

Wokingham Borough Council

Culverting Guidance Notes

1 Purpose

Wokingham Borough Council, as the Lead Local Flood Authority, became responsible for ordinary watercourse consent applications under Section 23 of the Land Drainage Act 1991 on 06 April 2012.

Before this date, the Environment Agency dealt with works of this nature and produced extensive guidance on the subject. We have therefore adopted many of the principles and policies that the Environment Agency have worked to over the years.

This guidance note has been adapted from the Environment Agency's 'Culvert Policy' documents and provides a detailed explanation of our view on works to watercourses, with particular regard to culverts. It is intended for use by planning authorities, Highway engineers, landowners and developers.

2 Introductions

Watercourses fulfil many roles in today's environment. They provide drainage for developed and agricultural land and can be vital water resources, while some also have important recreational value. They are important features of the landscape and provide habitats for a wide variety of wildlife. It is therefore important that watercourses and their associated habitats are protected and enhanced for the benefit of present and future generations.

3 Legal Requirements

The following works require ordinary watercourse consent from the Lead Local Flood Authority (Wokingham Borough Council) under Section 23 of the Land Drainage Act 1991:

- a) erect any mill dam, weir or other like obstruction to the flow of any ordinary watercourse or raise or otherwise alter any such obstruction; or
- b) erect a culvert in an ordinary watercourse, or
- c) alter a culvert in a manner that would be likely to affect the flow of an ordinary watercourse.

For works affecting Main Rivers the prior written consent of the Environment Agency is required under the Water Resources Act 1991 and Environment Agency Byelaws.

4 Enforcement actions against unconsented works

If any of the above works are carried out without consent, we have the power to serve notice on the person who carried out the work (if they have the ability to remove the obstruction at the time the notice is served) or the person having ability to remove the obstruction. If the notice is not complied with by the date specified on the notice then the person responsible may be enforced against, or we are entitled to carry out the necessary works to remove or alter the work and recover its expenses from the person named on the notice. We will take a risk-based approach to enforcement action taking into account the location and nature of the unconsented works, whether they are likely to increase flood risk and what the consequences of any increase in risk may be. The cost-benefit of pursuing an enforcement case will also be investigated to ensure we would be delivering value for money to the tax-payer.

5 Wokingham Borough Council Policy

We are in general opposed to the culverting of watercourses because of the adverse ecological, flood defence and other effects discussed above. We 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 we will seek to have culverted watercourses restored to open channels.

6 Reasons for the Policy

6.1 Loss of environmental features

Culverting has a detrimental impact on the environment, resulting in a loss of features within a watercourse. The continuity of the river corridor is broken, adversely affecting the landscape and ecological value of the watercourse for migrating species. An existing or potential amenity would also be lost for present and future generations.

6.2 Increased likelihood of blockages and flooding

Compared with an open channel there is an increased risk of blockage once a culvert is installed. If the blockage occurs within the culvert, there is much greater difficulty in removing it.

It is sometimes argued that culverting will reduce the problem of open channels subject to litter and fly-tipping. Such short-term advantages are outweighed by the overall disadvantages, and alternative means should be pursued to address rubbish problems. Flooding is more likely to result from culverts when they become obstructed, and culverted channels also provide less flood storage than open ones. There have also been cases of serious flooding caused by culverts collapsing due to root damage from vegetation or the weight of development above them.

Culverting will create a less permeable bed to a watercourse and often increases the speed of water flow, possibly increasing flood risk downstream and also preventing local recharge of groundwater

6.3 Increased difficulties in providing new drainage connections, and the repair, maintenance and replacement of culverts.

Drain connections are more easily made to open watercourses where the performance of drainage systems can be 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.

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.

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 remains 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.

6.4 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.

7 Consent Process

Landowners and developers should seek our advice as early as possible on any proposal, allowing sufficient time before the intended start date of the development or works. The consent application forms and details on how to apply and pay the appropriate fee are available on our website at www.wbc.gov.uk.

On receipt of a complete and valid application, we have a period of two months in which to determine it, but will aim to reach a decision as soon as possible within this timeframe. As part of the process we will consult various authorities including the Local Planning Authority, Highways Department, Environment Agency and Natural England where appropriate. Identifying and resolving possible problems before plans reach an advanced stage will minimise costs to all parties and will reduce the time taken to determine the application.

Once determined, we will notify the applicant of WBC's approval or refusal in writing along with a written copy of your consent or reason for refusal if applicable.

8 Design Guidance

Detailed design plans will need to be submitted with your consent application. An applicant should demonstrate that they have considered the environmental implications of all options, and preferably settle on the least environmentally damaging solution.

If no other alternative is feasible, any proposed culvert length should be as short as possible and the diameter as large as possible. Depending on local circumstances we will look for a minimum culvert diameter of 600mm.

Culverts must be designed so they do not cause a restriction to flow. They must not increase the risk of flooding or prevent maintenance of the adjacent open watercourse. Consideration must also be given to overland flow paths in the event of a culvert becoming obstructed or overloaded. It should be ensured that flows will not affect property or cause unreasonable nuisance or harm.

The responsibility for future maintenance and clearance of a culvert must be agreed and details of those responsible submitted with your application for consent. The responsibility for the maintenance of a culvert lies with the landowner or the person who owns the culvert unless otherwise arranged.

Appropriate inlet and outlet structures should be provided in order to ensure smooth hydraulic transition and avoid erosion. Headwall arrangements at the upstream and downstream ends of a culvert should be suitably keyed into the bed and banks of the watercourse, and should be appropriate to the local environment.

Suitable access arrangements for maintenance should be included in the design. Access chambers must be provided at each change of direction if the

culverting is not straight. Other access/inspection chambers should be installed at suitable intervals.

Inlet and outlet screens should not be used unless absolutely necessary. An appropriate risk assessment must be submitted with your application to demonstrate when a trash screen is necessary, and a formal maintenance regime must be agreed prior to approval.

In most situations it is appropriate for the inverts of culverts to be set slightly below the existing bed level to allow for future maintenance or other works on the watercourse. It also aids the provision of a more “natural” bed to the culvert.

Multiple small culvert arrangements are prone to blockage by accumulation of waterborne debris at the inlet. Where multiple culverts are unavoidable, a minimum number of culverts should be used and cutwaters should be provided between pipes at the culvert inlet.

9 Environmental Considerations

Environmental mitigation measures may be appropriate if any open watercourse is being removed. We must also consider the key aims of the Water Framework Directive throughout the consenting processes. Overall this Directive aims to:

- prevent further deterioration and protect and enhance the status of aquatic ecosystems and associated wetlands;
- promote sustainable water consumption;
- progressively reduce or phase out discharges, emissions and losses of priority substances and priority hazardous substances;
- progressively reduce the pollution of groundwater; and contribute to mitigating the effect of droughts and floods.

Possible Environmental mitigation for larger culverts:

- Make the culvert slightly larger than that needed to accommodate the design flow and then position the invert of the culvert below the natural bed of the watercourse, to enable some more natural bed features to form.
- Provide ledges running through the culvert (approximately 500 mm wide and 300 mm above normal water level) to allow for the passage of mammals. Or make provision for appropriately located mammal underpasses close to the culvert.
- The height of the invert should not pose an obstruction to fish movement.
- Provide structures to encourage bat roosting and bird nesting as appropriate.

Environmental mitigation for smaller culverts:

- Propose suitable environmental enhancements, for example opening up a length of previously culverted watercourse elsewhere on the site, enhancing other lengths of the watercourse, creation of a pond/marshy area, scrub/hedge planting.
- Construct headwalls and wingwalls in ‘soft-engineering’ or natural materials in keeping with the natural channel.

10 Planning Considerations

The requirement for ordinary watercourse consent is independent of the need for planning permission and the granting of planning permission does not imply or guarantee that we will grant consent.

We would normally oppose planning consent and refuse ordinary watercourse consent on conservation grounds for a development which proposes a culvert where there are reasonable alternatives. Such alternative solutions might include a revised site layout or an ecologically acceptable diversion of an open channel.

Buildings should not be sited over the top of new or existing culverts. Building regulations (Approved Document H) stipulate the distance from which a watercourse or sewer should be laid from new foundations.

We would oppose planning consent for any building over a culvert as the culvert may, in the future, need to be repaired, replaced or up-rated if conditions in the catchment change. There is also the need to maintain an overland flow route if the culvert is blocked or its capacity exceeded.

Consent is also required for development within a specified distance of either side of a Main River in accordance with Environment Agency Byelaws.

11 Acronyms and Definitions

EA – Environment Agency

LPA – Local Planning Authority

WBC – Wokingham Borough Council

LLFA – Lead Local Flood Authority

FWMA – Flood and Water Management Act

LDA – Land Drainage Act

WFD – Water Framework Directive

Ordinary Watercourse - all rivers, streams, ditches, drains, cuts, dykes, sluices, sewers (other than public sewers) and other passages through which water flows that are not designated as main rivers.

Main River - all watercourses shown as such on the statutory main river maps held by the Environment Agency and Defra, as appropriate.

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.

Wingwalls-a wing wall is a smaller wall attached or next to a larger wall or structure

Headwalls- a headwall is a small retaining wall placed at the outlet of a stormwater pipe or culvert.

Inverts- the invert level is the base interior level of a pipe, trench or tunnel.