

Water Features

Water features occurring on the soft estate include ditches, balancing ponds or lagoons, rivers, streams and canals. Valuable wetland habitats such as bogs, fens and estuaries also occur alongside roads (or underneath road structures) in many places, and may be directly or indirectly affected by them.

Motorways and trunk roads cross linear water features throughout the entire Highways Agency network, particularly in lowland areas, where a meandering watercourse may repeatedly cross the path of a road. Balancing ponds, settlement lagoons and drainage ditches all represent elements of road drainage systems, and are therefore even more prevalent across the network. Although created for a drainage function (and therefore not generally managed for wildlife), over time they may develop flora and fauna of some conservation value. Larger areas of the soft estate may contain natural ponds and other wetland areas (such as springs and flushes) which have not been created for drainage purposes.

Current status

General

Owing to the frequency of their occurrence, water features represent a prevalent and important element of the ecological resource of the soft estate. Water features within the soft estate are not generally managed for wildlife, but in line with their function as drainage and pollution control features. Although created for a drainage function, over time they may develop flora and fauna of some conservation value.

UKBAP habitats

Separate habitat action plans have been prepared in the UKBAP for numerous different types of aquatic habitats. Six of these are most likely to occur within, or be directly affected by, the soft estate: chalk rivers, eutrophic standing waters, reedbeds, lowland raised bogs, fens and estuaries.

There are approximately 35 chalk rivers and major tributaries in England. Water quality in chalk rivers is generally very high, and they support a rich diversity of aquatic plants and animals, in particular invertebrates. They are characteristically dominated by Water Crowfoot (*Ranunculus pencillatus*) and Starworts (*Callitriche spp.*) in mid-channel, and support a wide variety of marginal plant species along their banks.

They are particularly notable for otters and white-clawed crayfish. Roads are most likely to cross these watercourses in southern and eastern England, south of a line running from Dorset to Humberside.

Eutrophic standing waters comprise highly productive (either naturally or as a result of artificial enrichment) lakes, reservoirs and gravel pits, which are characterised by long-term populations of algae in mid-summer turning the water green. Planktonic algae and zooplankton are abundant and they support a rich diversity of submerged plants, invertebrates and fish. The total area of still inland water in England is estimated at 540km². Several important areas of eutrophic standing waters are found close to the network, including the Norfolk Broads and the West Midland Meres.

Reedbeds are wetlands dominated by Common Reed (*Phragmites australis*), but with areas of open water, in which the water table is at or above ground level for most of the year. Priority Species found in reedbeds include otters, water voles, bittern and great crested newts.



Reedbeds are commonly used in the treatment of road run-off, but may also occur close to the Highways Agency soft estate and be unaffected by road operation.

Lowland raised bogs and fens represent some of Europe's rarest and most threatened habitats and occur in low-lying locations or basins. They can occur both within and adjacent to highway land, as well as underneath road structures, and can be affected by road drainage. They are most likely to be found on the soft estate in lowland areas of the north-west, in Somerset and in the East Anglian Fens.

The core parts of an estuary are the intertidal and subtidal areas, which are associated with a number of related habitats such as saltmarsh, sand dunes, shingle, mudflats and grazing marsh. Estuaries can be adjacent to as well as inside highway land, and can be adversely affected by road drainage. Estuarine habitats may also occur underneath road structures, such as bridges and viaducts.

Current factors affecting the habitat

Habitat loss and deterioration

All of the wetland habitats referred to above are threatened by habitat loss, pollution and drainage. The construction of new roads is one of the main ways in which Agency actions may threaten water features, either directly through habitat destruction or indirectly through pollution and the hydrological effects of road construction. Existing roads can also potentially impact on water features through pollution.

Inappropriate management

Poor management of ditches and ponds within the soft estate can threaten these habitats as well as the species which occur within them, leading them to become overgrown and eventually drying out.

Poor monitoring and management of pollution control mechanisms can also threaten these habitats as well as the species that occur within them. Another major threat to wetland habitats is from highly invasive non-native species, such as Himalayan Balsam, Japanese Knotweed and New Zealand Pigmyweed (*Crassula helmsii*), all of which can spread rapidly if not controlled.

Current action

Pollution interceptors and other control mechanisms are routinely incorporated into road schemes in order to protect aquatic habitats from road run-off.

The TRMM recommends that maintenance of drainage ditches and balancing ponds should be timed, and special methods used (as advised by an appropriately qualified ecologist), to be least damaging to the flora and fauna.

Advice on the creation, translocation and management of wetland habitat on road verges (including the use of reedbed filter systems) is provided in the DMRB. The manual also details procedures for the avoidance of pollution and for the minimisation of impacts on the integrity of watercourses.

In the south-west of England, the Highways Agency is working to encourage research on heavy metal accumulation in reedbeds fed by contaminated water, and the availability and impacts of pollutants to wildlife species. The HA is also promoting and advising on the use of reedbeds for pollutant treatment and ensuring that this is taken into account along with mitigation against potential contamination of wildlife species.

Objectives

The plan aims to protect water features associated with the existing road network, and to ensure that future road building schemes take

account of potential impacts on important aquatic habitats and associated species.

	Objective	Proposed actions
A	To ensure that new road developments avoid water features, wherever possible.	7
B	To ensure that the indirect impacts of new road schemes on water features, in particular through pollution, are adequately mitigated.	1, 4, 5, 6, 7, 9, 11, 12
C	To record the distribution of existing valuable water features (particularly UKBAP Priority Habitats and protected species) and ensure their protection.	2, 3, 9, 10
D	To raise awareness with HA staff, Managing Agents and consultants regarding the importance of water features on the network, and to provide detailed advice to contractors on beneficial management.	1, 13, 14, 15
E	To create valuable water features as part of new roads and road improvement schemes, wherever possible.	8, 12

Proposed action

The following table lists the actions required to achieve the objectives set out in this Plan. For some of the actions, potential partners have

been assigned as likely sources of cooperation. Targets are provided to give an indication of the timescale for the proposed action.

	Action	Potential partners	Target
	<i>Policy, guidance and advice</i>		
1	Provide detailed information in TRMM/DMRB on management to avoid adverse impacts to water features, in particular UKBAP habitats.	-	2004
	<i>Surveying</i>		
2	Carry out further surveys to ensure that all valuable water features that fall within the soft estate, in particular UKBAP habitats, are mapped. Include all records on the HA Environmental Database.	-	2005
3	Ensure that all designated wetland habitats adjacent to the network with connections to the road drainage system are identified and mapped.	-	2006
	<i>Research and monitoring</i>		
4	Continue research into the impacts of pollutants on aquatic fauna and flora and the use of reedbeds for the treatment of pollutants.	Southwest Water Services, EA	Ongoing
5	Monitor the performance of 20 new protection measures for chalk rivers, eutrophic standing waters and reedbeds, and 10 new protection measures for estuaries.	-	2002-7

	Action (continued)	Potential partners	Target
	<i>Research and monitoring (continued)</i>		
6	Review pollution protection measures in place for sites within or under the road network designated for their wetland habitats. (Undertake additional measures where required).	-	2010 (2012)
	<i>Mitigation and Management</i>		
7	Carry out wetland surveys at the road design stage to ensure that there is the minimum adverse effect on water features, both directly through habitat destruction and indirectly through pollution.	-	Ongoing
8	Where impacts of new roads and road improvement schemes on water features are unavoidable, consider the options for habitat recreation and enhancement (target 25 new features or improvements to existing features).	-	2010
9	Ensure that appropriate management is in place at all protected wetland sites within (or under) the road network.	EN, EA	2010
10	Carry out surveys for protected species associated with water features (in particular white-clawed crayfish, great-crested newts, otters and water voles) to ensure that maintenance works do not break current legislation.	-	Ongoing
11	Ensure that petrol and oil interceptors are monitored and maintained across the network.	-	Ongoing
12	Consider the use of reedbeds, alternative vegetative filtration systems and SUDS into new drainage provision, where appropriate.	-	Ongoing
	<i>Communications and publicity</i>		
13	Raise awareness within the HA of the value of UKBAP wetland habitats, for example through the use of internal news publications.	-	2003
14	Ensure that HA staff members involved in road verge management are aware of the HABAP and of any updating of TRMM/DMRB with regard to the management of wetland features.	-	2004
15	Promote and advise on the use of SUDS for pollutant treatment.	EA	2003

Links with other plans

This plan should be read in conjunction with the SAPs for otter, water vole, great crested newt, vendace, white-clawed crayfish and the water beetle *Agabus brunneus*.

Lead partners

The lead partners for the relevant UKBAP habitats are as follows:
 Eutrophic standing waters and chalk rivers - Environment Agency
 Fens, reedbeds and lowland raised bog - English Nature.