

Heads of the Valleys Road, Brynmawr (A465)



Fig 1: Outfall into brook (road construction visible at top of bank)

SuDS used

- *Complex flow controls*
- *Geocellular Storage systems*

Benefits

- *Improved traffic flow*
- *Improved safety for road users*
- *Enhanced flood protection to villages and ecology areas along the route*

1. Location

A465 Section 2 – Brynmawr, NP23 4AJ; 51°47'54.4"N 3°10'25.5"W to Gilwern, NP7 0AR; 51°49'30.6"N 3°05'36.7"W

2. Description

The A465 road is a main arterial connection linking Swansea in west Wales with the Midlands. It also forms part of a toll-free route from England into Wales, and to the west Wales ferry ports to Ireland.

The existing three lane carriageway, between Brynmawr and Gilwern, was constructed in the 1960s, and traffic flow and speeds were restricted by road width, gradient, at-grade junctions and limited opportunities for safe overtaking.

Safety in particular had become a significant issue, with 31 personal injury collisions—including two fatalities being recorded between July 2011 and June 2012.

Road usage projections estimated that traffic flows on the road would rise to above 22,000 average annual daily traffic movements in 2020; with the advised maximum for single carriageway roads set at 21,000, it was clear that the road needed to be upgraded and improved.

The site runs through the Brecon Beacons National Park, the Usk Bat Sites Special Area of Conservation (SAC - the highest order of protected ecological site under European legislation) and Mynydd Llangatwg SSSI, renowned for an extensive karst limestone cave system, part of which passes directly under the road. The Gorge also contains European and nationally protected beech woodlands, a geological SSSI, four Scheduled Ancient Monuments and is overlooked by the Blaenavon Industrial Landscape World Heritage Site.

The Welsh Assembly Government initiated a £220m upgrade project under an Early Contractor Involvement contract, to be delivered by Contractor Costain, supported by a civil engineering design joint venture (DJV) comprising Atkins, and CH2M, plus environmental consultants RPS.

Officially called the Neath to Abergavenny trunk road, but better known as the Heads of the Valleys Road, the A465 connects across the northern heads of the south Wales valleys and along the southern edge of the Brecon Beacons National Park. Bordered by mountains and cutting through Clydach Gorge, the geography is one of the most significant constraints on the whole project.

Steeply sloping sites create construction challenges but also present the potential for fast-flowing surface water, as well as placing very high lateral pressures on buried structure due to the topography.

3. Main SuDS components used

The team eventually decided on stronger geocellular storage blocks due to the high lateral strength of the product (one of the highest available in the UK). The system had in fact already been installed successfully on a similar project on the A595 road between Parton and Lillyhall in Cumbria.

4. How it works

Thanks to the underground SuDS storage system the new carriageway will now be drained effectively to nearby watercourses, managing stormwater flow and mitigating against flood risk.

A number of interlinked, cascading geocellular storage tanks have been installed variously under verges adjacent to the highway, under roundabouts and under the triangular areas between slip roads and main carriageway to ensure effective storage and attenuation.

5. Specific project details

Further information.

6. Maintenance & operation

Details of maintenance and operation

7. Monitoring and evaluation

Details of monitoring and evaluation

8. Benefits and achievements

Construction on Section 2 of the A465 is scheduled to complete in late 2019, and when finished it will improve traffic flow, road safety and air quality.

9. Lessons learnt

The project really demonstrated the value of bringing multiple stakeholders together, including the main contractors, engineers, groundworks contractors and product supplier to ensure the best & most cost effective solution for a highly challenging site.

The Design Joint Venture (DJV) of Atkins and CH2M led the drainage design work on the project, and the team brought in the manufacturer of the geocellular drainage at an early stage to discuss options with the DJV and Costain.

The manufacturer provided design and installation advice, providing expert comment on drawings and proposed amendments, and acted as a key facilitator between Costain and specialist installation subcontractor Keytec.

The partners proactively managed the delivery schedule of a large number of blocks and lorry movements to ensure that deliveries met the installation schedule. The team remained agile and flexible, as the installation schedule shifted due to external factors.

10. Interaction with local authority

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11. Project details

Construction completed: *Due for completion late 2019*

Cost: £220m

Extent: 4.3miles of new carriageway

12. Project team

Funders	<ul style="list-style-type: none"> Welsh Assembly Government
Clients	<ul style="list-style-type: none"> Welsh Assembly Government
Designers	<ul style="list-style-type: none"> Atkins
Contractors	<ul style="list-style-type: none"> Costain Keytec
Manufacturer	<ul style="list-style-type: none"> Hydro International

13. Project images and illustrations



Fig 2: Existing road showing difficulties in terrain / topography