

## Bat Flight line mitigation at Grange Top Quarry Ketton

### Ketton, Rutland

Hanson Cement

*BIG Challenge 2015 submission category: Large scale permanent*

#### Project overview

A team of more than 15 personnel have been involved in the project, including ecologists, quarry personnel and students.

The mitigation covers approx. 39 hectares, within an active rural quarry site of 200 hectares.

The project included extensive pre-work bat surveys, careful retention of some key bat flyway features nearby, creation of new bat flyway features (hedgerows and bunds) and detailed follow-up monitoring over several years.

This is an important infrastructure project which benefits the quarry and the wider landscape via retained and created hedgerow and bunding linkages.

The retained and created features link an existing bat roost in a mine to an artificial bat cave.

#### What were the biodiversity conditions on site, prior to the enhancement?



*Photo: Open quarry prior to reinstatement*

The active quarry is an exposed, open landscape with little shelter for bats.

All vegetation is removed and the features are predominantly exposed stone.

There are no landscape linkages or wildlife corridors prior to enhancement.

#### Were there any specific conditions that led to you carrying out this work?

When planning permission for the site was granted the bat monitoring and flight line provision was a condition of the Mineral Planning conditions.

#### What were the biodiversity measures taken?

The biodiversity measures are the retention of hedgerow plants, and the provision of hedgerows and bunds to create and link to existing flight lines for bats.

The hedgerows to be removed are translocated using innovative techniques to ensure woody growth and structure is retained for the new hedges on site, in order to provide structural diversity and linear flight corridors for bats.

The project had a number of other innovative elements including the extent of

hedgerow creation, the use of double hedgerows, the use of the project for training ecologists and other land managers, and the use of detailed monitoring.

The strategy for site was to ensure all materials from translocated hedges were retained for re-use to provide shelter for newly planted hedge plants, shelter for insects from the prevailing wind, instant feeding areas for bats, dead wood habitat for saproxylic invertebrates and feeding and shelter for small mammals.

The strategy has been designed to be replicated on an ongoing basis so future developments will follow the same methodology.

Long-term monitoring and management has been built-in since the project inception.

Bat activity is monitored by the retained ecology team, and further information and advice are gathered by volunteer groups such as the wildlife trust and the butterfly and moth recording group who regularly visit the site and submit records.

Chartered Institute of Ecology and Environmental Management Training courses and community



*Photo: Lifting existing hedgerow for use in reinstated hedge*



*Photo: Translocating hedgerow*



wildlife walks have all benefited by visiting the site to see this innovative large scale project in operation and show good ecological practice in tandem with industrial processes.

### How would you best describe the project?

Mitigation.

### Further information Installation

The installation was inherently simple, identify hedges to be removed and once checked for the presence of protected species the hedges would be excavated with a 360 excavator and hedge shrubs and root balls placed into a trailer for movement to a storage area. The new site was first identified through targeted surveys and the flight corridor chosen. The subsoil was the excavated and top soil placed in the hole for the transplanted materials and new plants. All plants new and old were then watered to try and increase success rates.

### Long term benefits

The scheme long term benefits are landscape scale habitat connectivity and provision of bat flight lines and foraging areas. The linking and exchange of genetic resources and the



*Photo: Reinstated hedge bat flight line*

maintenance of the favourable conservation status of bats in their natural range and the maintenance of site ecological functionality on a landscape scale for all species recorded on site.

### Lesson learnt

Materials need to be regularly watered to increase success rates and regular surveys ensures knowledge of before and after to be able to show success against a baseline. The only tips for future are to make sure a lot of the initial effort is placed on the surveys, as this saves time and money later and makes site decisions more reliable. Secondly, plant composition for the new plantings need to take into account locally

successful species compositions as this ensures a higher degree of overall success in re-establishment.

### What was your personal motivation for carrying out the enhancement?

The ecologists and the Quarry Manager have a passion for ensuring wildlife and developments work together to provide landscape scale benefits for wildlife, whilst undertaken and delivered in a cost effective, innovative and robust way for business.