

## **Policy for the Construction of Structures or Culverting Works within a Water Course and the Construction of Engineering Works near an Open or Culverted Water Course.**

### **Purpose**

Neath Port Talbot County Borough Council, as the Lead Local Flood Authority (the Authority), became responsible for ordinary watercourse consent applications under Section 23 of the Land Drainage Act 1991 and Section 3 of the Flood and Water Management Act 2010 on the 06 April 2012.

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

This guidance note provides landowners and developers a detailed explanation of the Authority's approach to works to watercourses and in particular, culverts. It will also ensure a consistent approach in dealing with such works.

Note that main rivers and the coast fall under the remit of Natural Resources Wales (NRW). (Environment Agency Wales along with the Countryside Council for Wales, Forestry Commission Wales and some Welsh Government functions now fall under NRW). A map of all main rivers is accessible on the Environment Agency's website.

### **Introduction**

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.

The Authority considers it beneficial for watercourses to remain open wherever possible for both flood defence and environmental purposes. Culverting can exacerbate the risk of flooding, increase maintenance requirements and create difficulty in pollution detection. It also destroys wildlife habitats, damages a natural amenity and interrupts the continuity of a watercourse.

The Authority's objective when considering any development proposals 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 and be easily maintained. The Authority will also encourage developers to incorporate existing open watercourses, or create new ones, within their site design. These features are of particular importance to wildlife by providing valuable open land in developed areas. If an opportunity presents itself, the removal of culverts will be encouraged to restore a more natural river environment.

Where there may be cases where culverting is unavoidable for example, short lengths for access purposes or where highways cross watercourses. The length involved should

be restricted to a minimum, the hydraulic and environmental design assessed, and appropriate mitigating enhancements to the surrounding environment included.

Other options shall have been thoroughly explored before culverting will be considered, 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.

## **Reasons for the Policy**

This policy is designed to address the following problems:

### **1. Loss of environmental features**

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

### **2. Increased likelihood of blockages and flooding**

Culverts compared with an open channel increase the risk of blockages once installed. If a 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. These 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 been cases of serious flooding caused by collapsing culverts due to root damage from vegetation or the weight of development above them.

Loss of a permeable bed will be created to a watercourse due to culverting and increases the speed of water flow, possibly increasing flood risk downstream and also preventing local recharge of groundwater

### **3. Increased impact of flooding**

If a culvert becomes blocked then water will not be able to travel along it causing water from the inlet to find an alternative route which could cause damage to properties and/or land.

### **4. Loss of floodwater storage**

The construction of a culvert will reduce the flood water storage capacity of a water course, which could lead to the flooding of an area causing damage to properties and/or land.

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

Open watercourses offer easier drain connections, where the performance of drainage systems can be visually monitored. Outfalls within culverts are prone to blockage or,

in the case where flapped outfalls are used, 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. Buildings have been constructed above or adjacent to culverts in many urban areas. This could make it impossible in improving standards of flood protection or accommodating run-off from future developments or uneconomic due to the cost of replacing or enlarging existing culverts.

Unless other agreements are in place, the responsibility for the condition and maintenance of a culvert usually lie with the landowner or the owner of the culvert. Therefore the responsible party must 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. Inspection and maintenance can be both difficult and costly in gaining access to culverts, and is generally safe to do so, only with the use of special procedures and equipment.

#### **6. Health and safety hazards**

Natural open watercourses can present dangers, but culverted watercourses can be equally as dangerous. The risk of drowning or injury is not removed by culverting. There have been many cases in past where children have died or suffered injury after entering culverts and therefore they represent a considerable safety hazard. Without notice, water levels can rise suddenly and there can be a lack of oxygen or build-up of potentially toxic or explosive gases in culverts. All these hazards present a danger both to the public and to operatives where maintenance is required.

#### **7. Pollution and effect on water quality**

The early detection and tracing of pollution sources is more difficult after culverting a watercourse, with any adverse impacts being more serious. Due to the loss of the biological processes which are essential for river purification, there is further impact on water quality and there is normally a reduction in oxygenation of water passing through a culvert. Furthermore, it may result in stagnant water problems, particularly if culvert levels are badly planned or constructed.

### **Legal Requirements**

#### **Definition of an Ordinary Watercourse**

An 'ordinary watercourse' as defined under the Land Drainage Act 1991, includes all rivers and streams and all ditches, drains, cuts, culverts, dikes, sluices, sewers (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows which doesn't form part of a main river (a watercourse that forms part of a main river is the remit of NRW).

#### **Definition of a Culvert**

A 'culvert', also defined under the Land Drainage Act 1991, means a covered channel or pipe which prevents the obstruction of a watercourse or drainage path by an artificial construction.

The following works require ordinary watercourse consent from the Authority:

- the erection of any mill dam, weir or other like obstruction to the flow of any ordinary watercourse;

- the raising or alteration to any mill dam, weir or other like obstruction to the flow of any ordinary watercourse;
- the erection of any culvert in any ordinary watercourse or
- the alteration of a culvert in a manner that would be likely to affect the flow of an ordinary watercourse.

Neath Port Talbot County Borough Council may also set its own byelaws under Section 66 of the Land Drainage Act 1991. These byelaws must also be complied with.

### **Consent Process**

Consent is required to undertake works which affect a watercourse. There are two types of consent. Consent for permanent works and consent for temporary works.

Landowners and developers should seek the Authority's advice as early as possible on any proposal, allowing sufficient time before the intended start date. The consent application forms and details on how to apply and pay the appropriate fee are available at <http://www.npt.gov.uk/default.aspx?page=8631>

On receipt of a complete and valid application, we have a period of two months in which to determine it, but aim to reach a decision as soon as possible within this timeframe. As part of the process we will consult various authorities including Neath Port Talbot Council's Biodiversity Section and NRW where appropriate. Prior an application being submitted, the Authority through early discussions will endeavour to identify and advise in solutions to resolve possible problems to minimise costs to all parties which will reduce the time taken to determine the application. On determination, the Authority will notify you (the applicant) of our approval with reasonable conditions or refusal in writing along with a written copy of your consent if applicable.

Note that other consents may need to obtain. Such consents may include other landowners and NRW. Consents affecting watercourses as part of a main river or development within a specified distance either side of a main river is the responsibility of NRW. Determining which consents are required and obtaining these consents is the responsibility of the applicant.

### **Design Guidance**

Any consent application submitted will need detailed design plans. An applicant should demonstrate that they have considered the environmental implications of all options, and preferably settle on the least environmentally damaging solution. Where no other alternative is feasible, any proposed culvert length should be as short as possible and the diameter as large as possible. The Authority will look for a minimum culvert diameter of 600mm depending on local circumstances.

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 and
- ❖ 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 the application for consent. The landowner or the person who owns the culvert is usually responsible for the maintenance of a culvert unless otherwise arranged.

The following guidance must be adhered to:

- ❖ The hydraulic performance of the water course whether culverted or open shall be maintained at all times to its original design.
- ❖ 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 the 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 and
- ❖ 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.

### **Environmental Considerations**

Environmental mitigation measures may be appropriate if any open watercourse is being removed. The Authority must also consider the key aims of the European Union’s 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 and
- ❖ progressively reduce the pollution of groundwater; and contribute to mitigating the effect of droughts and floods.

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 wing walls in 'soft-engineering' or natural materials in keeping with the natural channel.

### **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.

The Local Planning Authority (LPA) 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.

The LPA 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.

### **Building near a Culverted Watercourse**

When building near a culverted water course the following distances must be adhered to:

1. A minimum easement of 6 metres, 3 metres either side of the centreline of the culvert or
2. 10 times the diameter of the culvert, plus the invert depth of the culvert, which is divided by 2 to give the distance either side of the centreline of the watercourse.

Whichever is the greater distance of these options is the required minimum distance. Any part of the building structure including foundations shall be kept outside the determined easement.

3. If engineering works are proposed within these easement areas then full engineering design drawing(s) are required along with any supporting

calculations required as part of any planning application or watercourse consenting application.

### **Exceptions**

It is recognised that there are situations 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 considered, the length of the culvert must be restricted to the minimum necessary to meet the applicant's objectives and where appropriate, mitigating environmental enhancements must be included in the proposal.

The Authority is in general opposed to the culverting of watercourses because of the flood defence, adverse ecological and other effects discussed above. The Authority may 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.

### **Enforcement action against un-consented works**

Where works have been carried out without consent in relation to the above, the Authority has the power to serve notice on those in control of the part of the watercourse in question including a landowner and occupier, those owning or occupying adjacent land or those who carried out the work. If the notice is not complied with, the Authority is entitled to carry out the necessary works to remove or alter the work and recover the expenses from those outlined above. In addition, those persons may also be liable to prosecution including infringement of local authority byelaws.

The Authority will take a risk-based approach to enforcement action in order to protect watercourses taking into account the location and nature of the un-consented 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.

Adequate mitigation must be provided for damage caused, in all cases where it is appropriate to do so. Wherever practical the Authority will seek to have any culverted watercourses restored to open channels.