CASE STUDY
Jacobs | New Ocknell Culvert Bat Surveys – July 2025

Introduction

Jacobs UK Ltd were commissioned to undertake bat surveys at the A31 New Ocknell Culvert ahead of essential maintenance works commencing late-2025.

The culvert is approximately 100m long and carries Highland Water underneath the A31 carriageway. The site is located in the New Forest, Hampshire (OS Grid Reference: SU 24623 11069), an area known to support 14 of the 18 British native bat species.

The culvert is lined with corrugated metal sheeting and will be relined as part of the maintenance works. Approximately halfway down the culvert lies a vertical manhole shaft, measuring approximately 1m across and extending upwards to the central reservation between the east and westbound carriageways.

Overview

Previous ecology surveys comprised an initial preliminary roost assessment (PRA) during which no internal access to the culvert was attempted, followed by two dusk emergence surveys. Bats were considered absent from the culvert over the summer months following analysis of the survey data, however there remained a possibility that the culvert could support bats over winter, particularly in the manhole shaft.

There were no photographs of the manhole shaft and relatively little information from which to infer suitability for roosting bats. Deployment of static bat detectors over winter was considered inappropriate for this site given the number of hours required to deploy kit, collect kit and analyse data, as well as the limitations of recording audio data only.

Access to the manhole shaft was explored but subsequently considered unfeasible given the risk to surveyor's personal safety through entering the culvert.

Challenges

- The culvert constitutes a high-risk confined space, and entry would require trained individuals/incur risk to personal safety.
- The culvert contains cold, flowing water and entry would require supervision by a cold-water rescue team.
- The site is in a remote location, approximately 30 minutes' walk from the nearest parking location therefore increasing the time taken for emergency response vehicles to attend site if needed.
- Standard methodologies for hibernation surveys were unsuitable in this instance given the lack of access to the culvert and therefore an innovative approach would be required.

"The Jacobs team embraced this challenge, in line with our organisation's commitmet to bringing innovative solutions that lead to shared success with our clients."

Action Taken

Discussions were had between experienced bat surveyors within the Jacobs Ecology team as well as with team members working on the wider project and within health and safety to assess options going forward. It was considered too risky to send surveyors into the culvert and therefore a remote solution was required.

It was suggested that involving the Jacobs Surveying and Reality Capture team could facilitate safe access to the culvert, making use of remotely operated vehicles.

Results

A collaborative approach between the Jacobs Ecology and Jacobs Surveying and Reality Capture team facilitated an alternative solution to undertake the hibernation survey. By using remotely operated vehicles (ROV), in this instance a boat and a tracked vehicle, the culvert was safely accessed and data captured without the need for people to enter the culvert. A thermal imaging camera was attached to the ROV to detect heat signatures from any bats roosting in the culvert and a high-powered torch and camera were attached to capture additional footage. The survey team also deployed a dynamic laser scanner to capture high-resolution point cloud and 360-degree images.

Benefits

- Achieved a 75% reduction in time spent on site compared to static detector deployment (two full days instead of eight full days).
- A cost-effective alternative by eliminating the need and cost of cold water rescue teams and confined space entry training, while improving safety by mitigating the risks of this hazardous environment.
- High quality data, equivalent to an in-person internal inspection that brings greater confidence when concluding presence/likely absence of bats.
- Generation of additional data from the dynamic laser scanner that can be used by other disciplines therefore reducing the need for future site presence or access, creating cost and safety benefits far beyond the initial survey scope.

Contact:
Ghayan Briggs
M:+447432202639

Email:
Ghayan.Briggs@jacobs.com

home safe and well