

A5-M1 Link (Dunstable Northern Bypass)

Chalton, Luton, Bedfordshire

Costain Carillion Joint Venture (CCJV)

BIG Biodiversity Challenge Award category: Large Scale Permanent Award

Project overview

The A5-M1 Link (Dunstable Northern bypass) is an exemplar of a major new highway, designed and constructed with environmental protection and ecological enhancement as core parts of the process. A new 5km two-lane dual carriageway will link the A5 north of Dunstable to the M1 at a new Junction 11a. The A5 provides a route from Milton Keynes to the M1 at Junction 9, passing through the built up area of Dunstable. This section of the route, as well as local roads, often carry significant amounts of traffic..

Objectives of the scheme are to:

- Reduce journey times for long distance traffic
- Relieve Dunstable of significant congestion
- Improve safety on local roads
- Link the M1 and the A5 to facilitate economic development in Central Bedfordshire

Costain Carillion Joint Venture commenced main construction work on the £162 million Highways England scheme in March 2015 with a completion date of Spring 2017.

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

Whilst the area of the road is rural, the habitat for wildlife was of relatively low quality – most of the land within the area of the scheme was arable, with some pasture. There are very few areas of mature planting with trees and shrubs that are affected by the scheme.

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

Highways England have zero net loss in biodiversity as a strategic aim, which the project used as a minimum target. Avoiding and minimising environmental impacts was integral to the design process. The designers, AECOM, and CCJV set an ambitious target to go beyond ‘no net loss’ and achieve net biodiversity gain. Early Contractor involvement ensured construction requirements were taken into account during scheme design which improved the environmental assessment and minimised changes required in detailed design.



Photo description: Aerial photo showing deep cutting to expose chalk, new attenuation pond, planting, and ecological habitat creation.

Putting much of the scheme into cutting reduced visual impacts and provided opportunities for new habitats. It balanced cut and fill for efficient use of materials and reduction of haulage.

What were the biodiversity measures taken?

The A5-M1 Link is retaining existing habitats and increasing the extent and diversity of local habitats, with net gain of 36 hectares of new habitats (wildflower grassland, woodland, scrub and trees, wildlife ponds, natural regeneration on chalk, badger setts, hibernacula and a wetland), benefitting both wildlife and access for people.

The most important geological feature associated with the scheme is a cutting, 6.5m deep and 800m long. This is being left as an exposed chalk face to seed naturally over time, providing geological and visual interest. Exposure of chalk allows scope for the encouragement of chalk loving grassland; a habitat characteristic of the local area but not found in the vicinity of the scheme at present.

Habitat creation and drainage design were combined in an innovative wetland design. Excavating valley slopes creates a new wetland, fed from the attenuation pond and agricultural drainage. The new wetland will enhance the existing Ouzel Brook valley. The 'corrugated' design provides diversity of wetness over a broad area, and future variety in the new wildflower grassland.

50,000m² of site clearance took place, the majority of which were hedgerows. The total area of replacement planting, made up of native species hedgerow, trees, woodland, shrub and scrub, totals 723,000m² – a replacement ratio of 14:1.

The scheme crossed arable fields that were important for their populations of scarce arable flora. Impacts were minimised by saving soils with arable flora seedbank and reinstating them in the same area as part of the landscape design. An existing main badger sett has been lost to the scheme with two replacement setts constructed. Another badger sett was due to be closed but CCJV used technology to help; ground-penetrating radar surveys revealed that active setts would not be severed.



Attenuation ponds and arable land bordering the scheme



Variety of pictures showing construction of badger setts

What were the biodiversity measures taken?

Bait-marking and motion sensor cameras confirmed success of both artificial setts.

A small Great Crested Newt population is present adjacent to the scheme. Provision of three new wildlife ponds, each with a hibernacula, and significant new GCN habitat will help long-term survival of a population under threat, a net gain for the newts.

How would you best describe the project?

Both mitigation and enhancement.

Further information

The A5-M1 Link shows good planning and environmental design can minimise the impacts of infrastructure construction and maximise the benefits. Environmental management is integral to construction, with CCJV having an on-site, environmental manager, plus an Environmental Clerk of Works (ECOW), supported by AECOM specialists. Daily ECOW reporting, rapid response plans for environmental protection, audit processes and environment reporting in monthly management and performance targets, e.g. for waste reduction, all aid good environmental performance on site.

Measures to minimise waste and resource use in construction include:

- Rainwater harvesting (6000 litres storage) for use in dust suppression, wetting materials and flushing toilets
- On-site materials reuse and recycling
- Reuse of excavated material on site, avoiding any export and minimising imported materials
- Use of recycled construction materials e.g. cement-bound granular material to provide a stronger sub-base and reduced depth of low-noise surfacing
- 93% of construction waste has been recycled (excluding spoil otherwise the figure would be 99%)

The created habitats can be easily maintained in future years which has come about by A key to the success of the Design-Build-Finance-Operate project has been the collaboration between AECOM, CCJV and Highways England. This is particularly important as Highways England will be responsible for the maintenance of the created habitats which can be easily maintained in future years.



Photo Description: Work progressing at the A5 end of the scheme

What was your personal motivation for carrying out the enhancement?

With the scheme passing through arable land the motivation was to deliver a project which enhanced biodiversity. The aim was to go beyond 'no net loss' and demonstrate how a large infrastructure project can be designed and constructed with environmental protection and ecological enhancement as core parts of the process.