The Blackwater Valley Road: using green infrastructure to mitigate significant environmental effects

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The Blackwater Valley Road comprises 17 km of high speed dual carriageway linking the A30 with the A31 and M3. It was conceived in the 1960s and then built in four stages between 1985 and 1996 by Hampshire and Surrey County Councils. Each of the four stages was the subject of a separate EIA; at the time these schemes were some of the earliest road schemes to be subject to EIA in the UK.

The Blackwater Valley is a wedge of open space separating major urban areas on the Surrey / Hampshire / Berkshire borders. The landscape is dominated by a chain of lakes formed by sand and gravel extraction. Rapid urban expansion led to the degradation of the local landscape and resulted in traffic congestion in the urban areas along the Valley.

The scheme to build the Blackwater Valley Road was constrained by significant engineering challenges including the narrowness of the valley, the presence of lakes and rivers and by the need to construct an aqueduct for the Basingstoke Canal Site of Special Scientific Interest.

The EIAs for the four schemes recognised that the road would have significant effects on ecology as a result of:

- Habitat loss – a net loss of 38 ha;
- Habitat fragmentation reducing the effectiveness of the valley as a wildlife corridor;
- Noise disturbance;
- Pollution of the River Blackwater from surface water run-off;
- Effects on legally protected species due to habitat loss and severance;
- Loss of recreational facilities.

In order to mitigate significant effects, the two County Councils purchased substantial areas of land alongside the scheme. This enabled a comprehensive package of green infrastructure measures to be designed and constructed.
The overall package of ecological measures included:

- Avoidance of existing sensitive areas wherever possible;
- Temporary fencing to prevent damage to adjacent areas during construction;
- Design of river diversions to improve riparian habitat;
- Habitat creation resulting in an increase in water bodies and woodland of 90 ha;
- Habitat management, such as tree removal from grassland and swamp areas;
- Translocation of heathland, aquatic and marginal vegetation and individual rare plants;
- Natural regeneration of chalk grassland communities (Figure 1);
- Capture and translocation of reptiles, amphibians and fish;
- Design of drainage ponds to provide wildlife habitat;
- Construction of a tunnel for roosting bats and erection of bat and bird boxes;
- Measures to protect the water quality of the river;
- Provision of a public footpath, doubling the area of open access land and improving the quality of an angling lake.

The results of monitoring exercises undertaken in 2004 and 2011 indicated that the habitat creation schemes were largely successful, although some of the new habitats, such as woodland, will still take many years to be of equal quality to those lost. Wildfowl populations have largely benefited from the borrow pits, which provided new water bodies, and woodland bird populations use the extensive new tree belts. Translocation of aquatic plant species was successful, whereas few of the translocated grassland plants survived.

Populations of legally protected species have been retained; for example a number of common bat species still forage in the valley. The habitat changes brought about by the road scheme also benefited many species not targeted by the mitigation work, such as the wildfowl that have benefitted from the new water bodies created from the borrow pits. However, some species have been adversely affected by the changes both directly and as a result of the changes to the overall balance of habitats within the valley; for example, attempts to translocate common spotted orchid were unsuccessful.
Three key factors were identified as being instrumental in the success of the mitigation for this scheme:

- Ecologists worked closely with the highway engineers during design and construction of mitigation;
- The Blackwater Valley Countryside Partnership works closely with local authorities, private landowners and local community groups such as the Tongham Woodland Improvement Group (Figure 2) to manage the green infrastructure;
- Maintaining a flexible approach to management, based on monitoring of habitats and species, helped to direct and reshape mitigation measures, while continuing to focus on the original overall aims. For example, trees were removed from a number of plantations to allow naturally regenerating grassland flora to flourish.

In summary, long before the phrase “Green Infrastructure” came into common use, the Blackwater Valley Road scheme retained, created and managed 117 ha of land to provide multi-purpose benefits for people and wildlife.

This green infrastructure was placed in local authority ownership and is being sympathetically managed to ensure that it provides green space for local people, habitat for wildlife and mitigation against the impacts of the road. At a time when budget constraints are likely to have an increasing influence on road and other major infrastructure schemes, it is essential that mitigation is as efficacious as possible; green infrastructure with its multi-purpose approach to realising benefits is an excellent way of ensuring this.

EIA is a robust method of identifying what environmental mitigation is required and therefore can provide sound information on what should be included in the green infrastructure design.

Photo legend
Figure 1. A verge that was not sown with a seed mix and allowed to regenerate naturally supports chalk grassland plant species. Credit: Tony Anderson, BVCP

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