The Former Stag Brewery, Mortlake

Protected Species Report

May 2020

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Client Name:	Reselton Properties Ltd
Document Reference:	WIE15582-102-R-2-3-3-PSR
Project Number:	WIE15582-102

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

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Comments

Comments

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1. Introduction

1.1. Waterman Infrastructure & Environment Ltd (Waterman IE) was commissioned by Reselton Properties Limited ('the Applicant') to carry out a series of updated bat surveys at the former Stag Brewery Site in Mortlake ('the Site') within the London Borough of Richmond Upon Thames ('LBRuT').

The Site

1.2. The Site is centred on Ordnance Survey Grid Reference (NGR) TQ 204 760 and is bounded by Lower Richmond Road to the south, the River Thames and the Thames Bank to the north, Williams Lane to the west and Bulls Alley (off Mortlake High Street) to the east. The Site is bisected by Ship Lane and currently comprises a mixture of dis-used large-scale industrial brewing structures and buildings, large areas of hardstanding and playing fields.

Development Proposals

1.3. The re-development of the Site will provide homes (including an increase in affordable homes, as part of the latest scheme amendments), complementary commercial uses, community facilities, a new secondary school alongside new open and green spaces throughout. Associated highway improvements are also proposed, which include potential highways works at Chalkers Corner junction.

1.4. The planning applications are as follows:

- Application A – hybrid planning application for comprehensive mixed-use redevelopment of the former Stag Brewery site consisting of:
    i) Land to the east of Ship Lane applied for in detail (referred to as 'Development Area 1' throughout); and
    ii) Land to the west of Ship Lane (excluding the school) applied for in outline (referred to as 'Development Area 2' throughout).
- Application B – detailed planning application for the school (on land to the west of Ship Lane).
- Application C –highways and landscape works at Chalkers Corner anticipated to now be progressed under Section 278 of the Highways Act 1980.

1.5. Full details and scope of all these applications are described in the submitted Planning Statement, prepared by Gerald Eve LLP and associated addendums.

Previous Survey Assessments

Historical

1.6. Previous ecological assessments were undertaken at the Site by Waterman IE in 2016 and 2017 to inform the Ecology Chapter of the 2018 Environmental Statement (ES) and to address consultation comments from LBRuT. These assessments comprised:

- An ecological data search;
- An 'Extended' Phase 1 Habitat Survey;
- A search for common invasive floral species;

- Preliminary bat roost inspections of buildings and trees;
- Evening emergence and dawn re-entry bat surveys;
- Bat activity surveys;
- Automated detector bat surveys;
- River wall inspection for roosting bats; and
- Black redstart *Phoenicurus ochruros* survey.

1.7. The results of the above surveys (except the river wall inspection) were reported within the 2018 PEA (ref. WIE10667-100-R-1-3-1-RA) and PSR (ref. WIE10667-100-R-7-3-1-PSR) which were provided as Technical Appendices to the 2018 ES. The results of the river wall inspection for roosting bats were presented in a separate report (ref. WIE10667-103-BN-2-1-2-LM) which was written to address consultation comments from LBRuT and is appended to the May 2019 ES Addendum.

Current

1.8. In support of the current applications an updated PEA (ref. WIE15582-102-R-1-1-4-PEA) was undertaken in 2019 and comprised an ecological data search, 'Extended' Phase 1 Habitat Survey, a search for common invasive floral species and Preliminary Roost Assessment at the buildings/structures and trees on Site.

1.9. The PEA found the Site to comprise a large former brewery complex (the Stag Brewery Site) and a road junction known as Chalkers Corner. The brewery complex was dominated by buildings and hardstanding. Other habitats present at the Site include a small section of Mortlake Green, amenity grassland in the form of Watney's Sports Ground playing fields, scattered trees, ornamental planting, a hedge, and ephemeral and tall ruderal vegetation (**Figure 1**).

1.10. The PEA assessed the Site as having limited opportunities to support black redstart. The buildings offered little nesting areas, if any owing to their simple structure and the nesting bird prevention measures installed (spikes and netting), thus resulting in a lack of holes and singing posts. In addition, the habitats on Site that could be of value to black redstarts including the ephemeral vegetation / gravel were sparse in size. It is noted that the River Thames which lies adjacent to the northern boundary of the Site is known to be an important habitat corridor for black redstarts in London, however given the Sites current limited value and that no black redstarts were recorded in 2016 the need for additional surveys/assessment has been scoped out.

1.11. As part of the PRA the Site was assessed to still contain opportunities to support roosting bats. The PRA undertaken at the buildings recorded the following buildings/structures (**Figure 1**) as having potential:

- Stables Court (B3) - **Low potential**;
- Finishing Cellar / Chip Cellar / Brew House (B6) - **Low potential**;
- The Maltings (B8) - **Moderate potential**;
- Packaging Building (B9) - **Low potential**;
- L Block – former bottling building and former hotel (B10) - **Low potential**;
- CO2 Block (B12) - **Low potential**;

- Power House (B13) - **Low potential**;
- River Wall (Adjacent to River Thames) – **Moderate potential**; and
- River Wall (South-east corner of Site – Figure 1, Target Note 3) – **Low potential**; and
- Jolly Gardener's Pub (B14 - located outside of but adjacent to the Site) – **Moderate potential**.

1.12. All other buildings on-Site and adjacent were assessed as having **negligible** potential to support roosting bats. A description of each building is provided within the PEA.

1.13. The PRA undertaken at the trees was targeted upon those trees that will be removed as part of the Development. A total of five such trees (**Figure** 1, T48, T49, T67, T68 and T83 - ref. 10667-WIE-ZZ-XX-DR-L-7704-P03) were assessed to have **moderate** potential to support roosting bats. The remaining trees were assessed as having **low** or **negligible** potential to support roosting bats.

1.14. The PEA assessed the Site itself to offer limited foraging and commuting opportunities for bats (i.e. **low** suitability) owing to the predominant habitat type comprising buildings and hardstanding. The trees around the periphery and within the north-western corner of the Site offer some foraging and commuting opportunities for bats. However, given their context and limited extent at the Site, it is unlikely that the Site is an important foraging resource for local bat populations. The adjacent River Thames to the north, and Mortlake Green to the south of the Site are likely to provide a much greater foraging and commuting resource.

Aims and Objectives of this Assessment

1.15. As a result of the updated PEA the Site was assessed to still have the potential to support roosting bats and potentially be of value to commuting and foraging bats given the presence of the River Thames adjacent to the Site. Given the time elapsed since the previous bat surveys were undertaken by Waterman in 2017 (detailed within the 2018 PEA) and River Wall Inspections in 2018, and in light of the proposed amendments to the Development and update 'Extended' Phase 1 Habitat Survey, further update surveys for bats have been undertaken at the Site. This Protected Species Report now supersedes all previous versions with regards to bats.

1.16. The purpose of this report is to:

- Present the findings of the updated bat surveys undertaken at the Site and outline any resulting constraints to the Development;
- Allow any further ecological assessments (beyond those identified within the update PEA) needed to inform an Ecology Chapter in support of the EIA, to be identified and appropriately designed, as required;
- Allow any further likely mitigation measures (beyond those identified within the update PEA and in line with the Mitigation Hierarchy[1]) to be developed, to ensure compliance with nature conservation legislation and planning policy (**Appendix A**);
- Allow any further likely ecological opportunities and enhancement measures (beyond those identified within the updated PEA) to be developed to ensure compliance with nature conservation legislation and planning policy; and

[1] BS 42020:2013 Clause 5.2

- Form a basis for agreeing the scope of the Ecology Chapter in support of the EIA with relevant consultees, as/if required.

2. Methodology

River Wall Inspection

2.1. Two updated endoscope inspections of those potential bat roosting features present on the section of the river wall adjacent to the River Thames were undertaken on 17 July and 2 September 2019. During this time, any features present on the wall within the south-eastern corner of the Site that could be accessed by ladder were also subject to endoscope inspection.

2.2. Each potential Roosting Feature (PRF) was systematically inspected for evidence of bat use (e.g. droppings, scratch marks, staining and sightings as well as bats themselves) using a RIGID micro CA-350 inspection camera with a ladder used to access any PRF's present at height. The inspections were led by a Natural England Class Level 2 Bat Licence holder.

Evening Emergence and Pre-Dawn Re-entry Surveys

2.3. To confirm the presence or likely absence of roosting bats within buildings/structures (B3, B6, B8, B9, B10, B12, B13, B14, **Figure 1** and section of wall within the south-east corner of the Site, **Figure 1**, Target Note 3) and trees (T48, T49, T67, T68 and T83, **Figure 1**), updated evening emergence and / or pre-dawn re-entry surveys were undertaken based on current best practice guidelines (Collins. J, 2016)[2].

2.4. A sufficient number of surveyors were used during each survey to ensure all of the potential bat access/roosting features at the buildings/structures and trees were covered. The surveys were led by an ecologist who holds a Natural England Class Level 2 Bat Survey Licence for all counties and species in England. The positions of the surveyors during the evening emergence / pre-dawn re-entry surveys are presented on **Figure 2**.

2.5. The surveys were undertaken using full spectrum BatLogger M and time expansion (Pettersson D240X) bat detectors with calls recorded from the Pettersson D240X recorded to solid state MP3 recorders. This survey equipment is considered suitable for detecting all resident species of UK bats.

2.6. The surveys were undertaken in appropriate weather conditions and within the recognised bat active season for these types of surveys. The evening emergence surveys commenced at least 15 minutes prior to sunset and continued for at least an hour and a half thereafter. The dawn re-entry surveys commenced at least an hour and a half before sunrise and continued until sunrise. **Table 1** below provides a summary of the bat survey parameters.

Table 1: Summary of Evening Emergence and Dawn Re-Entry Bat Surveys

[2] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1

Survey	Date	Sunset / Sunrise Time	Time Start / End (GMT+1)	Wind (Beaufort)	Cloud Cover (Oktas)	Temp Start / End (ºC)
Evening emergence (B8, T67, T68 and T83).	07.08.19	20:38	20:08 / 22:10	2-3	4	20ºC / 18ºC
Dawn re-entry (B12, B14, T48, T49).	08.08.19	05:35	04:05 / 05:35	1-2	1	16ºC / 13ºC
Evening emergence (B3, B9 and B10).	12.08.19	20:29	20:15 / 22:30	1	2	15ºC / 14ºC
Dawn re-entry (B6 and B13)	13.08.19	05:40	03:40 / 05:40	1	1	13ºC / 13ºC
Evening emergence (B14, T48, T49 and section of wall within south-east corner of Site)	27.08.19	20:00	19:45 / 21:30	1	0	28ºC / 26ºC
Dawn re-entry (B8, T67, T68, T83)	28.08.19	06:06	04:30 / 06:10	1-2	8 (light rain from 05:20-05:30)	18ºC / 18ºC
Evening emergence (B8)	09.09.19	19:30	19:05 / 21:15	0	8	14ºC / 14ºC

Bat Activity Surveys

2.7. The Site is assessed as comprising low habitat suitability for bats given its urban nature. To determine the use of the habitats along the northern boundary of the Stag Brewery component of the Site adjacent to the River Thames as well as Watney's Sports Ground, three updated bat activity surveys were undertaken.

2.8. The two evening activity surveys commenced from sunset to until two hours thereafter, with the dawn activity survey commencing two hours before, and continuing until, sunrise. A pair of surveyors, using a full spectrum BatLogger M detector, followed a pre-determined transect route (**Figure 3**).

2.9. All surveys were undertaken in appropriate weather conditions and within the recognised optimal bat active season for activity surveys at a Site of this nature. **Table 2** below provides a summary of the timings and weather conditions of the bat surveys undertaken. Any bats observed were recorded and information noted, where possible, included:

- time;
- direction of flight;
- use of landscape;
- flight characteristics;
- size;
- height; and
- behaviour.

Table 2: Summary of Bat Activity Surveys

Survey	Date	Sunset / Sunrise Time	Time Start / End (GMT+1)	Wind (Beaufort)	Cloud Cover (Oktas)	Temp Start / End (ºC)
1	30.07.19	20:53	20:53 / 22:53	2-3	7	18ºC / 18ºC
2	13.08.19	05:40	03:40 / 05:40	1	1	11ºC / 11ºC
3	02.09.19	19:46	19:46 - 21:46	2	6	20ºC / 19ºC

Automated Detector Surveys

2.10. To supplement the activity surveys, a single static automated bat detector (SM2BAT+) was deployed at the Site based on current best practice guidelines. The static detector was positioned beneath the Budweiser Sign (**Figure 3**) on the wall adjacent to the River Thames.

2.11. The static detector recorded for five consecutive nights in July, August and September 2019. The detector was programmed to record from 30 minutes before sunset until 30 minutes after sunrise. **Table 3** below provides a summary of the bat survey parameters[3] for each deployment session.

Table 3: Dates and Weather Conditions of Supplementary Automated surveys

Survey Month	Date	Sunset Time	Max Wind speed (mph)	Rain (inches)	Average Day Temp ºC
July 2019	17 July 2019	21:12	14	None	20
	18 July 2019	21:11	16	0.08	20
	19 July 2019	21:10	16	0.39	15
	20 July 2019	21:09	21	None	21
	21 July 2019	21:08	16	None	19
August 2019	13 August 2019	20:31	15	0.03	16
	14 August 2019	20:29	16	0.43	15
	15 August 2019	20:27	21	0.12	19
	16 August 2019	20:25	18	0.08	15
	17 August 2019	20:23	18	0.08	19

[3] Historical weather information sourced from www.wunderground.com

Survey Month	Date	Sunset Time	Max Wind speed (mph)	Rain (inches)	Average Day Temp ºC
September 2019	02 September 2019	19:45	17	None	16
	03 September 2019	19:43	16	None	18
	04 September 2019	19:40	21	None	17
	05 September 2019	19:38	14	None	15
	06 September 2019	19:36	20	None	14

Data Analysis

Evening Emergence and Pre-Dawn Re-Entry Surveys

2.12. All data was downloaded and BatSound 4.4 analysis software was used to manually identify bat echolocation pulses to species level, where possible. Manual analysis was undertaken using the parameters stated within Russ, 2012[4].

Activity Surveys

2.13. All data was downloaded and BatExplorer 2.1.5 analysis software was used to manually identify bat echolocation pulses to species level, where possible. Manual analysis was undertaken using the parameters stated within Russ, 2012.

Automated Detector Surveys

2.14. All data was downloaded and analysed in AnaLookW 4.1t to identify bat echolocation pulses to species level, where possible. The Zero Crossing Analysis (ZCA) sequence files were filtered using parameters set out in Russ, 2012 to facilitate analysis. However, all files were also manually checked by a suitably experience ecologist for bat passes fitting the outlined parameters.

2.15. The frequency of maximum energy, as described in Russ, 2012, is commonly the most useful characteristic of a bat call to aid in identification of a species. This has been calculated in AnalookW using the characteristic frequency of the body of the call (or constant frequency).

Constraints and Limitations

2.16. Given that all potential PRFs along the section of river wall adjacent to the River Thames could be accessed via ladder and endoscopic inspection this survey methodology was adopted over emergence/re-entry surveys as it increases the chances of evidence of occupation by bats (such as droppings) being discovered as well as bats themselves. As not all PRFs associated with the section of wall within the south-east corner of the Site could not be safely accessed via ladder and endoscopic inspection, this was also subject to an evening emergence survey.

[4] Russ, J. (2012): 'British Bat Calls. A guide to Species Identification'. Pelagic Publishing, Exeter.

2.17. No bat activity surveys were undertaken with regard to area at Chalkers Corner. This is due to the high level of associated street lighting present within this area and therefore any associated bat activity is likely to be on an infrequent and opportunistic basis from common species of bats adapted to urban environments. As such, it is considered that any adverse effects upon foraging and commuting bats as result to potential highways works to Chalkers Corner would be insignificant.

2.18. For the purposes of this report, when referring to the transect activity surveys a 'bat pass' refers to each sound file recorded by a surveyor, or where there was no ambiguity with regards to species identification if the bat pass was not recorded. With regard to the supplementary automated surveys, a bat pass was defined as a sequence of three or more bat echolocation pulses from the same bat species which had less than a five second interval between the first and last pulse within each ZC file. When two bat passes from the same species were found to be present within a single file, two labels were assigned.

2.19. There is considerable crossover between echolocation calls within British bat species (Russ, 2012). Given the close parameters of the frequency range of the calls of certain bat species, analysis of bat calls from the group *Myotis* is fraught with difficulties. Whilst slope, call duration and inter-pulse intervals have been used as indicators to separate *Myotis* calls from frequency modulated *Pipistrellus* calls, for the purposes of this assessment, identification has only been made down to the group *Myotis* level.

2.20. Both FM (Frequency Modulation)-qCF (quasi Constant-frequency calls) and qCF parameters are provided within Russ, 2012 for the *Nyctalus* species, however there is little definition for classifying the different nature of these vocalisations resulting in a large amount of crossover between the parameters of the *Nyctalus* species. The lower frequency vocalisation calls of noctule bats can be differentiated from Leisler's *Nyctalus leisleri* as the Leisler's bat does not echolocate below 20.9 kHz. However, as there is crossover between the parameters of vocalisations above this frequency, Leisler's bats can be particularly difficult to differentiate from noctule.

2.21. All other contractors, designers and the client should be aware of the following:

- The design recommendations within this report are assessed to be the most effective ecological solution at this stage of the project;
- No other pre-construction information has been provided, obtained or referred to during the preparation of this report (including, but not limited to, services information, geotechnical reports and ordnance reports);
- In deciding whether and how to progress with this project, it will be incumbent upon the client, designers and contractors to obtain and refer to relevant pre-construction and maintenance information, as required by the Construction (Design and Management) Regulations to ensure compliance;
- Waterman IE can assist with the development and co-ordination of this design to support effective risk management on this project upon request.

3. Results

River Wall Inspection

3.1. The results of the updated endoscope inspections undertaken upon the river wall are detailed in **Table 4** below. In summary a total of fifteen PRFs were recorded, both on the interior and exterior of the wall (Site and river side) and were assessed to be of between low and moderate bat roosting potential. The locations of those PRFs recorded are provided on **Figure 4**.

Table 4: Results of River Wall Endoscope Inspections

Description	Building Photographs	Bat Roost Rating
PRF 1 (River Side) Feature present on the river side of the wall. The front of 'Budweiser' sign comprises sheet metal wording attached to what appears to be wooden boarding. The rear of the sign comprises a steel frame and corrugated steel sheeting. Whilst the sign is assessed to be a solid structure with no cavities, gaps are present between the wooden boarding and 'Budweiser' lettering. The gaps are 4 to 5cm at their widest and open to the elements from above, below and the sides. During the inspection no signs of roosting bats were recorded.		**Low**
PRF 2 (Site Side) Feature present on the Site side of the wall. This section of the wall has areas of paint which are peeling, that may offer temporary sheltering opportunities for bats. During the inspection no signs of roosting bats were recorded.		**Low**
PRF 3 (Site Side) Feature present on the Site side of the wall. An open gap is present between steel support and the wall with 14 of these features present in close succession. The majority of the supports are flush with the wall or with a wide gap present, however several have a 1-3cm gap present along the length of the support. During the inspection no signs of roosting bats were recorded.		**Low**

Description	Building Photographs	Bat Roost Rating
PRF 4 (Site Side) Feature present on the Site side of the wall with 4 of these features present in close succession. The features are fully bricked up on the river side, with various heights of bricking up on the Site side, creating a cavities between approximately 40-80cm high. During the inspection no signs of roosting bats were recorded.	 	**Moderate**
PRF 5 (Site Side) Feature present on the Site side of the wall. An area of render has broken away from the wall and has created a linear gap between the render and the wall. The gap is 1cm wide at its greatest extent and protrudes up between 2 to 6cm. It is arguable if the cavity present is wide enough to provide an entrance point for bats, however spider webs are present both in the cavity and at the entrance. During the inspection no signs of roosting bats were recorded.		**Low/Moderate**
PRF 6 (Site Side) Feature present on the Site side of the wall. Linear gaps are present in the wall where mortar is missing, in the vicinity of PRF 5. The gaps are 1 to 1.5cm tall, 4cm at their widest and protrude into the wall 3-5cm. The gaps contain debris from the mortar and spider webs are present. During the inspection no signs of roosting bats were recorded.		**Moderate**
PRF 7 (Site Side) Feature present on the Site side of the wall. An open gap is present around the window frame with 3 of these features present in close succession. The gap is 3 to 4cm wide and 5cm deep. Spider webs are present. During the inspection no signs of roosting bats were recorded.		**Low**

Description	Building Photographs	Bat Roost Rating
PRF 8 (River Side) Feature present on the riverside of the wall. A crack is present in the wall running up the brickwork from 1m to 3m above ground level. The crack is assessed to be superficial and is 2cm at its widest and contains snails, woodlice and spider webs. The crack is 6cm at its deepest. During the inspection no signs of roosting bats were recorded.		**Low**
PRF 9 (River Side) Previously a moderate PRF (top photo) located on the river side of the wall and is one of the river side features of PRF 4. However, this feature has now been vandalised (bottom photo) and is considered too large exposed to support roosting bats.	 	**Negligible**
PRF 10a and 10b (River Side) Both features are present on the river side of the wall and again are river side features of PRF 4. The features are the same except that 10a comprises a horizontal access point in the bottom left hand corner and 10b comprises 2 no. vertical access points down the left-hand side. The features are present at between 0.5 and 1m above ground level. Where previous bricking up works were undertaken the resulting cavity has been filled with debris. Where external mortar has been lost, internal debris which filled the cavity has also been lost, creating small cavities behind. The access points are 2 to 3cm high and 2 to 7cm long, with the internally cavities protruding between 5 and 10cm back and 5 to 7cm across.		**Low**

Description	Building Photographs	Bat Roost Rating
Old spider webs are present within the cavities and during the inspection no signs of roosting bats were recorded.		
PRF 11 (River Side) Feature present on the riverside of the wall. A gap is present between the top of a 'new' wall (constructed from darker brick work as part of previous bricking up work) and a concrete lintel above. The gap is 5cm wide (2cm wide during previous survey) and goes up 2cm and back the width of a brick. No internal cavity is present behind. During the inspection no signs of roosting bats were recorded.		**Low**
PRF 12 (River Side) Feature present on the riverside of the wall. A large crack is present at the stone lintel at the top of the wall (above ladder). The crack has split the stonework in two and has expanded in width to 5-6cm at its widest. The cavity is therefore open to the elements and leaf little and spider webs are present and it is considered that the gap is now too open and exposed to be of value to roosting bats. During the inspection no signs of roosting bats were recorded.		**Negligible**

Description	Building Photographs	Bat Roost Rating
PRF 13 (River Side) Feature present on the river side of the wall and is a river side feature of PRF 4. The feature is present at 1.5m above ground level and is assessed to have formed due to bricking up work. The access point (created as a result of missing mortar) is 3 to 4cm high and 7 to 8cm wide and leads into a confined internal cavity. The cavity runs 1m along the top of the brick work and is 10cm wide but also drops down by 5cm on the site side of the wall. The cavity contains debris from the brick work including mortar and spider webs are present. During the inspection no signs of roosting bats were recorded, however a mouse was observed inside.		**Moderate**
PRF 14 (River Side) Feature present on the riverside of the wall. A crack is present above the bricked-up window. The crack is 1.5cm at is widest with spider webs and woodlice present. During the inspection no signs of roosting bats were recorded.		**Low**
PRF 15 (Site Side) Several areas of missing brick work within the south-eastern corner of the Site. The missing brick work has created cavities approximately 10cm in height, 15cm in width and 10-15cm in depth. At the higher feather there is also a crack in its top approximately 1cm in width and 1-cm deep. During the inspection spider webs were present with no signs of roosting bats recorded.		**Low**

Description	Building Photographs	Bat Roost Rating
PRF 15 (Site Side) Gaps in brick work between the wall and a buttress within the south-eastern corner of the Site. The gap is approximately 1.5cm wide at its widest and 20-25cm in height. No enclosed cavity is present with the gap running through to the other side of the buttress. During the inspection spider webs were present with no signs of roosting bats recorded.		**Low**

Evening Emergence and Pre-Dawn Re-entry Surveys

3.2. The following results section should be read in conjunction with the bat surveyor positions detailed on **Figure 2**.

3.3. In summary, a single soprano pipistrelle *Pipistrellus pygmaeus* bat was observed emerging from a gap within a boarded-up window on the second floor of the northern side of B8 (**Appendix B**, Plate 1).

3.4. No bats were observed emerging from or entering buildings B3, B6, B9, B10, B12, B13 and B14; the section of wall within the south-eastern corner of the Site; or those moderate potential trees proposed for removal (T48, T49, T67, T68 and T83). However, foraging and commuting activity by common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle, noctule *Nyctalus noctule* and serotine *Eptesicus serotinus* bats was recorded during the surveys, as detailed within **Table 5** below.

Table 5: Updated Evening Emergence and Pre-Dawn Re-Entry Survey Results

Building/ Tree Number	Survey Type / Date	Survey Results	Summary
B3	Evening emergence 12/08/19	Foraging and commuting activity (c.35 passes) from noctule, common pipistrelle and soprano pipistrelle bats. The majority of activity during the survey was by soprano pipistrelle bats and recorded to the north of B3 within the gardens of the adjacent residential properties along Williams Lane.	No bat roost present.
B6	Dawn re-entry 13/08/19	No bats recorded during the survey.	No bat roost present.

Building/ Tree Number	Survey Type / Date	Survey Results	Summary
B8	Evening emergence 07/08/19	Foraging and commuting activity (c.26 passes) from common and soprano pipistrelle bats recorded, with bats observed commuting between Mortlake Green and the River Thames. A single soprano pipistrelle bat was observed emerging from a gap within a boarded-up window on the second floor of the northern side of B8 (**Appendix B**, Plate 1).	Soprano pipistrelle day roost present.
	Dawn re-entry 28/08/19	Foraging and commuting activity (c.12 passes) from common and soprano pipistrelle passes recorded. One soprano bat was observed foraging along the tree line adjacent to the River Thames, all other bats recorded were single passes.	
	Evening emergence 09/09/19	Foraging and commuting activity (c.42 passes) from common pipistrelle and soprano pipistrelle. In addtion two serotine passes were recorded, however these bats were not seen. Two soprano bats were recorded flying along the southern edge of B8, whilst one common and one soprano pipistrelle were recorded flying towards the River Thames from Mortlake Green. A soprano pipstrelle was also recorded flying along the river towpath in an easterly direction.	
B9	Evening emergence 12/08/19	Foraging and commuting activity (c.6 passes) from common and soprano pipistrelle passes recorded, all heard not seen.	No bat roost present.
B10	Evening emergence 12/08/19	Foraging and commuting activity (c.14 passes) of common and soprano pipistrelle passes recorded. Common pipistrelle was observed briefly foraging the northern edge of the building.	No bat roost present.
B12	Dawn re-entry 08/08/19	Foraging and commuting activity (c.4 passes) of common pipistrelle passes recorded, all heard not seen.	No bat roost present.
B13	Dawn re-entry 13/08/19	Single pass from a single soprano pipistrelle bat recorded, heard not seen.	No bat roost present.

Building/ Tree Number	Survey Type / Date	Survey Results	Summary
B14	Dawn re-entry 08/08/19	Foraging and commuting activity (c.37 passes) from noctule, common pipistrelle and soprano pipistrelle bats recorded, with most activity from common pipistrelle. Soprano pipistrelle observed foraging in Mortlake Green and a common pipistrelle bat commuting west to east along the trees down the A3003.	No bat roost present.
	Evening emergence 27/08/19	Foraging and commuting activity (c.12 passes) of soprano pipistrelle passes and a single common pipistrelle pass. All bats were heard not seen.	
Wall (within south-eastern corner of Site)	Evening emergence 27/08/19	Foraging and commuting activity (c.9 passes) of common and soprano pipistrelle passes recorded. Both species were observed commuting along the Site side of the wall and then flying off Site.	No bat roost present.
T48 & T49	Dawn re-entry 08/08/19	Two soprano pistrelle and one common pipistrelle passes heard. The only bat observed was a soprano pipistrelle flying above the nearby security light and under the tree canopy.	No bat roost present.
	Evening emergence 27/08/19	Two soprano pistrelle and three common pipistrelle passes heard. The only bat observed was a common pipistrelle flying north towards the River Thames through the tree line.	
T67 & T68	Evening emergence 07/08/19	No bats recorded.	No bat roost present.
	Dawn re-entry 28/08/19	No bats recorded.	
T83	Evening emergence 07/08/19	Four soprano pistrelle and one faint noctule pass heard but not seen.	No bat roost present.
	Dawn re-entry 28/08/19	No bats recorded.	

Bat Activity Survey

3.5. Descriptions of bat activity recorded during each activity survey are provided below and illustrated on **Figures 5** and **6**.

Evening Activity Survey (30/07/19)

3.6. A total of 113 bat passes were recorded along the transect survey route (**Figure 5**). Of these, 75 passes were by common pipistrelle and 38 by soprano pipistrelle bats. The first bat call recorded was of a soprano pipistrelle at 21:01 (8 minutes after sunset) which was heard but not seen. The majority of bat passes recorded were not observed, however those bats which were observed are detailed within **Table 6** below:

Table 6: Bats Observed During July 2019 Evening Bat Activity Survey

Time	Species	Activity Description
21:07	Soprano pipistrelle	Single pass commuting east along river at 10m above ground level.
21:10	Soprano pipistrelle	Single pass commuting east along river at 3m above ground level.
21:31	Soprano pipistrelle	Two bats commuting east across Watney's Sports Ground at 5m above ground level.
21:33	Soprano pipistrelle	Single bat foraging around trees in the north of Watney's Sports Ground.

Dawn Activity Survey (13/08/19)

3.7. No bat activity was recorded during this survey.

Evening Activity Survey (02/09/19)

3.8. A total of 52 bat passes were recorded along the transect survey route. Of these, 34 passes were by common pipistrelle, 17 by soprano pipistrelle and one by noctule bats. The first bat call was recorded at 20:02 (16 minutes after sunset) and it was a soprano pipistrelle which was heard but not seen. The majority of bat passes recorded were not observed, however those bats which were observed are detailed within **Table 7** below:

Table 7: Bats Observed During September 2019 Evening Bat Activity Survey

Time	Species	Activity Description
20:05	Soprano pipistrelle	Foraging along the towpath at 3m above ground level.
20:10	Soprano pipistrelle and common pipistrelle	Foraging along the towpath at 3-5m above ground level.

Automated Detector Surveys

3.9. A total of six confirmed bat species were recorded by the automated detectors deployed across the Site, namely common, soprano and Nathusius' pipistrelle, together with noctule, Leisler's and serotine bats. *Myotis sp*. bats were also recorded however, and as detailed within the limitation section of this report, identification down to species level could not be made.

3.10. **Table 8** provides a summary of the number of passes recorded by each species during each automated bat detector survey session.

Table 8: Results of Supplimentary Automated Surveys

Recording Period	Common Pipistrelle	Soprano Pipistrelle	Nathusius' Pipistrelle	Noctule	Serotine	Leisler	Myotis Species	Total no. of Bat Passes
23/07/2017 – 27/07/2107	677	237	-	-	-	-	4	**918**
13/08/2017 - 17/08/2017	842	790	-	6	14	2	-	**1,654**
02/09/2019 – 06/09/2019	855	390	1	5	6	1	3	**1,261**
Total	**2,374**	**1,417**	**1**	**11**	**20**	**3**	**7**	**3,833**

3.11. **Table 9** provides a summary of the earliest and latest recording times of those bat species recorded during the automated bat detector surveys.

Table 9: Results of Supplimentary Automated Surveys

Bat Species	Earliest Time (mins before/after sunset)	Latest Time (mins before/after sunrise)
July 2019		
Common Pipistrelle	+20	-32
Soprano Pipistrelle	+16	-33

Bat Species	Earliest Time (mins before/after sunset)	Latest Time (mins before/after sunrise)
Myotis	+86	-152
August 2019		
Common Pipistrelle	+20	-28
Soprano Pipistrelle	+9	-25
Noctule	+88	-171
Serotine	+24	-94
Leisler's	+62	-382
September 2019		
Common Pipistrelle	+17	-29
Soprano Pipistrelle	+7	-24
Nathusius' Pipistrelle	+123	-511
Noctule	+19	-376
Serotine	+29	-468
Leisler's	+466	-168
Myotis	+225	-283

4. Discussion and Recommendations

Roosting Bats

4.1. As a result of those updated evening emergence and pre-dawn re-entry surveys undertaken in 2019, an active soprano pipistrelle day roost has been recorded within The Maltings (building B8). Roosting bats are assessed as to be likely absent from those remaining buildings on Site, in addition to trees T48, T49, T67, T68 and T83 and the river wall (including the section within the south-eastern corner of the Site).

4.2. The supplementary automated activity surveys recorded a number of early (with regards to minutes after sunset) and late (with regards to minutes before sunrise) passes of both common and soprano pipistrelle bats, and early recordings of noctule and serotine (**Table 9**). Whilst a soprano pipistrelle roost has been confirmed within The Maltings, which is likely to account for the recording times for this species, as no roosting bats were recorded within any other buildings on Site, it is also likely that a common pipistrelle, and potentially a noctule and serotine, roost is present within the local proximity of the Site.

4.3. Given the earliest (and latest) timings, and number of passes, of those other species recorded during the supplementary automated activity surveys, it is considered likely that no roosts of these species are present within the local proximity of the Site.

4.4. The average emergence time of those species recorded during the supplementary automated activity surveys are provided within **Table 10** below, together with the earliest time recorded during the survey.

Table 10: Earliest and Average Emergence Times

Bat Species	Earliest Time (mins before/after sunset)	Research on Emergence Times
Common Pipistrelle	+17	Mean emergence time of 24.8 minutes after sunset and a median time of 22.76 minutes. Standard deviation of 17.9 minutes, and some were noted emerging at seven minutes after sunset[5]
Soprano Pipistrelle	+7	Mean emergence time of 33.5 minutes after sunset and a median time of 25 minutes. Standard deviation was 21.5 minutes[5]
Nathusius' Pipistrelle	+123	11-50 minutes[6]
Noctule	+19	Typically, 0-40 minutes after sunset[7] and occasionally before

[5] Davidson-Watts, I. & Jones, G. 2006: 'Differences in foraging behaviour between *Pipistrellus pipistrellus* (Schreber, 1774) and *Pipistrellus pygmaeus* (Leach, 1825)'. Journal of Zoology, 268, 55-62.
[6] Gelhaus. M, & Zahn. A (2010): 'Roosting ecology, phenology and foraging habitats of a nursery colony of *Pipistrellus nathusii* in the southwestern part of its reproduction range'. Vespertilio 13-14: 93-102, 2010
[7] Racey, P. A. 1991: *The Handbook of British Mammals* (Ed. by G. B. Corbet & S. Harris), pp. 117-121. Oxford: Blackwell.

Bat Species	Earliest Time (mins before/after sunset)	Research on Emergence Times
		sunset. Median emergence time is 5 minutes after sunset[8]
Serotine	+24	Median emergence time of 20 minutes after sunset[6]
Leisler's	+62	Median emergence time of 20 minutes after sunset[30]
Myotis	+86	Median emergence times of between 32 and 84 minutes after sunset[6] (average of 56 minutes after sunset).

Roost Classification

4.5. Soprano pipistrelle is considered one of the most common and widespread bat species in England (population estimate of 2,980,000)[9]. As such this species is of a low conservation status and listed on the IUCN Red List as being a species of Least Concern[5].

4.6. A single soprano pipistrelle bat was recorded emerging from The Maltings on one survey occasion only. Consequently, it is assessed that this roost comprises a day roost which is utilised by a single, or very low numbers of, soprano pipistrelle bat(s). As such, this roost type is assessed to be of low conservation significance.

Licencing Requirements

4.7. The Maltings building will be refurbished and converted into residential apartments and community space as part of the Development. These works have potential to impact upon the soprano pipistrelle day roost recorded and therefore contravene the protection afforded to roosting bats by legislation (**Appendix A**). As a result, an approved Natural England (NE) European Protected Species (EPS) Mitigation Licence will be required to permit the proposed works to The Maltings.

4.8. Given that only a single bat was recorded as roosting within The Maltings; the low conservation status of this species; and low conservation significance of roost type i.e. a day roost of a common and widespread species, it is assessed that the criteria to use the NE Bat Low Impact Class Licence (CL21) is achieved, for which a detailed Method Statement and Mitigation Strategy is not required.

[8] Jones, G., & Rydell, J. 1994. Foraging Strategy and Predation Risk as Factors Influencing Emergence Time in Echolocation Bats. *Philosophical Transactions: Biological Sciences,* **346**, 445-455.
[9] Natural England Joint Publication (2018): 'A review of the Population and Conservation Status of British Mammals'. JP025

Refurbishment/Clearance Works, Timings and Update Survey

4.9. As part of the Bat Low Impact Class Licence those features suitable for supporting roosting bats, such as the window boarding's, will need to be subject to soft strip working practices and removed sensitively through the use of hand tools prior to the commencement of full refurbishment works.

4.10. Due to the current internal condition of The Maltings, no internal inspections have been undertaken to date. However, if possible, and safe to do so (in consultation with the Principal Contractor), it is recommended that a further internal inspection of the building is also undertaken as part of the above soft strip working practices and any other internal roosting features are also removed at this time.

4.11. It will be a requirement of the NE Bat Low Impact Class Licence that all building works at B8 will be undertaken in the presence of the suitably qualified and licenced ecologist to which the Bat Low Impact Class Licence is assigned.

4.12. It is recommended that the above works are undertaken at a time of year which avoid avoids the main bat hibernation period (November to February, weather dependent).

4.13. Further recommendations for the timing of works with regards to other faunal species, such as birds, are provided within the PEA.

4.14. It will be a requirement of the NE Bat Low Impact Class Licence for those evening emergence and dawn re-entry surveys detailed within this report to be updated within the year refurbishment works at B8 (The Maltings) are proposed to be undertaken in order to ensure as up to date survey information as possible is provided to allow for the licence to be determined.

4.15. In addition to the above, should there be a period of greater than 18 months since the time those remaining evening emergence and dawn re-entry surveys detailed within this report were undertaken and the commencement of preparation and construction/refurbishment works for each of the respective buildings; trees; and the wall, further update surveys should be undertaken as conditions at the Site may have changed and further bats roosts become established at the Site.

4.16. Furthermore, should any additional trees on Site be highlighted for removal, these trees should also be subject to update ground-based inspections and /or evening emergence or dawn re-entry surveys as necessary and at the correct time of year, in line with current best practice guidelines (Collins. J, 2016).

Mitigation and Enhancement

4.17. As the refurbishment works for The Maltings will be covered under a Bat Low Impact Class Licence, no compensatory measures are required to be implemented at the Site to compensate for the loss of the bat roosts present. However, it is recommended that a bat box is erected upon a retained tree at the start of the soft strip working practices so that a suitable receptacle is present on Site should any bats be discovered during the course of these works.

4.18. Nevertheless, in line with the NPPF, London Planning Policy and Local Planning Policy LP 15 *'Biodiversity'* the Development will include the following enhancement measures for roosting bats:

- A minimum of ten bat boxes shall incorporated in the Development Area 1 (number of bat boxes within the outline (Development Area 2) component of the Site would be determined following the reserved matters application).

4.19. Roosting bats are assessed as to be likely absent from those remaining buildings on Site, in addition to trees T48, T49, T67, T68 and T83 and the river wall (including the section within the south-eastern corner of the Site). It is therefore assessed that there is no licencing requirement to allow works at these buildings. However, there remains a chance that opportunist bats within in the vicinity of the Site could potentially start roosting within these buildings/trees/structures. Therefore, a toolbox talk should be provided to contractors during the demolition/refurbishment phase of the Development. This will cover all built structures (buildings and wall) and trees with the potential to support roosting bats.

4.20. Further to the above, the felling of those trees with moderate and low bat roosting potential should be undertaken using soft felling techniques and in accordance with the Arboricultural Association Guidance Note 1[10], with the felling of those trees with moderate bat roosting potential also carried out under an Ecological Clerk of Works.

4.21. In the unlikely event that bats are identified (given the current survey results) during the Development works, all works would cease, and an ecologist contacted. Liaison would then be undertaken between the ecologist, LBRuT and / or Natural England to agree a suitable way forward.

Foraging and Commuting Bats

4.22. A total of three bat species: common and soprano pipistrelle and noctule bats were recorded during the transect activity surveys. The majority of passes were of common and soprano pipistrelle bats, with only a single noctule pass recorded. Bat passes were predominantly recorded along the River Thames tow path during both surveys where bat activity was recorded. A small number of passes were recorded of bats foraging within the north of Watney's Sports Ground playing fields (during the survey on 30 July only) and along Ship Lane and Lower Richmond Road, most likely associated with foraging / commuting bats utilising the tree line along Ship Lane and Mortlake Green.

4.23. Whilst nearly all of the bat recordings from the automated detectors were of common and soprano pipistrelle (98.90% when combined). The supplementary automated activity surveys recorded a further three bat species which could be identified to species level – Nathusius' pipistrelle, Leisler's and serotine bats, together with unidentified *Myotis species.* Given that only low numbers of passes were recorded by these three further species (and noctule), including only a single pass by Nathusius' pipistrelle, it is considered that the Site, although more likely the adjacent River Thames, is used by these species on an infrequent basis only.

4.24. Whilst the Site itself provides some foraging and commuting opportunities, largely in the form of those trees and tree lines present, the adjacent River Thames and associated habitats are considered to provide a much greater resource for foraging and commuting bat species. This is also reflected within the results of the transect activity surveys. As such and given the presence of further habitats of value to bats: such as Mortlake Green and residential gardens, it is further considered that the Site itself does not present a resource upon which the local bat population would be dependent.

[10] Arboricultural Association (2011): 'Bats in the Context OF Tree Work Operations'. Guidance Note 1. ISBN 978-0-900978-54-8

4.25. Overall, bat activity levels associated with the Site itself are assessed to be low, as expected given the urban location of the Site and those habitats present within in it, with bat activity levels associated with habitats adjacent to the Site, in particular the River Thames to be moderate.

Mitigation and Enhancement

4.26. In line with the NPPF, London Planning Policy and Local Planning Policy LP 15 *'Biodiversity'* the Development will include the following mitigation and enhancement measures for foraging and commuting bats:

- During the demolition and construction phase of the Development lighting would be designed so that retained commuting and foraging habitats along the northern boundary of the Site and adjacent to the River Thames would remain dark and no excessive light spill on to these habitats would occur. The main hours of the Works would also be undertaken during typical working hours minimising the requirement for additional lighting during the night;
- Soft landscaping as well as artificial habitats (see Roosting Bats above) would be provided in the Development which would provide enhanced opportunities at the Site for bats. The Site would include:
  - up to 160 new trees and up to 51 retained trees;
  - hedge planting (1.5 m high) enclosing all ground level residential courtyards east of Ship Lane in the detailed part of the Development;
  - provision of new trees including the use of native species, or species of benefit to wildlife. This includes littoral plant species in areas close to the river edge responding to existing riverside vegetation and fruit / berry and nut bearing trees located in the community park south of the proposed school;
  - provision of biodiversity roofs, including a mix of extensive green and brown roofs; and
  - a green link connecting the River Thames and Mortlake Green.
- A sensitive lighting strategy would be implemented as part of the Development which will avoid light spill upon habitats currently utilised by bats (e.g. the River Thames).

Update Survey

4.27. Should there be a period of greater than 18 months since the time those activity surveys detailed within this report were undertaken and the commencement of Site preparation and construction/refurbishment works, further update surveys should be undertaken as conditions at the Site and therefore its utilisation by foraging and commuting bats may have changed.

5. Conclusions

5.1. As a result of those update evening emergence and dawn re-entry surveys undertaken at the Site a bat roost of low conservation significance comprise a single soprano pipistrelle bat has been recorded within The Maltings (B8). Consequently, in order to avoid the contravention of legislation, a Bat Low Impact Class Licence should be submitted to and granted from Natural England prior to refurbishment works being undertaken upon this building.

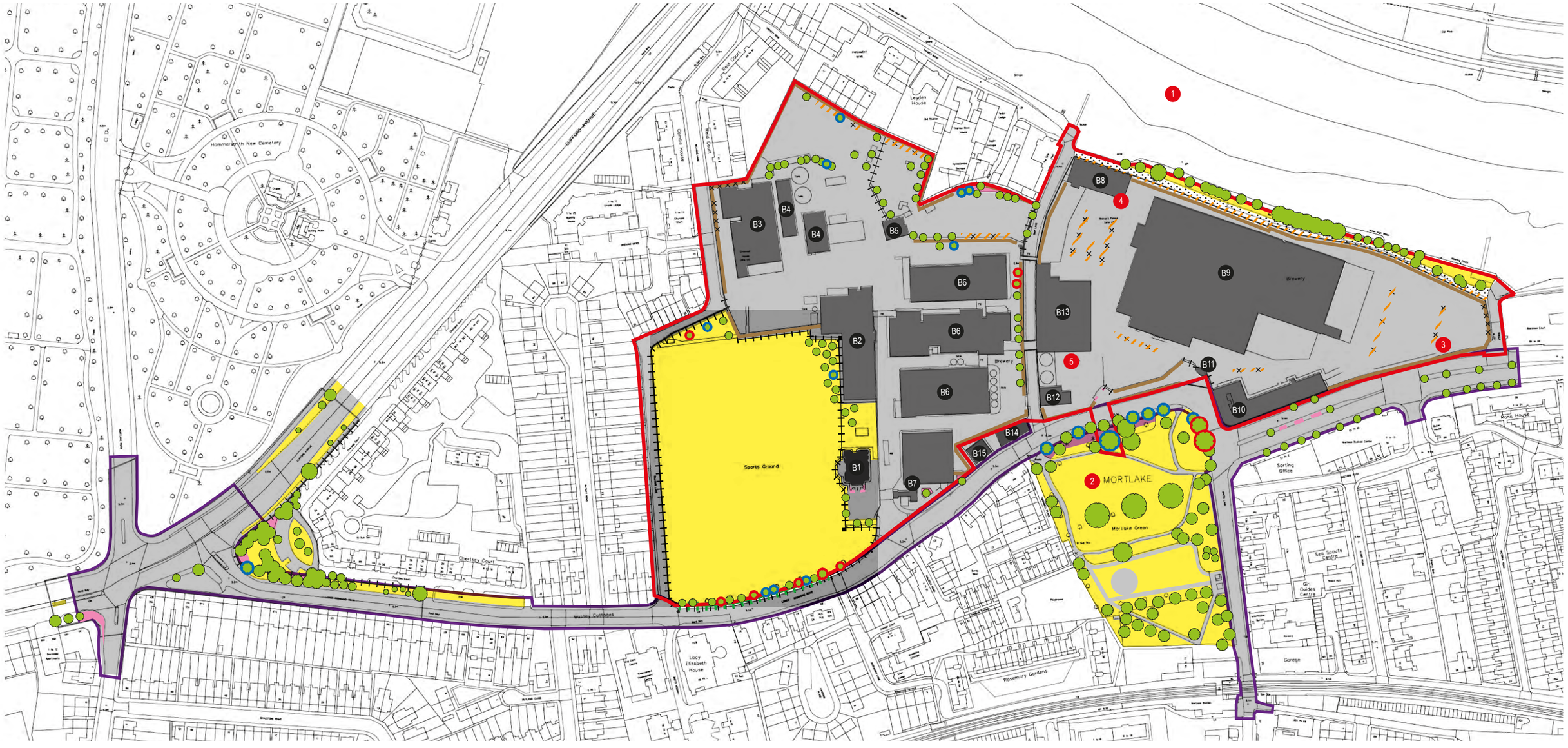
5.2. As part of the Bat Low Impact Class Licence soft strip works should be undertaken to remove those potential roosting features associated with this building in a sensitive manner and overseen by an Ecological Clerk of Works.

5.3. Whilst no roosting bats have been recorded within those trees highlighted for removal. Those trees of low bat roosting potential should be removed using soft felling techniques, with those trees of moderate and low bat roosting potential also removed under an Ecological Clerk of Works.

5.4. Further mitigation, together with proposed enhancement, measures for bats have also been detailed within this report.

5.5. Should there be a period of greater than 18 months since the time those surveys detailed within this report were undertaken and the commencement of Site preparation and construction/refurbishment works, further update surveys should be undertaken as conditions, and therefore utilisation, of the Site by bats may have changed and additional, or reduced mitigation measures required.

FIGURES



- Planning Application Boundary
- Section 278 Works
- Building with Building Numbers
- Hardstanding
- Ornamental Planting
- Amenity Grassland
- Ephemeral
- Scattered Tree
- Wall
- Bare Ground
- Hedge
- Fence
- Tall Ruderal Vegetation
- 1 Target Note

Bat Roost Potential within Trees

- Negligible Potential
- Low Potential
- Moderate Potential

N

Project Details	WIE15582-102: Stag Brewery, Mortlake
Figure Title	Figure 1: Habitat Features Plan
Figure Ref	WIE15582-102_GR_EC_1D
Date	May 2020
File Location	\\lh-lncs\wiel\projects\wie15582\102\graphics\ec\issued figures

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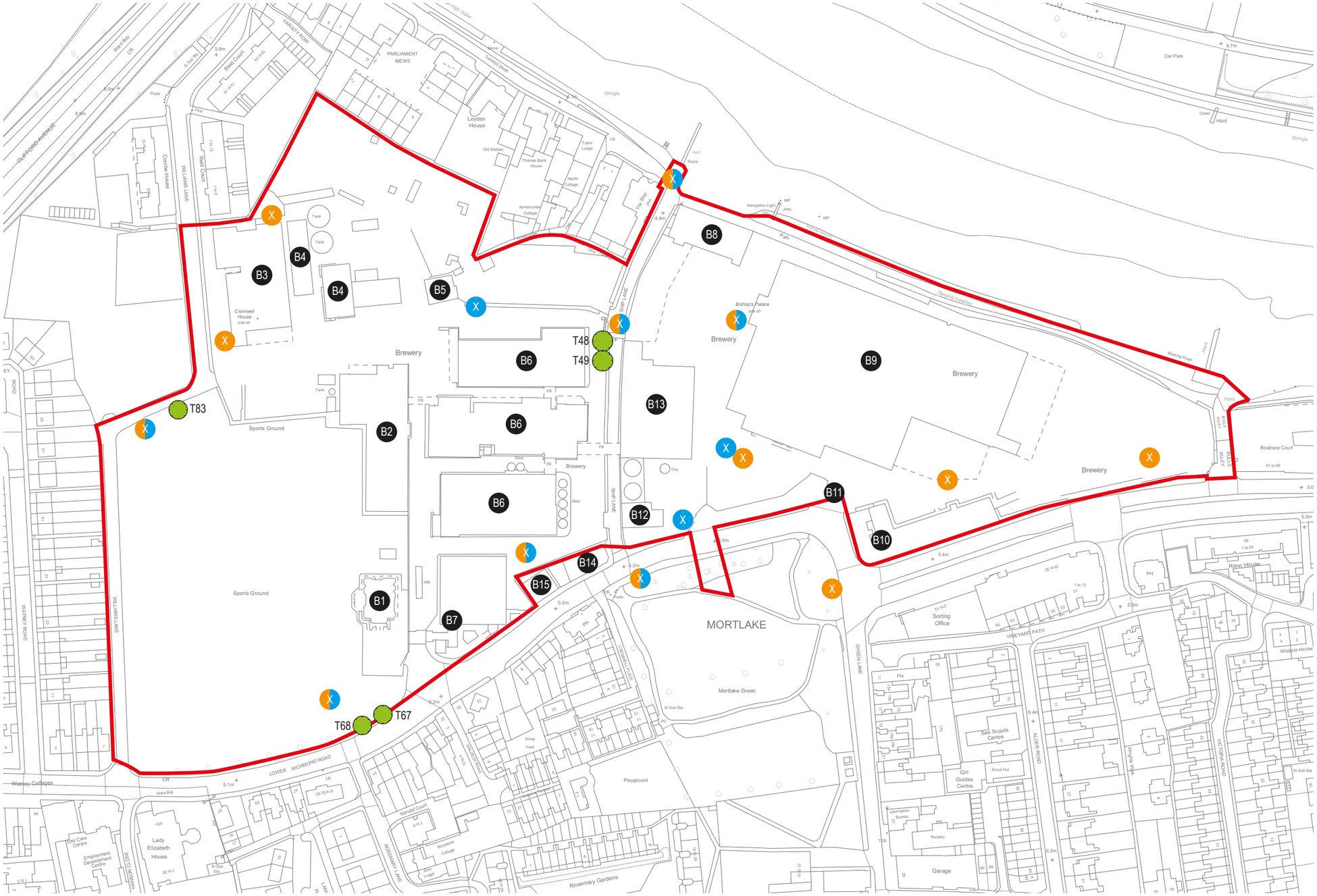
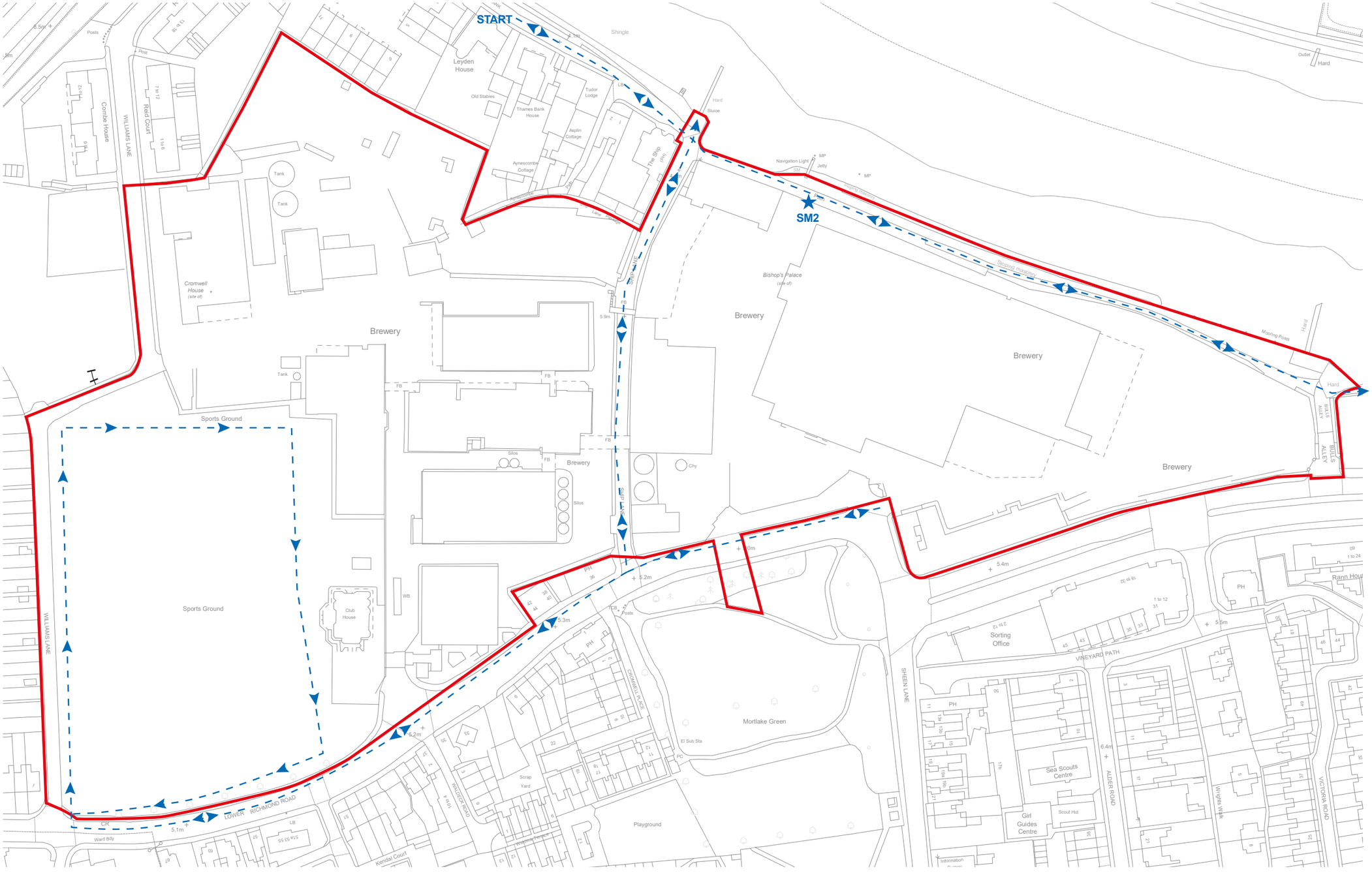


Project Details	WIE15582-102: Stag Brewery
Figure Title	Figure 2: Evening Emergence & Dawn Re-entry Bat Surveyor Locations
Figure Ref	WIE15582-102_GR_EC_2A
Date	2019
File Location	\\s-lncs\wiel\projects\wie15582\102\graphics\ec\issued figures



N

The Site

Location of Automated Bat Detector (SM2)

Bat Activity Transect

Project Details	WIE15582-102: Stag Brewery
Figure Title	Figure 3: Bat Activity Survey Transect & SM2 Location
Figure Ref	WIE15582-102_GR_EC_3A
Date	2019
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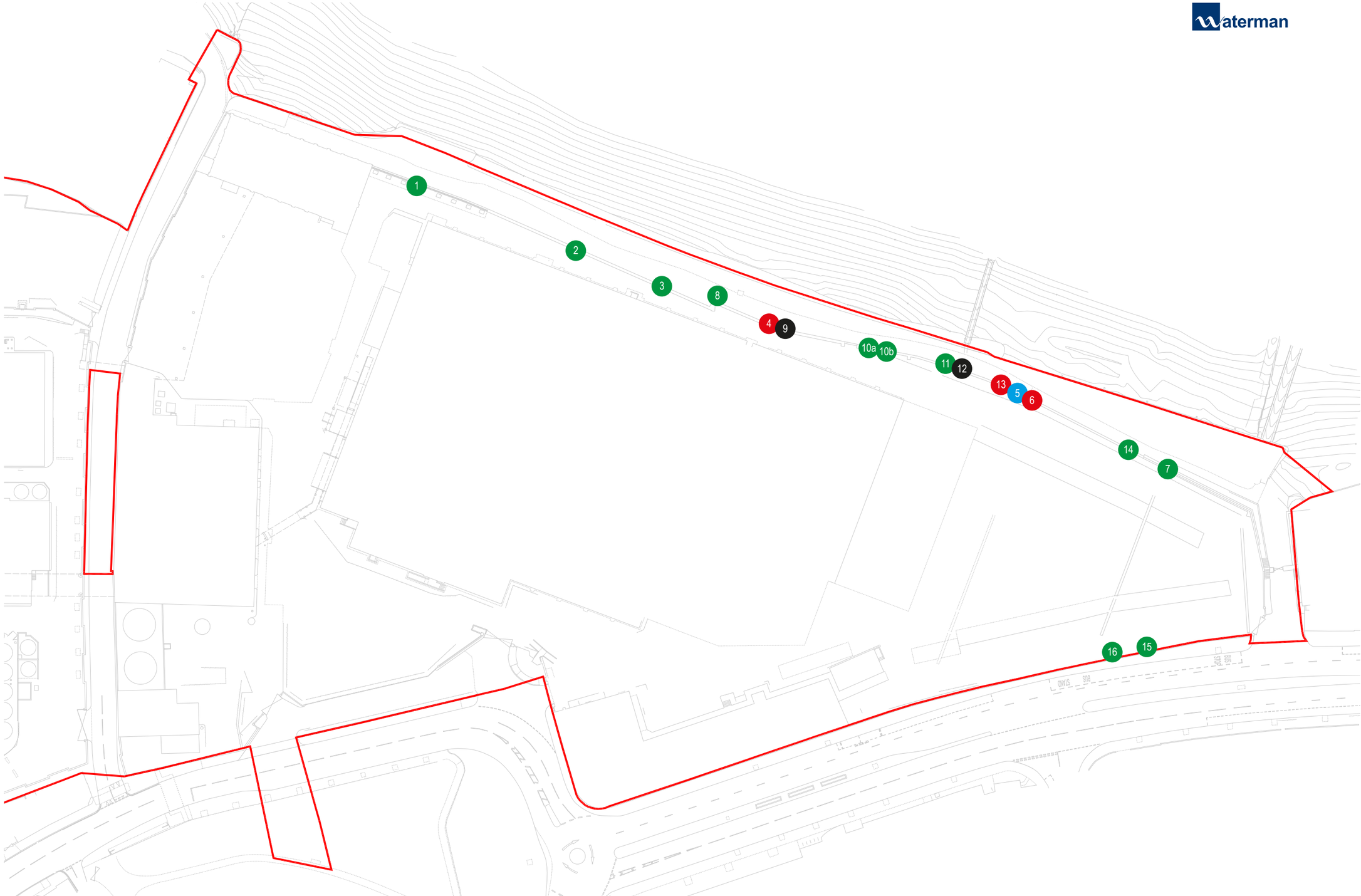

N

The Site

Potential Roosting Features

- Negligible Potential Roosting Feature
- Low / Moderate Potential Roosting Feature
- Low Potential Roosting Feature
- Moderate Potential Roosting Feature

Project Details	WIE15582-102: Stag Brewery
Figure Title	Figure 4: River Wall – Potential Roosting Features Locations
Figure Ref	WIE15582-102_GR_EC_4A
Date	2019
File Location	\\s-lncs\wiel\projects\wie15582\102\graphics\ec\issued figures