A417 Missing Link

Gloucestershire

Kier

BIG Biodiversity Challenge Award Category: Habitat Creation: Project of Year Award (Large scale biodiversity enhancement 5ha and above)

Project overview (50 words max)

The A417 Missing Link is a landscape-led highways scheme within the Cotswolds. Within the scheme there are several important biodiversity features and protected species, thus specific design, mitigation and enhancement measures have been implemented to minimise the potential impacts. The habitat creation measures detailed have been completed by May 2024.

What were the biodiversity conditions on site prior to the enhancement? (100 words max)

Within the scheme footprint the biodiversity conditions were suitable for a variety of notable and protected species and important habitats. The scheme has confirmed presence of Roman snails, four species of common reptiles, bats, badgers, priority habitats and numerous sites designated for ecological interest. Consent for the project was granted in 2022 and legal compliance with respect to all protected species under UK legislation was mandated. To ensure the impact of species and habitats were minimised, mitigation and enhancement measures have been implemented. The aim is to minimise the impact of disturbance, species injury and create alternative and connected habitats.

What were the reasons behind this project? (100 words max)

The project's objective is to create a safe and free-flowing road whilst being a landscape-led scheme. This means the landscape is a primary consideration for every design decision made and proposals have been made to fit the character of the landscape. To minimise adverse effects, mitigation measures, such as the creation of habitat, have been embedded within the design of the project. Many of the mitigation measures have been established to create replacement habitat for wildlife in advance of construction. Other measures have been incorporated into the operation design and are purposely planned to maintain connectivity for wildlife throughout the landscape.

One of the adders moved as part of the large-scale translocation

One of the created dead hedges

What were the biodiversity measures taken? (300 words max)

The project is expected to complete in 2027 and during construction the mitigation strategies will be implemented, ensuring some will be established by the operation-phase. The mitigation measures have been designed to be effective, technically feasible and likely to succeed. Many are replicable, low cost and their value is well evidenced. Therefore, monitoring activities have been planned from less than a year, up to 25 years post-construction. The habitat creation measures have been designed specifically for each species and include an artificial sett for badgers, temporary cathedine roosts, a bespoke bat barn, bat boxes and a refurbished WWII structure for bats. Large-scale translocation exercises and hibernacula creation for reptiles and Roman snails. Several bird boxes for displaced nesting birds. Screen netting and dead hedges have been installed to facilitate flight paths and connect habitats. The particularly technically innovative mitigation measures have made possible the translocation of known bat tree roosts, tree veteranisation to create roosting opportunities in younger trees and an adder telemetry project, where adders were tracked post-translocation to gain data on movements and behaviour. The measures will provide alternative habitats, but also help connect the wider landscape. The value of these measures is high; however, monitoring will need to be undertaken to ensure they are adopted and effective. Several measures have been installed in a local Site of Special Scientific Interest (SSSI), such as the bat and bird boxes to provide further compensation for displaced species and tree veteranisation has taken place to create valuable features in younger trees. The materials for the hibernacula creation were sourced from felled trees and dry-stone wall that had been removed as part of the clearance works. On a volunteer day in 2023, a team of 22 from Kier, National Highways and other contracting companies attended two of reptile receptor sites to help with habitat management tasks.

Translocated bat tree roost

Roman snail hibernacula

Further information (250 words max)

In 2023, the ecological early works were completed to mitigate the disturbance and habitat loss which would result from the construction phase of the project and allow time for the various measures to establish. During this time, the translocation of the reptiles and Roman snails were completed, and specific habitat creation measures were implemented to provide alternative habitats connected to the wider landscape. Baseline data was recorded during all the surveys completed prior to submitting the Development Consent Order in 2022 and post-construction monitoring is a requirement for all protected species and priority habitats. This includes regular monitoring of the mitigation, compensation and enhancement measures that have been installed. The scheme has been designed to maximise biodiversity delivery and provide an increase in priority habitats for protected and notable species. The legacy is to build a new safe road, whilst conserving and enhancing the special character of the landscape. Thus far, the monitoring activities have evidenced the success of the reptile translocation with many translocated individuals being observed. The artificial sett is being used by the local badger population and several species of bat have been recorded using the cathedine roosts and screen netting to support flight paths. The project is still in the early stages of construction so there are many more mitigation measures to be implemented and further monitoring activities to complete, which will provide essential data on the success of the habitat creation measures and how these may be continued or improved for future projects.

Artificial badger sett

Tree veteranisation techniques to create veteran features in younger trees for bats

Project Team

- Client(s)/funder(s) – National Highways/Kier
- Other design team members – Kier/Arup
- Volunteer organisations

What was the motivation for carrying out the enhancement? (100 words max)

Transportation developments are necessary to keep people safe, however it is so important to conserve species and habitats at the simultaneously. Successful habitat creation can enable populations to positively recover after disturbance and in this project, well-evidenced and effective measures were carefully selected. In addition, comprehensive monitoring requirements have been outlined and these will collect further data and help evaluate long-term trends. The measures detailed are just what has occurred up until now, there are many more planned and several still in design. These strategies will ultimately result in a landscape that is well-connected and provides an increase in habitats for wildlife.