

Tytherington Quarry 6mt Additional Reserves: Bat Technical Note

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SUBJECT:	Bat Technical Note		
PROJECT:	Tytherington Quarry 6mt Additional Reserves	AUTHOR:	Drew Wilson
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INTRODUCTION

This bat technical note is provided as an appendix to the Environmental Statement (ES) Addendum produced for application references P24/01355/RVC and P24/01356/RVC. It provides an update in relation to certain ecological receptors within the application boundary that have occurred since the ES was submitted. Specifically, this technical note concerns a tree previously identified as being suitable to support roosting bats and the impacts of proposals on bat activity.

Project Background

Heidelberg Materials plan to secure the continued extraction of all consented limestone reserves, and extraction of further unconsented reserves, within the existing footprint of Tytherington Quarry, near Thornbury, Gloucestershire (hereafter referred to as the 'Proposed Scheme'). To achieve this, Heidelberg Materials is seeking planning permission to change the existing working method at Tytherington Quarry to allow for the deepening of the Woodleaze area of the quarry to release an additional 3 million tonnes as well as enable the extraction of a further 3 million tonnes from the southern part of the quarry, beneath the existing soil storage area. The soil storage area, which is the focus of this document, is centred at Ordnance Survey (OS) Grid Reference ST 65685 88066 (hereafter referred to as the 'Site'). The Site is approximately 3.7 hectares (ha) in extent and primarily comprises neutral grassland, deciduous woodland, hedgerows and scrub (**Appendix A Figure 1**). The Site adjoins the existing quarry area and sits within an agricultural landscape.

There is a phased restoration strategy which will include reprofiling of the existing soil storage bunds, replanting of woodland areas and creation of a grassland mitigation area surrounded by hedgerows. The mineral extraction and the restoration strategy are collectively referred to as the 'Proposed Works'.

It is understood that the permanent lighting arrangement, operational hours and access arrangements to the Site will remain unchanged during the Proposed Works from that which is permitted by the extant principal planning consent NA/IDO/002/A (dated February 2006). This lighting is designed to illuminate works areas and walkways at the asphalt plant, weighbridge and offices. The asphalt plant uses downward directed LED lighting between 1900 and 0330. The weighbridge and offices use downward directed photocell lighting in any hour after sunset and before sunrise. The temporary lighting for the Proposed Works within the Woodleaze area is expected to include mobile lighting in winter months deployed in dark hours between 2100 and 0530.

Ecological background

A Preliminary Ecological Appraisal (PEA) including a ground level tree assessment was completed for the Site in June 2023. The PEA concluded the following:

- There was an ash *Fraxinus excelsior* tree on the Site which had multiple potential roosting features (PRFs) for bats (**Appendix A Figure 1**). The potential roosting features included a knot hole at around 6m height on a southern primary branch and a woodpecker hole at around 8m on northeastern side of

the trunk. A ground level tree assessment concluded that the tree could support multiple roosting bats and was therefore classified as PRF-M tree which could be used in the active season as a maternity roost (Collins, 2023). The ash tree was exhibiting advanced decay due to ash die back and had been assessed as being vulnerable to limb fall from wind damage. Any further weathering could result in a change in the PRF status as part of the natural aging of the tree.

- The woodland edge was shaded by the soil store and associated hedgerows and provided a dark corridor as a flightline for bats. This flightline would connect the Woodleaze quarry access track to Itchington Road and any potential roosts in the ash tree with the wider landscape (**Appendix A Figure 1**).
- The scattered scrub within grassland and hedgerows could provide foraging opportunities for a small number of bats. The scrub patches were limited to single buddleia, hawthorn, or bramble plants and there was no grazing of the grassland by livestock. The scrub and grassland habitats were therefore unlikely to support a diverse invertebrate assemblage of value to foraging bats. The hedgerows habitats could provide foraging opportunities for bats however, the habitat is common in the surrounding landscape. These habitats were likely to be used by bats for occasional opportunistic foraging and their removal is unlikely to adversely impact the foraging opportunities for bats in the wider landscape.

The Proposed Works require removal of some woodland edge, hedgerows and grassland with scattered scrub habitats to facilitate reprofiling of the soil storage bund and extraction of limestone. This habitat clearance would result in a new woodland edge within approximately 25-35 of the existing woodland edge and would continue to provide a flightline for bats. The re-profiled soil bund will then be allowed to naturally revegetate ahead of the reinstatement of grassland and boundary hedgerows as part of the final restoration strategy (see ES Appendix 10B Landscape and Biodiversity Enhancement Plan (LBEP)). The Proposed Works also included the retention of the ash tree and the section of the hedgerow within which it is located.

The PEA therefore concluded that there would be no need for further survey because there would be no impacts to the ash tree and its PRFs, and that any flightlines and foraging potential of the Site would be temporarily changed but reinstated by the restoration strategy.

This conclusion was caveated because the advanced decay of the ash tree could result in limb and trunk damage from inclement winter weather. This damage had the potential to present a health and safety (H&S) risk to quarry personnel and equipment. It was therefore advised that sufficient surveys were completed to determine the roost status of the ash tree so that in the eventuality that the tree became a H&S risk Heidelberg Materials would have the necessary survey data to inform a Natural England Development Licence application.

Heidelberg Materials thus commissioned WSP to complete three visits to the ash tree to understand the value of the tree for bats. It was recognised that confirming the roost status of the ash tree prior to the 2023/2024 winter would be valuable should the ash tree become damaged by winter weather. As such, one emergence survey was scheduled for September 2023 with two aerial inspection surveys scheduled for the maternity season of 2024.

In April 2024 storm Kathleen and storm Pierrick impacted the southwest of England resulting in strong winds and wet weather. During April the ash tree dropped one of its main limbs and part of the remnant crown resulting in the cessation of access to the Site due to H&S concerns. As a result, Heidelberg Materials paused all operations within the Site until the two aerial inspections could be completed in the summer of 2024.

This bat technical note provides:

- A summary of the methods and results of the emergence and inspection surveys.
- Recommendations for maintaining the value of the Site for bats with respect to legislation and biodiversity policy.

METHODS AND LIMITATIONS

The following section summarises the applied survey methodologies including any limitations which represent a deviation for industry good practice (Collins, 2023).

The bat surveys were conducted by suitably experienced ecologists who hold Natural England survey licences where appropriate for the survey types deployed.

Dusk Bat Emergence Survey

A single dusk bat emergence survey was completed on 26th September 2023. The survey began 15 minutes before sunset at 19:00 and continued until 2 hours after sunset. The temperature was between 15-16°C throughout the survey with minimal wind and relative humidity being between 75 and 80%. The cloud cover was approximately 5 oktas at the beginning of the survey and cleared to 0 by the end of the survey.

Two surveyor locations were utilised to fully cover the PRFs on the ash tree. One surveyor was positioned to the south of the features looking north towards the ash tree. The second surveyor was positioned on the northeastern side of the tree covering an aspect that was partially obscured from the first surveyors' position. The first surveyor used an infra-red (IR) camera as a visual aid for when light levels were too low for bats to be seen by eye and to visually record any bat activity at the tree.

The surveyors used Batlogger M full-spectrum bat detectors to listen to and record echolocation calls of bats present during the survey. During the survey, surveyors mapped the flight-lines used by any bats observed and noted any features used by the bats to exit/enter the PRFs on the ash tree.

The recordings of bat echolocation calls collected during the survey were analysed using specialist computer software (Kaleidoscope Pro, version 5.6.2). The analysis enables confirmation of species or species group based on call parameters, and the relative activity of different species of bats by counting the minimum number of bats recorded within discrete sound files.

There were no limitations to this survey.

Aerial Close Inspection

Two aerial inspections of the ash tree and its PRFs were completed on 29th May 2024 and 27th August 2024. The inspections were completed using a mobile elevated work platform for access and a torch and endoscope for investigating PRFs. The inspection was completed by a licensed bat ecologist who has approximately 6 years of bat survey experience.

The surveyor recorded the location and extent of any PRFs on the tree as well as an indication of whether they could support individual or multiple bats.

During the May inspection a blue tit nest was identified in a woodpecker hole that extended approximately 15cm into the primary limb on the east of the tree. This nest was considered active with an adult present but no young. The nest was found at the end of the survey and therefore did not stop a thorough examination of the tree for roosts in May. In the August inspection the birds' nest was observed from a distance to check for signs of nesting activity and then inspected first to ensure that there was no risk of disturbing an active nest. The nest attempt had finished and as such a full inspection of all PRFs in the tree could be completed. This is therefore not considered a limitation to the inspections. There were therefore no limitations to the inspections.

RESULTS

Dusk Bat Emergence Survey

No bats were recorded emerging from the ash tree during the September 2023 survey.

The quarry access track to the north of the ash tree and the edge of the woodland plantation were used by serotine and common pipistrelle bats commuting northeast to southwest across the Site (**Appendix A Figure 1**). There was also foraging passes from the same species under the ash tree and along the hedgerows. The majority of commuting and foraging activity was concentrated within an hour period between 1930 and 2030. After this time, the level of activity was notably reduced.

Aerial close inspection

The following PRFs were identified on the ash tree:

- An impact shatter at approximately 6m elevation on the northwest aspect of the western stem. The feature was open and upward facing with no suitability for bats.
- An impact shatter at approximately 8m elevation on the northwest aspect of the western stem. The feature had decaying hollow heartwood with several small pockets and gaps.
- Two woodpecker holes at approximately 9m elevation on the northeastern side of the eastern trunk. The holes extended into a hollow limb with a large cavity.
- An excavated knot hole at an approximately 8m elevation on the southern aspect of the eastern stem. The excavation extended 15cm into the branch. In May there was an active blue tit nest present.

There was no evidence of current or previous use of any PRFs within the ash tree by bats.

DISCUSSION AND RECOMMENDATIONS

The ash tree had no evidence of current or previous use by roosting bats. The H&S risk that the ash tree presented and the constraint on the operations of activities near the Site made the immediate felling of the tree a priority for Heidelberg Materials. It was therefore recommended that the ash tree was felled following the August aerial close inspection to ensure that the tree would not become used by bats between inspection and tree removal.

The access track, woodland edge and the double hedgerow were used by commuting and foraging bats. Serotine and common pipistrelle bats were using the tracks and woodland edge for commuting across the Site and the canopies of trees in the hedgerow for foraging.

There will be removal of a section of woodland on the existing M5 screening bund to allow for a reprofiling of the bund and soil store. This will result in a new woodland edge approximately 25-35m further southeast than the current woodland edge alignment. This new woodland edge will connect with the retained access track so that bat flightlines across the Site would be retained. However, the flightline along the woodland edge is currently shaded from existing quarry lighting by the hedgerows and the soil store, which create a dark corridor along which bats commute. The reprofiled soil bund will be approximately 5m higher than the current plantation woodland ground level and should therefore provide shading across the majority of the flightline. Nonetheless, the removal of the hedgerows and reprofiling of the soil store bund has the potential to result in the illumination of the habitat at the eastern end of the Site between the retained double hedgerow and the slope of the new bund. This could create a gap in screening from the permanent lighting which could then be a temporary barrier to commuting bats whilst the new hedgerow establishes. A lighting strategy will therefore be developed designed to minimise the potential for impacts arising from the existing lighting arrangement, through lightspill, on the bat flightline. The details are still to be developed and is expected to be a condition of the planning permission.

It is recommended that the permanent and temporary lighting strategy is designed with input from a suitably experienced ecologist to ensure they are sensitive to commuting bats and maintain an unlit corridor on the Site. Any measures from the lighting strategy could be captured within an Ecological Method Statement.

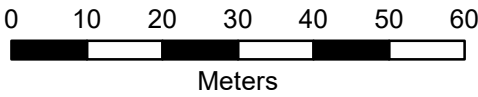
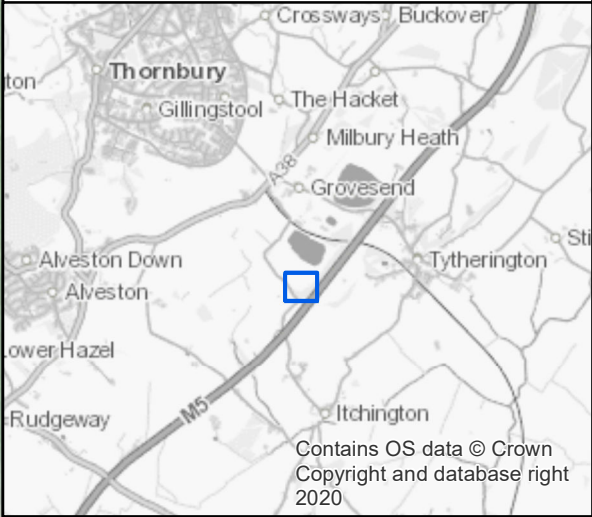
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- Collins, J. (ed.) (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London.
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Key

- Site Boundary
- Broadleaved woodland - plantation
- Scrub - scattered
- Neutral grassland - semi-improved
- Standing water
- Intact hedge native species poor
- Hedge and trees native species-rich
- Bat PRF-M Tree
- Indicative Bat Flightline



Client:	HEIDELBERG MATERIALS		
Project:	TYTHERINGTON QUARRY 6MT ADDITIONAL RESERVES		
Title:	APPENDIX A FIGURE 1: PHASE 1 HABITAT & BAT SURVEY RESULTS		
Drawing No:	FIGURE 1	Drawn:	DW
Date:	25/10/2024	Checked:	HB
Scale:	1,000 @ A3	Approved:	AB