

ENVIRONMENT AGENCY
POLICY REGARDING CULVERTS
EXPLANATION OF POLICY

MARCH 1999



ENVIRONMENT
AGENCY

1.0 | Purpose

This leaflet provides a detailed explanation of the Environment Agency's policy with regard to culverts. It is intended for use by planning authorities, landowners and developers. The approach is recommended for other drainage authorities in England and Wales.

2.0 | Introduction

The Agency considers it beneficial for watercourses to remain in an open state for both flood defence and environmental purposes. Conserving open watercourses is one of the Agency's major aims and, where possible, the Agency will encourage and promote the removal of culverts in order to restore a more natural river environment.

In considering new development proposals an Agency objective is to retain open watercourses with a corridor of open land on both sides. This maintains a flood channel and creates a valuable environmental feature which can enhance the site. The Agency will encourage developers to incorporate open watercourses within their site design. Such features are of particular importance to wildlife by providing valuable open land in developed areas.

Culverting should not be considered until other options have been thoroughly explored, for example:

- clear open span bridges with existing banks and bed retained;
- revision of site layout to incorporate an open watercourse;
- diversion of the watercourse in an environmentally sympathetic channel and corridor.

It is recognised there are various reasons why in some instances landowners, developers and local authorities believe that open watercourses should be culverted.

However, the Agency considers any benefits are usually outweighed by the potential problems in managing the system, the loss of habitats and difficulty in pollution detection.

Nevertheless, there may be cases where culverting may in practice be unavoidable for example, short lengths for

access purposes or where highways cross watercourses. In such cases the length involved should be restricted to a minimum, the hydraulic and environmental design fully assessed and appropriate mitigating enhancements to the surrounding environment included in the proposal.

3.0 | Agency Policy

The Agency is in general opposed to the culverting of watercourses because of the adverse ecological, flood defence and other effects that are likely to arise.

The Agency will therefore only approve an application to culvert a watercourse if there is no reasonably practicable alternative or if the detrimental effects of culverting would be so minor that they would not justify a more costly alternative. In all cases where it is appropriate to do so adequate mitigation must be provided for damage caused.

Wherever practical the Agency will seek to have culverted watercourses restored to open channels.

4.0 | Reasons for the Policy

The Environment Act 1995 places both general and specific duties on the Agency relating to environmental, recreational and nature conservation matters. The Agency must be mindful of these duties in discharging all its functions, including those relating to flood defence and land drainage. Consequently, the Agency is in general opposed to the culverting of watercourses because of the detrimental effects that are likely to arise. Such effects may be:

- loss of and adverse effects on environmental features and wildlife habitat;
- increased likelihood of flooding due to blockage;
- increased impact of flooding;
- loss of floodwater storage;
- increased difficulties in providing for drainage connections;
- difficulties in the repair, maintenance and replacement of culverts;
- increased health and safety hazards;
- reduced groundwater recharge;
- increased difficulty in detecting the origins of pollution and in monitoring water quality.

4.1 Loss of environmental features

Culverting watercourses has a detrimental impact on the environment. There is a complete loss of environmental features associated with that section of watercourse. The continuity of the river corridor is broken, adversely affecting the landscape and ecological value of the watercourse and inhibiting the migration of some species. An existing or potential amenity is lost for present and future generations.

Culverting results in the removal of species and river features such as pools, riffles, gravel, cobble, sand, silt, marginal/aquatic vegetation, earth banks with associated vegetation, invertebrate communities and fish. Even seasonally dry watercourses provide valuable habitats for many species, such as amphibians and invertebrates.

Culverting is therefore contrary to the Agency's duty to further conservation in relation to its flood defence responsibilities and its aim of contributing to sustainable development.

4.2 Increased likelihood of blockages

Compared with an open channel there is an increased risk of blockage once a culvert is installed. If the blockage is within the culvert, there is much greater difficulty in removing it. For these reasons many culverts have screens installed at their upstream end. These screens themselves are often prone to blockage and require frequent clearance and robust emergency procedures to ensure that they do not in themselves cause flooding.

It is sometimes argued that culverting will reduce the problem of open channels subject to rubbish deposition. The Agency considers that in most cases such short-term advantages are outweighed by the overall disadvantages of culverting and that alternative means should be pursued to address the rubbish problem.

4.3 Increased impact of flooding

The effect of the overland flooding that will occur when a culvert cannot cope with all the flow reaching it is often more serious than flooding from an open watercourse.

4.4 Loss of floodwater storage

Open channels generally provide more storage capacity than a culvert and the detriment will be more significant in relation to longer culverts.

4.5 Increased difficulties in providing for drainage connections

Drainage can be provided more easily with open watercourses into which drain connections can readily be made and the performance of drainage systems visually monitored. Outfalls within culverts are prone to blockage or, in the case of flapped outfalls, can seize up. Maintenance of these outfalls is considerably easier in open channels.

4.6 Difficulties in the repair, maintenance and replacement of culverts

Culverts conceal the presence of a watercourse and can lead to development or unacceptable land-use above or near them. In many urban areas buildings have been constructed above or adjacent to culverts. This means that improving standards of flood protection or accommodating run-off from future developments could be impossible or uneconomic due to the cost of replacing or enlarging existing culverts. There have recently been cases of serious flooding caused by culverts collapsing due to large amounts of materials stockpiled above them.

In urban areas consideration must be given to the need to provide alternative means to deal with flood water over and above that which can be accommodated by the culvert under design conditions. This will also provide contingency arrangements in the event of blockage of the culvert, thereby minimising the risks of flooding to property.

The responsibility for the condition and maintenance of a culvert lies with the landowner or the owner of the culvert unless other agreements are in place. The responsible party must therefore ensure that the culvert and any screens remain in good condition and free from obstructions. Failure to do so could result in liability for any damage caused by flooding.

Access to culverts is generally safe only with the use of special procedures and equipment, making inspection and maintenance both difficult and costly.

4.7 Health and safety hazards

There are dangers associated with natural open watercourses but culverted watercourses can be equally dangerous. Culverting does not remove the risk of drowning or injury. There have been many cases in the

past where children have died or suffered injury after entering culverts and they therefore represent a considerable safety hazard. Water levels can rise suddenly and without notice, and there can be a lack of oxygen or build-up of potentially toxic or explosive gases in culverts.

All these hazards are a danger both to the public and to operatives when maintenance is required.

4.8 Effect on recharge to groundwater

Culverting creates an impermeable bed to a watercourse and increases the speed of water flow, so reducing recharge to groundwater which can be particularly serious in large developments or areas of permeable geology.

4.9 Pollution and effect on water quality

Culverting a watercourse makes the early detection and tracing of pollution sources more difficult, resulting in the adverse impacts being more serious.

There is further impact on water quality due to the loss of the biological processes which are essential for river purification, and there is normally a reduction in oxygenation of water passing through a culvert. Culverting may also result in stagnant water problems, particularly if culvert levels are badly planned or constructed.

(Note: The Agency is not empowered under flood defence legislation to refuse consent purely on the grounds that it makes the detection of pollution more difficult.)

4.10 Culvert removal and river restoration

For the reasons outlined in 4.1 to 4.9 above, the Agency considers that it is good practice to promote the benefits of removing culverts and restoring watercourses to open channels.

5.0 | Exceptions

There are cases where culverting may in practice be unavoidable, such as short lengths for access purposes or where highways cross watercourses. In such cases alternatives such as open span bridges or diversion of the watercourse must have been rigorously considered, the length restricted to the minimum necessary to meet the applicant's objective, and appropriate mitigating environmental enhancements included in the proposal.

Before installing a culvert it is recommended that a risk assessment of the likelihood and consequences of blockage should be carried out and proposals implemented to reduce the risk to acceptable levels.

6.0 | Legal requirements and the need for consent

6.1 Land drainage consent

Any culverting of a watercourse, or the alteration of an existing culvert, requires land drainage consent. On main rivers (for definition see Section 8.0) the prior written consent of the Agency is required under Section 109 of the Water Resources Act 1991. On all other watercourses, except within the district of an internal drainage board (IDB), the Agency's consent is required under Section 23 of the Land Drainage Act 1991. In an IDB district the consent of the IDB is required, again under the Land Drainage Act 1991. On ordinary watercourses consents to the highway authority are granted under Section 339 of the Highway Act 1980.

If a culvert is constructed (or altered) on main river without consent, the Agency may remove, alter or pull down the work and recover its expenses from the person who carried it out. In addition, that person may also be liable to prosecution under the Agency's bylaws. If a culvert is constructed without consent on a watercourse which is not main river, the Agency may serve an abatement notice on the person having the power to remove it. If the notice is not complied with, the person responsible may be prosecuted and the Agency is entitled to carry out the necessary works and recover reasonable costs incurred in doing so.

(Note: More information on main rivers, the location of IDB Districts and Agency bylaws can be obtained from local Agency offices.)

6.2 Other permissions

Works either within or which would affect a Natura 2000 Site or a Site of Special Scientific Interest (SSSI) as a result of changes in flow regimes or water levels require the approval of English Nature or the Countryside Council for Wales, as appropriate.

Applicants should also check with their local authority whether their culverting proposals require planning permission under the Town and Country Planning Act 1990 and/or consent under the Public Health Act 1936.

7.0 | Consent Procedures

Landowners and developers should seek the Agency's advice as early as possible on any proposal, allowing sufficient time before work is to start. Identifying and resolving possible problems before plans reach an advanced stage will minimise costs to all parties and will reduce the time taken by the Agency when the consent application is received. In addition, opportunities for environmental enhancements can be identified, which may not necessarily entail significant expenditure by the developers.

Please refer to the Agency's leaflet **Technical Guidance on Culverting Proposals** before applying for consent. This is available from all Agency offices.

After preliminary details have been agreed, an application must be completed and submitted to the Agency, along with the appropriate fee, for formal consent. On receipt of a complete and valid application, the Agency has two months in which to determine it.

Each application will be treated on its merits in accordance with the Agency's duties and responsibilities under the Environment Act 1995, including the impact on the environment. The Agency acknowledges that the establishment of its policy regarding culverts is not in itself sufficient grounds for refusal of an application for consent to culvert a watercourse.

8.0 | Definitions

(Note: For the purpose of this document there are two types of structure connected with crossing watercourses, namely bridges and culverts. Short culverts are sometimes used, for example to allow an access road over a watercourse, and can be difficult to differentiate from bridges.)

Watercourse

Includes all rivers, streams, ditches, drains, cuts, dykes, sluices, sewers (other than public sewers) and passages through which water flows.

Bridge

An open span structure that carries a road, footpath, railway etc over a watercourse.

Culvert

A covered channel or pipeline which is used to continue a watercourse or drainage path under an artificial obstruction.

Internal drainage board

A board elected by ratepayers and established for designated, particularly low-lying, areas of England and Wales where flood protection and land drainage are necessary to sustain agricultural and developed land use. The functions of the IDBs and the Agency are separate.

Main river

All watercourses shown as such on the statutory main river maps held by the Agency and Ministry of Agriculture, Fisheries and Food or Welsh Office, as appropriate. Main river can include any structure or appliance for controlling or regulating the flow of water in or out of the channel.

More information on main rivers can be obtained from local Agency offices.

Ordinary watercourse

A watercourse which does not form part of a main river.

Sustainable development

Defined in the 1987 Report of the World Commission on Environment and Development (the Brundtland Report) as "Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs".

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