

Construction of the A30 Bodmin –India Queens Improvement



This case study involved the construction of the A30 Bodmin-India Queens Improvement Scheme. The scheme upgraded this section of the A30 to dual carriageway and removed the previous height restrictions, easing congestion in the area. The project team undertook very effective resource efficiency measures to make the most of site won and locally available materials.

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Summary

This case study involved the construction of a new dual carriageway section of the A30 in Cornwall to replace the existing single carriageway road, reduce congestion and improve journey times in the area. The project team worked together to ensure that the environmental and social aspects of sustainability were identified and their impacts minimised within the project. The case study provides good examples of good practice resource management including the use of recycled or secondary materials, the use of local materials and waste minimisation.

Introduction

This A30 case study provides a good example of a highway construction project team taking full account of resource efficiency issues and aiming to minimise waste and the use of virgin materials.

This scheme was commissioned by the Highways Agency:

- Mouchel was the client,
- The main contractor was Alfred McAlpine,
- Scott Wilson was the Designer, and
- RPS was the client environmental advisor.

This scheme was one of the first to be procured on an ECI (Early Contractor Involvement) basis which, at the time (2002) was considered to be a dramatic step highlighting the Highways Agency's (HA) commitment to improving value through effective partnering and procurement arrangements.

Description of the scheme

The A30 is the most vital trunk road link in Cornwall, linking towns in the far southwest of the county, such as Penzance and Falmouth, to the city of Exeter and the rest of the UK Highways Agency road network. Over the years, most of the A30

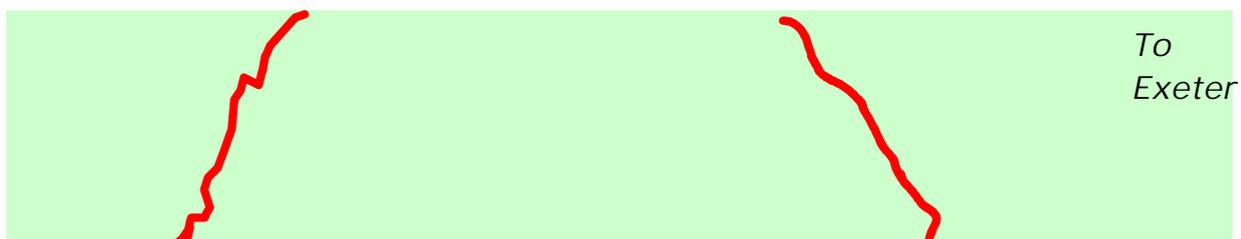
west of Exeter has been upgraded to dual carriageway standard, with the single carriageway section between the town of Bodmin and the village of Indian Queens causing a major bottleneck. Schemes to improve the A30 between Bodmin and Indian Queens had been examined since the 1970's as a means of relieving the significant congestion that occurred during the tourist season, which added to the amount of traffic on the road leading to significant delays particularly during bank holidays and school holiday periods.

The development of the 11.5 km (7 mile) scheme between Bodmin and Indian Queens faced at least two major challenges: one was the environmentally sensitive nature of the landscape and wildlife in the area which meant that significant environmental issues had to be managed, and the second was a low railway bridge over the A30 at Victoria village which meant that HGV traffic had to be diverted onto local minor roads to get around this obstacle causing significant problems for the drivers of heavy goods vehicles and the local community.

These issues meant that it was only in 2002 using a new contract type (Early Contractor Involvement) that plans were finally agreed in consultation with the local authority, local communities and special interest groups to upgrade the road to a dual carriageway.

This new scheme required the road to be significantly realigned in places to improve the environmental quality of the landscape; the old single carriageway road had crossed Goss Moor to the east of Indian Queens and the increasing traffic on the A30 had led to the moor essentially becoming separated into two parts for the insects and animals living there. The scheme aimed to build a new dual carriageway to the North of the Moor thus allowing the Goss Moor to become whole again once the old A30 road was closed to vehicle traffic. The old road would be down graded and used for walking, horse riding and cycling; activities which would not significantly impact on the ability of insects and larger animals to cross to the other side of the moor.

The scheme commenced in July 2005 and the new carriageway was completed in July 2007. The work comprised the construction of an 11.5km length of new dual carriageway together with the development of around 6.5km of side roads. In addition to this, new structures were built on the A30 including three over-bridges, four underpasses and two grade-separated junctions to improve the flow of traffic.



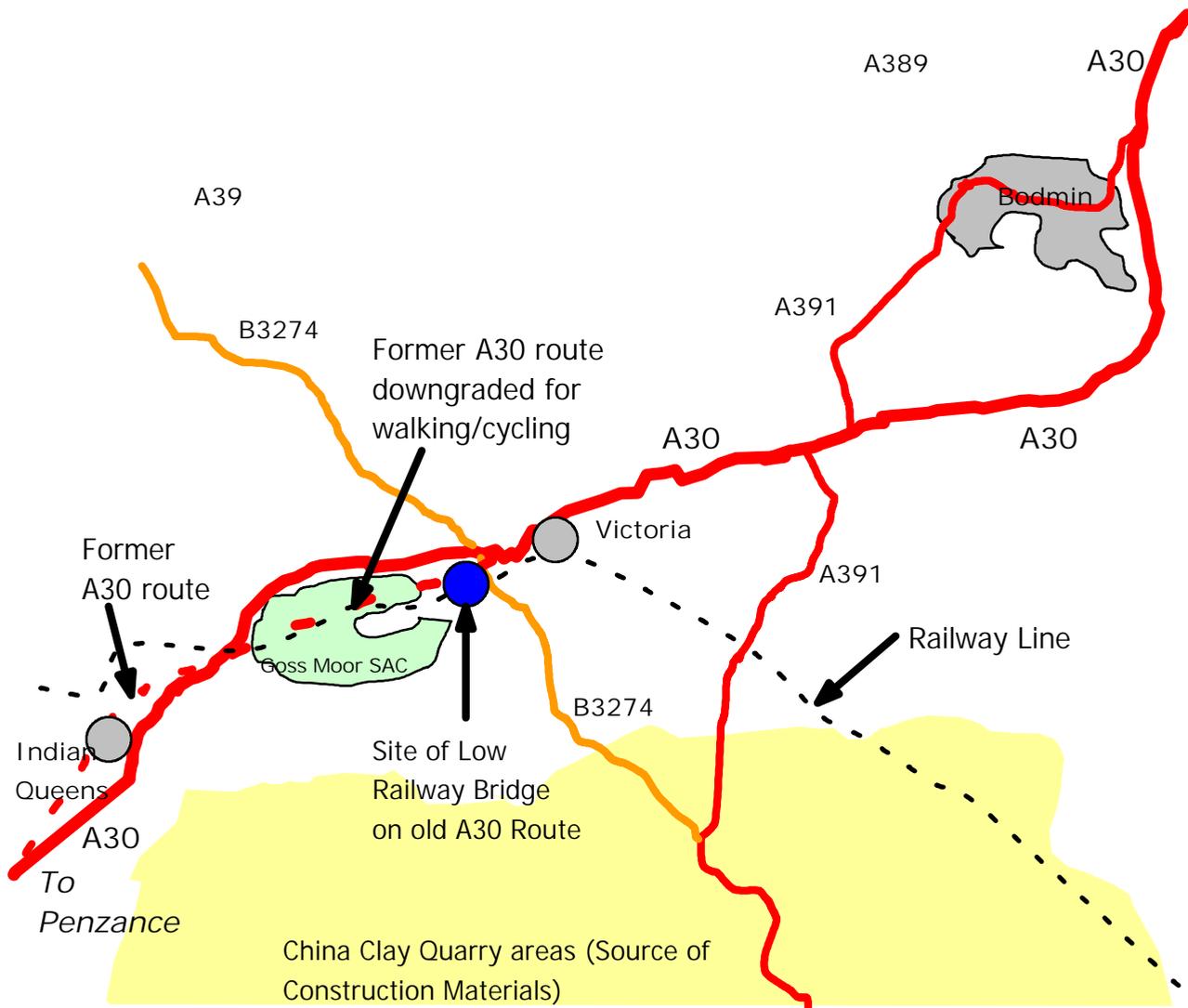


Figure 1: Location Map of Scheme

How the resource efficiency issues were addressed

The project team focussed on minimising resource use and reducing the amount of material transported to the site from outside the local area. This is in line with the HA's aim for sustainable construction to minimise resource use and waste.

Wherever possible, site-won or local materials were used. Advantage was taken of technological developments. Activities undertaken as part of this included:

- Over 98% of the imported aggregates used for the entire works (over 700,000 tonnes) were sourced as a secondary product from the china clay industry, thereby utilising a secondary product available in abundance in close

proximity of the site. (With the china clay industry in decline in the UK, the use of this readily available secondary material provided an economic benefit to the local community in difficult times). This resulted in a substantial reduction in long distance lorry journeys and their associated carbon emissions.

- For the first time on a road scheme in the UK, a paving machine was used that could pave across two lanes at a time with great accuracy thus reducing waste, emissions and time taken to complete the task.
- A mobile asphalt coating plant for producing the new carriageway surfacing was established at the source of the secondary aggregate at the china clay quarry reducing the need for additional lorry movements and minimising transport impacts on local villages.
- Existing roads that were no longer required (parts of the A30 on the old alignment and associated redundant side roads) were planed and the chippings reused for access tracks.
- All vegetation and roots cleared during the project were chipped and reused as mulch.
- The scheme was carefully designed to have an exact balance of cut-and-fill, negating the need to import or export large amounts of soil or other materials.
- Cornish hedges used locally quarried stone (and local skills) which reduced delivery mileage.

Economic benefits of resource efficiency

The decision to source over 98% of the imported aggregate for the scheme from the local china clay industry is likely to have had a positive economic benefit on the scheme as well as on the local economy. In addition to this, making use of a double width paving machine will have saved time on this element of the scheme with an associated positive economic benefit.

Conclusions

This case study on the A30 Bodmin-India Queens improvement illustrates the significant resource efficiency actions that can be taken to reduce the amount of material transported to the construction site and the importance of early involvement of all parties and an awareness of locally available materials from the outset.