighting columns no greater than 5m within the Proposed Development and use of <2700K colour temperature LED luminaires.

D3 Post-development interference impacts: e.g. extra street lighting or other external lighting, use of loft space as storage, increased noise. Please also consider other direct or indirect post development impacts which may include disturbance/ injuring/killing.
E.g. Security lighting being installed will shine on the brown-long eared bat maternity roost access points which may affect emergence patterns and lead to a reduction in foraging times. This may cause a reduction in the long term success of the breeding colony or cause the roost to be abandoned. Moderate to high negative impact at a site and local level.

No roosts will be illuminated during the construction or operational stages of the Proposed Development. Security lighting will be in operation within the proposed WWTP operational area. This lighting will be on timers to switch off automatically after use. Car parking lighting will remain permanently on during the night for health and safety of Anglian Water staff. Without mitigation the lighting will have more of an impact at first on commuting and foraging routes, then as the vegetation matures over approximately 15 years the lighting impact will reduce following shielding from the vegetation.

D4 Predicted scale of impact of this development/activity on species status (also see section 6.5 of the Bat Mitigation Guidelines and the BCT's Bat Survey Good Practice Guidelines): Please complete the following table to explain what this is likely to be at the site, local/county and regional levels for each roost type and species. Add additional lines when necessary

Roost types to be referenced as: Day, Night, Feeding Perch, Transitional, Satellite, Maternity, Hibernation confirmed, Foraging Area, Commuting Route, Swarming Site, Other.

Species and Numbers (which will be affected at the time works will be undertaken)	**Roost type**	**Predicted scale of impact** ***(place X in relevant column)***			**Notes** (include impact on roost – damage / destruction /modification etc)
		Site	**County**	**Regional**	
Common Pipistrelle <5	Day tree roost	X	-	-	There is one confirmed common pipistrelle roost and two *Pipistrellus* sp. roosts. Temporary disturbance. Impact in the absence of mitigation would cause the disturbance of this species.
Soprano Pipistrelle <5	Day tree roost	X	-	-	There are three confirmed soprano pipistrelle roost and two *Pipistrellus* sp. roosts. Temporary disturbance. Impact in the absence of mitigation would cause the disturbance of this species.

* ***Please note** that you can add more rows to the table: right click in any cell outside the grey box area. Choose Insert > Insert rows below.*

Provide further comments/explanation as required (this helps understand how the impacts will be mitigated or compensated for when assessing section E):

N/A

Important Advice:
Please ensure that a separate 'Impact map' is provided (Figure D) which must show all structures or habitats (clearly referenced) that will be disturbed, damaged or destroyed, detailing where the roosts and access points are etc. Also *see section I "Map checklist" at the end of this document*.

E Mitigation and Compensation (please also see section 7 and 8 of the Bat Mitigation Guidelines)

E1 Please explain why this design was chosen over other potential solutions - set out what other designs were considered and why they were not feasible (*e.g. if the proposal is to construct a new stand-alone roost, explain why it is not possible to retain the roost in the existing structure etc).* The mitigation solution being proposed in the method statement should be the one that delivers the 'need' with the least impact on the bat population.

The existing Cambridge WWTP off Cowley Road, south of the A14 is relocating to a new area in arable farmland near Horningsea. This work is required so that the waste water from future development in Cambridge can be accommodated in bigger treatment facilities. There have been three iterations and locations of the waste water treatment plant design. The current site was chosen due to its access off the A14 rather than through urban area and the design chosen as it fitted more in line with the surrounding natural landscape. The design of the Proposed waste water treatment plant will include features such as earth banks. These earth banks will be landscaped to provide additional shielding from the surrounding environment. Furthermore, the footprint of the design will not directly impact any of the confirmed roosts.

Therefore, the mitigation measures put in place across the Proposed Development will ensure that there is minimal disturbance caused to individual roosting bats or populations during the construction works. In summary:

1. The works will avoid key sensitive periods near roosts with hibernation potential, namely G041-T006 and R107-T006. Although no hibernation surveys have been conducted, the thermal stability of G041-T006 and R107-T006, as well as the species recorded roosting within them suggest that there is potential for the trees to be used for hibernation. Similarly, no maternity roosts have been confirmed on site, but work near the roosts should be avoided during the breeding period as a precautionary approach.

2. A suitable bat box will be installed prior to works on a nearby tree to each of the disturbed known roost locations. Where suitable trees are not found boxes will be placed in the wider area. This may mean that two boxes are placed on one tree.

3. Heras fencing will surround the known bat tree roosts to prevent approach by machinery. This perimeter should be at least as large as the root protection zone, if not larger and not block or impede access to the roost. An ecologist will assess the fencing once in place and advise as required.

4. During all working periods an ecologist will be available as an Ecological Clerk of Works (ECoW).

5. When working within 20m of the roost an ecologist will be present, typically the on-site ECoW,

6. In the unlikely event a bat is discovered during the works, the licensed ecologist will place them within the nearest bat box or in the care of a suitably experienced bat carer as appropriate; and

7. Once all works are complete, all fencing will be removed around the tree roosts and returned to their original state.

These methods aim to maintain the local population of bats at a favourable conservation status, whilst causing the least impact on the local population.

E2.2 Capture and release (if applicable):

Please confirm that you agree to undertake the following procedures for the capture and exclusion of bats, where these are applicable:

a. The use of endoscopes, artificial light from torches, destructive search by soft demolition (see Definitions), temporary obstruction of roost access, temporary or permanent exclusion methods (including installation) and use of static hand held nets must only be undertaken or directly supervised by the Named Ecologist, or an Accredited Agent.

b. Where capture and/or handling of bats are necessary, only the Named Ecologist, Accredited Agent, or an Assistant directly supervised by the Named Ecologist may do so. Capture/handling/exclusion of bats must only be undertaken in conditions suitable for bats to be active.

c. Where bats are discovered and taken (excluding unexpected discoveries during adverse weather conditions) they must either be relocated to an alternative roost (see Definitions) suitable for the species, or where bats are held this must be done safely and bats released on site at dusk in, or adjacent to, suitable foraging/ commuting habitat in safe areas within or directly adjacent to the pre-works habitat.

d. Endoscopes and hand held nets are only to be used to assist with the locating and capture of bats.

e. Temporary and permanent exclusion must be carried out using techniques specified in the most up to date edition of the '*Bat Workers Manual*'. If one-way exclusion devices are to be used, each device must remain in position for a period of at least 5 consecutive days/ nights throughout a spell of suitable weather conditions, or remain longer until these conditions prevail.

f. Prior to destructive works, an inspection using torches and/or an endoscope must be performed internally to search for the presence of bats. If any licensed vesper bat species is found and is accessible, each will be captured by gloved hand or hand-held net, given a health check and then each placed carefully inside a draw-string, calico cloth holding bag or similar for transport. If any licensed horseshoe bat species is found, the capture methods outlined in (h) will only be used after it has been shown that overnight dispersal or exclusion are no longer practicable methods.

g. Following inspection and exclusion operations, the removal of any feature with bat roost potential, will be only performed by hand in suitable weather conditions and under direct ecological supervision. Where applicable, materials will be removed carefully away and not rolled or sprung to avoid potential harm to bats. The undersides of materials will be checked by the Named Ecologist or Accredited Agent for bats that may be clung to them before removal.

h. For sites where the presence of horseshoe species has been confirmed, the following exclusion method will be used: prior to work commencing, the Named Ecologist or Accredited Agent will conduct a thorough internal inspection for the presence of horseshoe bats. Only after the void is shown to be unoccupied will the destructive search commence, or all apertures into that void be closed and sealed (windows, doors, etc) by use of boarding, sealed tarpaulin or similar.

   If a horseshoe bat is encountered, it will be left undisturbed during daylight. After all bats have dispersed overnight, the void will be sealed as described above. If all bats have not emerged, the Named Ecologist will either use torchlight and non-tactile human presence to disturb the bat to encourage it to emerge and disperse, during night only, or through use of a hand held net. Only after all bats have emerged from the building or void will it be sealed.

Yes, I agree / No, I don't agree
Yes

If NO, please provide justification below. Please use this text box to describe any additional information on protocols to be employed if bats are found during works. Non-standard capture and exclusion apparatus must be shown on **Figure E2**.

N/A

Should your proposals include capture (taking) please specify numbers of each species that will be affected at the time the works are to be undertaken:

Species	**Expected number of bats to be captured at the time works will be undertaken**. *Note: this may be different to the number of bats using the roost at its optimum time as timings for works will be at a time when bats are least likely to be present*.
N/A	**N/A**

** * Please note that you can add more rows to the table: right click in any cell outside the grey box area. Choose Insert > Insert rows below.*

E3 Bat roost and access point retention, modification and creation: Please detail how all impacts to each species (as identified in sections C and D) will be mitigated. If not applicable to your proposals please state 'N/A' in the relevant text boxes.

Please note that breathable roofing membranes must not be installed into a roof used by bats. If the use of roof membranes is necessary, only Bitumen type 1F felt with a hessian matrix will be permitted under licence:

N/A

E3.1 Retention of existing roost(s) – *Works may include, for example, maintenance works that result in no material changes to the roost but may cause disturbance or temporary damage e.g. t*emporary *exclusion of a roost to allow investigative and repair works to a bridge*. Provide details of all works including:

- Number and description of roosts to be retained, with an explanation of how they will be retained. Confirm dimensions to be retained.

A total of five tree day roosts will be retained across the Proposed Development. There will be no material change as the roosts are only being temporarily disturbed. The roosts and potential disturbance includes:

1. A soprano pipistrelle roost of <5 bats, in tree R838-T002 and a *Pipistrellus* sp. roost of <5 bats in tree R838-T004 located next to the Waterbeach WRC and the transfer pipeline corridor from the Waterbeach WRC has the potential to disturbed by construction activities associated with the creation/update of these Proposed Development elements.

2. A soprano pipistrelle roost of <5 bats in tree R838-T002 and a *Pipistrellus* sp. roost of <5 bats in tree R838-T004 has the potential to be disturbed by construction and operational activities associated with the proposed construction compound near to the transfer pipeline corridor from Waterbeach WRC.

3. A soprano pipistrelle roost of <5 bats, in three R107-T006 has the potential to be disturbed by construction activities for the transfer pipeline corridor from a pumping station off Burgess Drove, Waterbeach.

4. A common pipistrelle, and pipistrelle species roost, in tree G041-T006 has the potential to be disturbed by construction activities for the transfer pipeline corridor from a pumping station off Bannold Drove, Waterbeach.

5. A soprano pipistrelle roost of <5 bats, in tree Y039-101 have the potential to disturbed by construction and operational activities associated with the Proposed waste water treatment plant.

The exact dimensions of the roosts are unknown as it is not possible to fully endoscope the features due to the height and angle of each feature in the tree. Some of the trees are unsafe and cannot be climbed and inspected.

- Number of access/entrance points to be retained and how this will be achieved. If enhancements to the roosts will be provided, such as through crevice provision, please detail.

All entrances to the roosts will be retained during and post works. There will be no material change as the roosts are only being temporarily disturbed.

- Mitigation for any other impacts e.g. new lighting at the site.

Tree planting to shield the Proposed Development from surrounding areas helping to reduce light spill. Sensitive lighting regimes within the operating WWTP will ensure no unnecessary light spill into the surrounding area when personnel are not needing security/operating lighting at night.

Increased screen planting has been incorporated in the landscape masterplan in the LERMP (Application Document Ref 5.4.8.14) since Consultation 3, including semi-mature trees on the earth bank and woodland belts around the WWTP. Semi-mature trees will help advance the landscape planting and as a result slightly advance the screening effect of the planting.

Mitigative measures such as the earth bund surrounding the Proposed Development will act as a shielding barrier between the lighting and the roost located in tree Y039-101, as well as the Low Fen Drove Way Grasslands and Hedges CWS.

E3.2 Modification of existing roost(s) - *Works may include, for example, reduction in roof void height, change of tiles and roof lining (stating the type of membrane that will be used), alteration of access point through replacement of soffits etc.* Please provide the following:

- Dimension details of modified roosts: clearly state what the original roost dimensions were and what the dimensions of the modified roost will be.

N/A

- Dimension details of modified access points: clearly state how the access points are being modified.

N/A

- Details of any other modifications to be made to roosts.

N/A

- Mitigation for any impacts of lighting on the modified roost/s if appropriate.

N/A

E3.3 New roost creation (including bat houses, cotes and bat boxes etc).

Note – creation of compensation for high impact cases (e.g. loss of a maternity roost) must be protected in the long term. Any bat boxes or roost structures that are part of a licence proposal which do not show signs of bats must be retained for a minimum of 5 years from date of completion of the development/works. Typically this will be around 5 years for low conservation status roost compensation (e.g. bat boxes) and longer for other significant roosts (e.g. bat houses, lofts etc). The exact time period will be specified in any licence issued. For high conservation status roost loss, the compensation roost/s must still be protected in the long term by another means (such as a s106 agreement), which is particularly important if the structure is likely to change ownership.

E3.3a Please complete the table below for the species and roost types listed. For all other species and roost types please provide information under **E3.3b**.

Species & Roost type for which new roost creation will be provided Select 'yes' for those species impacted or 'N/A' if not applicable to this application	**New roost creation**
	Compensation should be in line with the *Bat Mitigation Guidelines*. Where compensation is being provided, there should be at least **one compensation feature, suitable for the species concerned, per roost and per species to be impacted**, OR If a proposal impacts more than one bat species and / or roost type then cumulative impacts must be considered when designing the compensation; this should always be in line with the species and / or roost type which will be subject to the greatest impact and ensure that the requirements of all species impacted are met.

	Compensation Feature	**Quantity**	**Location of Compensation Feature** (as shown on Figure E3)
Common pipistrelle ☒ Yes ☐ N/A *Day roost* *Night roost* *Feeding* *Transitional/Occasional*	☒ Bat box ☐ Integrated bat box/ bat brick/ bat tube ☐ Bat tile (including ridge tile) ☒ Other (specify): New woodland, hedgerow and grassland planting as well as four (4) seasonal ponds. ☐ None		☐ In same building ☐ In other existing building on site ☐ In new building ☒ Other (specify): As close as practical and applicable, bat boxes will be mounted on appropriate undisturbed trees but near to the roost location, and potentially existing Low Fen Drove Way CWS.
Soprano pipistrelle ☒ Yes ☐ N/A *Day roost* *Night roost* *Feeding* *Transitional/Occasional*	☒ Bat box ☐ Integrated bat box/ bat brick/ bat tube ☐ Bat tile (including ridge tile) ☒ Other (specify): New woodland, hedgerow and grassland planting as well as four (4) seasonal ponds. ☐ None		☐ In same building ☐ In other existing building on site ☐ In new building ☒ Other (specify): As close as practical and applicable, bat boxes will be mounted on appropriate undisturbed trees but near to the roost location, and potentially existing Low Fen Drove Way CWS.
Whiskered ☐ Yes ☒ N/A *Day roost* *Night roost* *Feeding* *Transitional/Occasional*	☐ Bat box ☐ Integrated bat box/ bat brick/ bat tube ☐ Bat tile (including ridge tile) ☐ Other (specify): ☒ None		☐ In same building ☐ In other existing building on site ☐ In new building ☐ Other (specify):
Brandt's ☐ Yes ☒ N/A *Day roost* *Night roost* *Feeding* *Transitional/Occasional*	☐ Bat box ☐ Integrated bat box/ bat brick/ bat tube ☐ Bat tile (including ridge tile) ☐ Other (specify): ☒ None		☐ In same building ☐ In other existing building on site ☐ In new building ☐ Other (specify):
Daubenton's ☐ Yes ☒ N/A *Day roost* *Night roost* *Feeding* *Transitional/Occasional*	☐ Bat box ☐ Integrated bat box/ bat brick/ bat tube ☐ Bat tile (including ridge tile) ☐ Other (specify): ☒ None		☐ In same building ☐ In other existing building on site ☐ In new building ☐ Other (specify):
Natterer's ☐ Yes ☒ N/A *Day roost* *Night roost* *Feeding* *Transitional/Occasional*	☐ Bat box ☐ Integrated bat box/ bat brick/ bat tube ☐ Bat tile (including ridge tile) ☐ Other (specify): ☒ None		☐ In same building ☐ In other existing building on site ☐ In new building ☐ Other (specify):
Brown long-eared ☐ Yes ☒ N/A *Day roost* *Night roost* *Feeding* *Transitional/Occasional*	Note: boxes for this species will only be acceptable in certain circumstances, where this is justified on an ecological basis ☐ Bat box, justification ☐ Other (specify): ☒ None		☐ In same building ☐ In other existing building on site ☐ In new building ☐ Other (specify):
Serotine ☐ Yes	Note: bat boxes are not suitable for this species. Compensation		☐ In same building ☐ In other existing building on site

☒ N/A *Day roost* *Night roost* *Feeding* *Transitional/Occasional*	should replicate, as closely as possible, the existing roost: ☐ Bat tile ☐ Bat brick ☒ Other (specify):		☐ In new building ☐ Other (specify):
Lesser Horseshoe ☐ Yes ☒ N/A *Day roost* *Transitional/Occasional*	A proportionate number of bat features suitable for the species. The provision of one feature, suitable for the species concerned (eg void) per roost to be impacted will be considered appropriate: Specify:		☐ In same building ☐ In other existing building on site ☐ In new building ☐ Other (specify):

E3.3b For all species and roost types not covered in the above table please provide the following:

- New roost dimension details or features (to include bat tiles/boxes as applicable).

N/A

- Access points and size of access points.

N/A

- Location details (including an 8-figure grid reference for bat houses or bat lofts relating to the structure. 8-figure grid references are <u>not</u> required for positions of individual boxes, tiles etc).

N/A

- Aspect. Explain how the internal conditions of the roost will be created.

N/A

- Details of the materials to be used e.g. timber, sarking, felt etc.

N/A

- Justification for any variation from the original roost and/or deviations from recommendations in the Bat Mitigation Guidelines. (*Diagrams of widely available standard bat box designs are not required; just refer to bat box name and reference number, e.g. Schwegler 1FF*).

N/A

- Mitigation for any impacts of lighting if appropriate.

N/A

- Structures for access for monitoring / maintenance purposes (if applicable)

N/A

E3.4 Other habitat re-instatement or creation (e.g. retention of existing flight lines, retention or creation of appropriate vegetation around roost entrances where applicable) – please include details of:

- Habitat replacement (following works resulting in temporary impacts) or creation not covered by sections E2 to E3 such as hedgerow/woodland planting or enhancement. State the length of hedgerow planting and areas (ha) of other planting to be provided such as woodland and anticipated establishment period etc.

The Proposed Development intends to achieve a minimum of a 20% biodiversity net gain. Hedgerow replacement - 8037.0476m of hedgerow planting is proposed as reinstatement for hedgerows lost and new creation. Hedges are anticipated to reach 3m within 15 years. Species-rich hedgerows will be planted with a minimum of five woody species in the planting mix, characteristic of NVC community W21 hawthorn (*Crataegus monogyna*) – ivy (*Hedera helix*) scrub. Hedgerow management will vary depending on its purpose from clipping annually to layering every 7-10 years for example, with adjacent lengths cut in different years. Hedgerow planting with fencing, where required will also be used in places to deter visitors from accessing ecological sensitive areas such as the CWS to maintain reserved areas for wildlife and prevent trampling of the grassland.

Woodland creation - The Proposed development will also plant 25ha of woodland habitat within the Scheme Order Limits. The woodland species mix will include species characteristic of a National Vegetation Classification (NVC) community W8 ash (*Fraxinus excelsior*) – field maple (*Acer campestre*) – dog's-mercury (*Mercurialis perennis*) woodland. Most semi-natural woodland in Cambridgeshire is NVC community W8. However, due to ash dieback, ash will not be included in the mix, and it is proposed that the percentage of oak and field maple within the planting palette is increased at the expense of rowan and wild cherry, which are less common in native woodlands in Cambridgeshire.

The Proposed landscaping and planting will improve the connections to other areas of habitat for the common and soprano pipistrelles roosting in the known roosts. Although the planting will take a number of years to mature and become effective it will benefit the two roosting species and likely other species in the long term. The Proposed planting and landscaping will improve the local area around the known roosts by way of biodiversity net gain. The current known roosts are present in a largely arable landscape with limited high-quality features. Once the planting matures and the newly established hedgerows and woodland features are fully functional, the known roosts will tie into the wider landscape with a greater degree of connectivity and functionality.

This planting will be within the Scheme Order Limits, via a phased approach. The planting period cannot be accurately given at present as it is yet to be determined. It will begin during construction and end during operation.

Overall objectives for the retained and created hedgerows and woodland habitats are as follows:

- To ensure the continued health and condition of existing retained landscape features across the site, such as boundary hedgerows and trees, field ditches where they have been retained,
- To ensure the continued health and condition of existing retained habitats such as bat roosting sites in the south eastern area of the site, wildlife corridors that are part of the boundary hedgerow network on the A14 and Horningsea Road.
- To ensure the protection and retention of the adjacent County Wildlife Site.
- To ensure the successful planting operations, establishment, and continued growth through to maturity of the trees, hedgerows, woodland, and grassland areas for the benefits of users and wildlife.
- For barbastelle bat, the Proposed Development includes woodland expansion and hedgerow linkages, which is a suggested action to benefit the species in the Local Biodiversity Action Plan Priority Species Factsheet. The new woodland habitat creation adjacent to the Low Fen Drove Way Grasslands and Hedges CWS will over time provide new areas for dispersal and foraging.

Bat boxes - Options will also be explored for installing bat boxes in the Low Fen Drove Way Grasslands and Hedges CWS.

The addition of mature trees and planting will be used in areas such as the north and east earth bund to advance the lighting shielding benefits from vegetation as much as possible, within reason.

- Creation of flight lines/routes of connectivity.

Planting of new habitats around the proposed WWTP including woodland, hedgerows and seasonal ponds will provide additional foraging, commuting and resting resources for bats, other small mammals, birds, invertebrates, and reptiles.

Once mature the new planting will provide favourable habitat for commuting bats. This Proposed new planting will improve upon the existing baseline, which was largely arable fields with species poor hedgerows. The increase in connectivity will facilitate movements across the landscape. Increasing the connectivity to the north of the Proposed Development will potentially allow bats to move to new roosting and foraging areas. Tying this new planting into the existing habitat will further increase the effectiveness. There will be new planting of trees along Low Fen Drove Way Grassland and Hedges CWS which will tie in the landscaping to known commuting routes. This planting will also result in an overall greater connectivity across the local landscape, supporting the Cambridge Nature Recovery Network. Mature planting will be used to advance the mitigation and offsetting as much as possible. This will reduce the uptake time.

Where applicable to the maintenance and management routines, continued management will allow for vegetated linkages to remain functional. This will be achieved by replacing any failures (in line with management periods) to facilitate higher connectivity levels for bats across the local area. The landscape masterplan within the Landscape, Ecology Recreational Management Plan (LERMP) includes hedgerow replacement in excess of the lengths of hedgerow removed during the construction of the proposed WWTP. See figure B2.1 for the masterplan overview.

New flight lines and connectivity will be created for both direct biodiversity benefits and as a product of the landscaping for anthropocentric benefits. Examples of these newly created flight lines include, but are not limited to:

- A publicly accessible path will traverse the eastern part of the site, set between a hedgerow with hedgerow trees, and the edge of the Proposed created woodland. Double hedgerows are ideal commuting corridors for bats.
- Early planting of larger specimen trees and hedgerow plants will support linkages to facilitate retained commuting and foraging corridors. Additional “thickening” of retained hedgerows is also proposed to promote habitat connectivity for bats.
- Provide increased connectivity between Low Fen Drove Way Grasslands and Hedges CWS with the wider countryside and will support dispersal and foraging resource availability for bats at Anglesey Abbey.

- Foraging area enhancements, etc

Woodland habitat creation will include woodland features such as edges, rides and glades, creating open areas of woodland divided into different pockets of woodland. These will provide ecological benefits for insects, birds, and bats, which have been recorded on and adjacent to the site. Rides will provide new wildlife corridors through the site to connect species to the wider landscape. The woodland design will follow a scheme and design like that shown on page 23 (of the Landscape, Ecological and Recreational Management Plan), the rides and glades are also visible in the Landscape Masterplan (see page 12, Landscape, Ecological and Recreational Management Plan) and the Proposed Ecology Features Plan (see page 31, Landscape, Ecological and Recreational Management Plan). See figure E3 for more information.

- Mitigation for any impacts of lighting if appropriate.

Mitigation of the visual effects from the waste water treatment plant infrastructure, including the effects of lighting will be achieved through a combination of extensive new woodland and hedgerow planting and tree planting on the 7m high earth bank which will surround the proposed WWTP. The combination of these measures will, in time, screen views of the proposed WWTP from Horningsea Road, the River Cam, Fen Ditton, Biggin Abbey and the public rights of way north and west of the

proposed WWTP. Furthermore, this screening effect will have additional mitigative effects for the surrounding biodiversity. The bund and planting on the bund once mature will reduce light spill into the surrounding newly created habitats.

Minimum light levels are defined by the Water Industry Mechanical and Electrical Specifications (WIMES) 3.02(E), as set out in the Lighting Strategy (Application Document Reference 7.14). Worst case lighting levels are provided in Table 2-27 in Chapter 2 (Project Description) of the Environmental statement.

Key lighting design principles are as follows:

- The site will be very dimly lit.
- All lighting should point downwards and if possible shaped to light the required areas only so the dark sky will largely be affected by reflection from the surface rather than light being directed upwards.
- Task lighting will only be provided for those working areas where overnight maintenance is required, and where possible will be restricted in height to avoid visibility from outside the earth bank (although some will be visible).
- Pathway lighting will only be provided to get employees from the roadside (their van/truck) to the relevant task area/general inspection area and will be controlled by passive infrared (PIR) sensors where possible.
- Areas on top of tanks/structures (top of digesters) where lighting is critical for safety will be manually controlled only to ensure that a PIR sensor doesn't time-out and switch-off whilst the employee is still on the tank.
- Operational lighting for areas of plant such as post digestion, sludge dewatering and the works outfall will be on manual switches to reduce the overall lighting output.
- Lighting sources shall be selected to be aesthetically appropriate and to limit light pollution, improve energy efficiency and increase equipment longevity.
- All luminaires should lack UV elements. Metal halide, fluorescent sources should not be used.
- LED luminaires will be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally <2700 Kelvin should be adopted to reduce blue light component.
- Luminaires should feature peak wavelengths higher than 550 nanometres to avoid the component of light most disturbing to bats.
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- Use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered. As these may cause glare, poor illumination efficiency, a high upward light component and poor facial recognition, their use should only be as directed by the lighting professional.
- Column heights will be set to minimise light spill.
- Only luminaires with an upward light ratio of 0% and with good optical control should be used – following ILP Guidance for the Reduction of Obtrusive Light.
- Luminaires should always be mounted on the horizontal, i.e., no upward tilt.
- External security lighting should be set on motion-sensors and short timers.
- As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.

E3.5 Wider biodiversity gains:

Please indicate if enhancements, over and above what is necessary to mitigate the impact of the activity of the licence proposal, are being provided. Please indicate if enhancements are included to satisfy the requirement of a planning permission, and if so state the relevant planning condition, or other consents in your response below. Please also state if an applicant wishes to provide more than is typically required to mitigate for the impacts. Enter N/A if this is not applicable to your application.

Note: *Any licence granted will only cover mitigation and compensation required to fulfill licensing requirements, but will acknowledge additional biodiversity enhancements*.

As part of the wider Biodiversity Net Gain requirements, of which a minimum of 20% has been designed to be delivered, the landscape design proposals create a range of new ecological habitats, including a mosaic of grassland types, woodland, hedgerows, and tree planting.
The new landscape and ecology habitat creation has been designed to complement the Cambridge Nature Network opportunity areas for nature recovery, providing a new component and potential extension to the stepping stones, corridors and core areas such as Quy Hall, Little Wilbraham Fen, Stow-cum-Quy Fen SSSI.
The wider biodiversity gains described above is above and beyond what would be expected to mitigate impacts to low numbers of bats. This is to satisfy new legislation requiring BNG requirements.

Bat boxes will be mounted to a selection of the planted trees once they reach a maturity that allows them to provide a suitable base for the bat box, as described in the LERMP.

Important Advice:
Scaled maps/plans of mitigation/compensation must be provided as separate maps/figures (also ***see section I "Map checklist" at the end of this document)***:

- **Figure E2** if non-standard capture and exclusion apparatus is proposed please include diagrams/photographs.
- **Figure E3** to show specifications for mitigation / compensation to be provided and annotate where it will be provided. Should the scheme be large or complicated it may be necessary to submit more than one figure.

NOTE: It must be possible to compare these with the survey results plan (**Figure C6**) and 'Impacts' Figure (**D)**.

E4 Post-development site safeguard: Further guidance and explanation on post-development monitoring requirements are included within our 'How to get a licence' document http://www.naturalengland.org.uk/Images/wml-g12_tcm6-4116.pdf. Also see Section 8.7 of the Bat Mitigation Guidelines.

E4.1 Habitat/site management and maintenance: Is any specific post-development habitat management and site maintenance planned? If 'No; state 'N/A'. If 'Yes' include the following:

- The period (years and months) for which habitat management and maintenance will take place. Ensure that this is consistent with the post development works detailed in section **E5b** of the **Work Schedule document, WML-A13-a-E5a&b**.

Habitat creation and biodiversity net gain as set out in the Biodiversity Metric 3.0 calculation will be secured through Schedule 2 of the DCO which includes a series of requirements which obligate The Applicant to implement the Landscape Masterplan and the LERMP (Application Document Ref 5.4.8.14). The LERMP will ensure the created habitats achieve their target condition and retained habitats maintain their condition for the duration of the biodiversity net gain requirement. The target condition scores are based on a reasonable worst-case scenario.

This will be achieved by a biodiversity net gain management and monitoring plan implemented for a minimum of 30 years. Section 3 of the LERMP (Application Document Ref 5.4.8.14) emphasises the need to apply ecological principles so that the long-term habitat creation and enhancement included within the biodiversity net gain assessment remains realistic and deliverable based on local conditions (geology, hydrology, nutrient levels, water availability) and the complexity of future management requirements. It also outlines the application of adaptative management principles.

The LERMP includes detailed management and maintenance information for years 1-5 (including frequency and timing of measures) with a commitment to review maintenance and management regimes every 5 years. This will be enforced by the DCO requirements.

- Details of what will be undertaken in terms of site maintenance required to ensure long-term security of the affected population (e.g. maintain, repair or reinstate access points; maintain and repair heaters and /or data loggers; maintain, repair or restore bat feature / bat loft in good condition; repair or replace inspection hatches; management and maintenance of lighting regime, or bat boxes etc).

On page Inspections of the bat boxes as outlined above will be undertaken using a ladder to check the condition and to perform any required maintenance annually for the first five years in February during one of the twice-yearly checks. If the bat boxes become damaged or destroyed, they will be replaced at the expense of Anglian Water within the first five years. The type of boxes has not yet been determined. After the initial five years of checks, the bat boxes will be allowed to degrade to imitate a natural tree roost deterioration.

- Details of what will be undertaken in terms of habitat management (e.g. planting cover around roost structure, hedgerow management regime, checking establishment of habitat creation; reduction of shade around roosts, woodland management to maintain species and structural diversity etc). Ensure this relates to the relevant map.

Monitor and record any plant losses annually for the first five years and then every five years thereafter, for a minimum of 15 years. Remove dead materials and replace with the original species and size as specified in the planting schedule. Where a single species shows consistent losses, signs of disease, or planting method or location appear to be the cause, review the method or choice of species, and consider an amendment to original proposals.
Detailed condition survey for new trees - to be undertaken by a qualified arboriculturist at least once every five years, any recommendations to assist with establishment must be undertaken as soon as possible. This will continue for a minimum of 15 years, longer if needed depending on the success of the planting.
A regular programme of landscape maintenance will ensure the establishment and continued growth of the planted and seeded areas. Habitat maintenance includes:

- protecting young trees during initial growth;
- lightly trimming new hedgerows in the first three years after planting to encourage lateral growth;
- cutting existing and fully established hedgerows every three years to maintain a height of between 2-4m; and
- mowing the new areas of grassland twice in the first two growing seasons in spring and autumn. Mowing the established grassland annually in autumn.

Inspections of the bat boxes as outlined above will be undertaken using a ladder to check the condition and to perform any required maintenance annually for the first five years in February during one of the twice-yearly checks.

Full details of the landscape and habitat management can be found in the LERMP.

Note – for phased or multi-plot developments a separate habitat management and maintenance plan is required, which must be submitted with the master plan: see guidance on phased developments.

Important Advice:
Please include **Figure E4** as a separate figure to show which structures and habitats will be managed, maintained and monitored post development as part of your proposal – also *see section I "Map checklist" at the end of this document)*.

E4.2 **Population monitoring, roost usage etc**: This should be in line with the monitoring requirements detailed in the Bat Mitigation Guidelines section 8.7 and Figure 4.

E4.2a Please complete the table below for the species and roost types listed. For all other species and roost types please provide information under E4.2b.

Species	**Roost type**	**Post-development monitoring requirement**
Common pipistrelle **Soprano pipistrelle** **Whiskered** **Brandts** **Daubenton's**	*Day roost* *Night roost* *Feeding* *Transitional/Occasional*	☒ None. There is no post-development requirement for proposals affecting bat roosts supporting up to any 3 species indicated, of the roost types listed, where they are used by low numbers of each species.

Natterer's **Brown long-eared**		☐ A single presence / absence survey at an appropriate time of year is to be undertaken. This should not take place in the first year following completion of development. Timing (year): ☐ Other (specify):
Serotine	*Day roost* *Night roost* *Feeding* *Transitional/Occasional*	☐ A single presence / absence survey at an appropriate time of year is to be undertaken. This should not take place in the first year following completion of development. Timing (year): ☐ Other (specify):
Lesser Horseshoe	*Day roost* *Transitional/Occasional*	☐ A single presence or absence survey at an appropriate time of year to be undertaken in year 2 post development plus a check of the condition and suitability of the roost. ☐ Other (specify):

E4.2b For all species and roost types not covered in the above table please include details of:

- Timing – state the years and months post development monitoring or other will be undertaken. Ensure that is consistent with the post development works detailed in section **E5b** of the **Work Schedule document WML-A13-a-E5a&b**.

N/A

- The type of monitoring which will be undertaken – include survey methods and equipment to be used. If it is expected any bats are to be taken or disturbed during this period please state anticipated numbers per species against each licensable activity.

N/A

- Specify which compensation/mitigation measures will be subject to monitoring (as referenced on Figure E4).

N/A

Please note that it will be a requirement of the licence to undertake remedial action should monitoring identify that further management/maintenance is required of any compensation/mitigation provided, to ensure that mitigation/compensation measures are working effectively and are fit for purpose.

Important advice: Please always consider whether any *post development* monitoring effort should be staggered over alternate years in cases where use of the compensation measures may not occur in the same year of provision.

E4.3 Mechanism for ensuring safeguard of mitigation/compensation and post-development management, maintenance and monitoring works:

Please explain what mechanism is in place to ensure safeguard of mitigation/compensation provisions (e.g. Restrictive Covenant, clause to relinquish future development rights in S106 agreement, NERC Act agreement, explicit recognition of site in local planning documents, designation as County Wildlife Site or similar.) The need for this, and the type of mechanism, will vary with the scheme and impact. For substantial impact schemes (e.g. destruction of a significant maternity roost, or important hibernation site), some mechanism is always required. If you offer no specific mechanism, explain how you believe the population will be free of threats as far as can be reasonably determined (**the expectation of the granting of a licence should not be used for this purpose**).

The Proposed Development is undergoing a DCO application, as part of this DCO application there will be conditions required as part of the granted DCO. In conjunction with this, Anglian Water are fully aware of the requirements of the Proposed Development and will ensure that sufficient funding is in place for the fulfilment of the actions required under the LERMP.

Habitat creation and biodiversity net gain as set out in the Biodiversity Metric 3.0 calculation will be secured through Schedule 2 of the DCO which includes a series of requirements which obligate The Applicant to implement the Landscape Masterplan and the LERMP (Application Document Ref 5.4.8.14).

The LERMP will be used to inform the safeguarding of the mitigation and compensation, as well as post-development management and maintained of the site and the newly created ecological receptors.

Explain how all post-development works (management, maintenance (including remedial action) and monitoring, as appropriate) will be ensured? Include a commitment that the monitoring, habitat management and maintenance work will be undertaken. Mechanism/s for ensuring delivery must be in place before applying for a licence (also see Section F).

The proposed WWTP is owned by Anglian Water, and it is therefore highly unlikely ownership of the WWTP will change in the future. Anglian Water is committed to supporting the mitigation proposed within this application. Some funding has been secured by Homes England to support Anglian Water with the relocation project.

Habitat creation and biodiversity net gain as set out in the Biodiversity Metric 3.0 calculation will be secured through Schedule 2 of the DCO which includes a series of requirements which obligate The Applicant to implement the Landscape Masterplan and the Landscape Ecology and Recreational Management Plan (LERMP) (Application Document Ref 5.4.8.14).

E5 Timetable of works: Please complete the **work schedule document WML-A13-a-E5a&b found on the 'bat' application form web page and append to your application pack.**

Important Advice: *Please note that from end of March 2014 a separate work schedule is a mandatory requirement to support a new bat licence application when using this template.*

F Declarations

If the mitigation/compensation area/s is/are not owned by the applicant, you must have consent from the relevant land owner(s). You must have also secured details of how any measures to maintain the population in the long term will be achieved (e.g. a legal agreement).

F1 Declaration Statement(s) – **You must <u>include</u> the following declarations within your Method Statement and include the appropriate answer (Yes/No/Not applicable):**

F1.1 **Re: section E1 -** I confirm that relevant landowner consent/s has/have been granted to accept bats into roosts or access into roosts on land outside the applicant's ownership:

N/A

F2.2 **Re: section E2 -** I confirm that landownership consent/s has/have been granted to allow the creation of the proposed compensation on land outside the applicant's ownership

N/A

F2.3 **Re: section E3** - I confirm that consent/s has/have been granted by the relevant landowner/s for monitoring, management and maintenance purposes on land outside the applicant's ownership

N/A

Comments if applicable:

This document provides information based on survey information up to Summer 2022 (prior to planning consent) and is considered a "ghost method statement", i.e., a draft method statement. Any

design or methodology amendments following planning consent being granted, or new survey information prior to construction being available, will inform the final method statement submitted to Natural England in support of a licence once all consents are in place.

Important Advice:

Unsecured consents statement:

If you have been unable to secure consents for any of the three declarations please explain why and detail any plans you have in place to obtain the consent(s) or provide details of any right(s) or agreement(s) that will enable the lawful implementation of the proposed mitigation, compensation and monitoring. Failure to provide the appropriate landowner consents means that the Method Statement is unlikely to meet the requirements for the FCS test to be met. It is therefore in your interest to ensure that the appropriate consents have been secured *before* applying for a licence.

G References: List any references cited, and include credits for source information.

H Annexes (supporting documents please append to your application pack)

H1 Pre-existing survey reports;

H2 Raw survey data.

I Check list of figures to be submitted with each Bat Method Statement

With your Method Statement and supporting documents please submit the following maps/figures – see table below. Note that some can be included within the Method Statement itself (if preferred) and others must be submitted individually (i.e. separate documents)**.** Maps/Figures must include the title, site name as referenced on your application form, date and figure reference. If a grid reference is more applicable (e.g. a bat house is being provided please included this). Include a scale bar (appropriate to the situation e.g. 100m on site maps, 1km on location maps) and direction of North etc.

Additional maps, photographs or diagrams should be included where necessary to adequately explain the scheme.

Figure reference	**Mandatory as will be included in the annexed licence, if applicable**	**Mandatory for assessment purpose only, but will not be included in the annexed licence**	**What it must show (also see details above on site reference, dating and naming).**
Figure B2.1	-	Yes, if the application is part of a phased or multi-plot development	**Master plan overview-** note – this is not the same as a master plan document, for which you should follow the guidance as stated in section B2.1.
Figure B2.2	-	Yes, if applicable	**Locations of other nearby bat licensed sites, or sites which will be impacted on by future development.**
Figure C5a	-	Yes	**Location map** at an appropriate scale for the application (often 1:50,000 or 1:25,000)
Figure C5b	-	Yes	**Survey area** showing all buildings, structures and habitats that are within the survey area and distinguishing those that were surveyed and those that were not. Indicate where surveyors were located for each of the surveys and their respective field of view. Aerial photographs should be provided where possible (ensure you have permission to use copy righted maps). If automated detectors and/or transect routes were used, ensure that these are indicated (as appropriate).

Figure C6	-	Yes	**Survey results -** provide clear, annotated and cross-referenced maps/plans/photographs to show the survey results (access points, location of roosts, flight lines, results of activity surveys where DNA samples were taken etc). Ensure the Figure is at a suitable scale to show the results. If presenting multiple survey results on a single Figure, ensure the results are clearly differentiated.
Figure D	**Yes**	**-**	**Impacts plan –** map/figure which must show all structures or habitats (clearly referenced) that will be disturbed, damaged or destroyed, detailing where the roosts and access points are.
Figure E2	**Yes** – but only if applicable to the application	**-**	**Non-standard capture and exclusion apparatus.** If these are proposed please include diagrams/photographs.
Figure E3	**Yes**	**-**	**Specifications for mitigation / compensation** (including all dimensions for bat lofts/houses/stand-alone structures and materials to be used etc and 8-figure grid reference). Mitigation / compensation (must show all habitat creation, restoration, boxes). It may be necessary to submit more than 1 figure if the proposal is large or complicated.
Figure E4	**Yes** – when monitoring and maintenance will be included in the licence	**-**	**Monitoring, management and maintenance map.** Please indicate the specific structures and habitat that are to be managed, maintained and monitored as part of this licence proposal. Ensure that they are correctly referenced and are consistent with other parts of the Method Statement and figures.

Definitions of roost types to be included in the application (further detail can also be found in the Bat Mitigation Guidelines and the BCT's "Bat Surveys Good Practice Guidelines"):

a. **Day roost**: a place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.

b. **Night roost**: a place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.

c. **Feeding roost**: a place where individual bats or a few individuals rest or feed during the night but are rarely present by day.

d. **Transitional / occasional roost**: used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.

e. **Swarming site**: where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites

f. **Mating sites**: sites where mating takes place from later summer and can continue through winter.

g. **Maternity roost**: where female bats give birth and raise their young to independence.

h. **Hibernation roost**: where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. Sites where hibernating bats have been confirmed by appropriate survey effort should be classed as '**hibernation confirmed**'.

i. **Satellite roost**: an alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

j. **Other** – please explain what the roost type is if not one of the above (we recognise that roost types are interchangable and not always easy to classify according to the nuances of certain species).

k. An **'alternative roost'** shall include: a purposely installed bat box; an existing roost which will not be impacted by the works; or other new/enhanced roosting opportunities. Any alternative roost must be suitable for the species, within or close to the existing roost and free from additional disturbance or development pressure.

G: References

Bat Conservation Trust. (2019). National Bat Monitoring Programme Annual Report 2019. Retrieved from https://www.bats.org.uk/news/2020/05/national-bat-monitoring-programme-annual-report-2019

Bat Conservation Trust. (2022, May). Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys. Retrieved from https://cdn.bats.org.uk/uploads/pdf/Interim-guidance-note-on-NVAs-May-2022-FINAL.pdf?v=1653399882

Cambridgeshire and Peterborough BAP. (2013). Cambridgeshire and Peterborough Environmental Records Centre. Retrieved from https://www.cperc.org.uk/

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

Mitchell-Jones, A. J. (2004). Bat Mitigation Guidelines. Peterborough: English Nature.

Mitchell-Jones, A. J., & McLeish, A. P. (2004). 3rd Edition Bat Workers' Manual. Peterborough: JNCC.

WCA. (1981). UK Public General Acts: Wildlife and Countryside Act. Retrieved from https://www.legislation.gov.uk/ukpga/1981/69/contents

Get in touch

You can contact us by:

Emailing at **info@cwwtpr.com**

Calling our Freephone information line on **0808 196 1661**

Writing to us at **Freepost: CWWTPR**

Visiting our website at [redacted]

You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/