

Pollution Prevention Technical Information note

Major pipelines

August 2010.

We've written these guidelines to help you identify the pollution risks in pipeline construction and operation. They will help people involved to minimise the risks by giving good practice advice. For the construction phase you should read our guidance for working at construction and demolition sites, reference 1.

1. General

We're responsible for the protection of surface waters and groundwater from pollution and for preventing environmental pollution, harm to human health and detriment to local amenity by waste management activities under the Environmental Protection Act 1990.

Surface waters include all watercourses, lakes, lochs and coastal waters. Groundwater is water contained in underground strata. It's an offence to pollute these waters, either deliberately or accidentally. You must have our formal permission before you can discharge anything to surface waters or groundwater. Permits are granted subject to conditions and aren't issued automatically.

Any other waste produced during construction or operation must be treated according to the Duty of Care (reference 2) under the Environmental Protection Act 1990 and may also be subject to control under the Environment Permitting Regulations 2010. Some hazardous wastes are subject to the Hazardous Waste (England and Wales) Regulations 2005 and the Hazardous Waste (Wales) Regulations 2005, as amended. Advice is available from us or the NetRegs website.

The most frequent pollution problems involving pipelines occur during the construction and initial commissioning. Leaks and pipeline failures are rare, but can have a massive impact.

2. Planning and pipeline design

a. The choice of route of the pipeline can have a significant impact on the risk of pollution as it's constructed and while it's operational. You should discuss your route options with us as soon as possible when you're planning a pipeline. You need to consider sensitive watercourses, vulnerable groundwater, contaminated land and old landfill sites before the final route is chosen. These sites should either be avoided or appropriate measures agreed to prevent water pollution. In some circumstances we may oppose the route of a pipeline due to the risk of groundwater pollution, see reference 3.

At some river crossings we may not allow in-river work and you'll need to find an alternative route or crossing technique.

b. The design of the pipeline should take into consideration:

- i. The thickness of the pipe wall, which may have to be increased in sensitive areas to minimise the risk of product loss due to damage or corrosion.
- ii. The depth of the pipe, which should take into account sensitivity, land use and the potential for damage due to excavation, construction or agricultural activities.
- iii. The provision of stop valves at river crossings, monitoring equipment to identify leaks and facilities to stop leaks.

iv. Maintenance and inspection programmes for the operational pipeline may need to be more exhaustive in sensitive areas and there will be a continuing need to monitor development along the route.

v. Emergency procedures for dealing with leaks or damage to the pipeline will need to take into account the time taken to reach a the site and effect a repair.

c. In most cases you'll need some on-site treatment of silty water during construction and commissioning. This may mean you need additional land for settlement lagoons or grass plots. It's essential that you account for this during your planning.

d. In some cases the pipeline may cross or pass under vital flood defences. Such work will require close liaison with us so that these aren't compromised.

e. You should check for other pipelines in the area you're planning to put your pipeline. We recommend that you use the [Linewatch](#) website, which records the location of major cross country oil and gas pipelines. It has guidance to help you work safely close by these pipelines. You should contact the local utility companies before you start work to check if there are gas, electric (particularly fluid filled cables), telecommunications, water mains or sewers where you're planning to build. You may need permission from the service provider for your excavations.

3. Construction

Constructing a pipeline has a great potential for pollution. De-watering, silt laden run-off from bare soil and stockpiles, and spilled oil are the main problems, references 4 and 5. A common cause of pollution from construction sites is vandalism and theft. Equipment and storage facilities should be protected by secure fences and locked where possible. You should also consider the risk that pollution could travel a considerable distance along the trench before detection, particularly where imported granular bedding is used.

a. Run-off from soil stockpiles and excavations

After the route has been fenced, the first phase of pipeline construction usually involves top soil removal from the line of the pipe to a linear stockpile on one side. Soil stockpiles and the exposed excavation area can generate silt laden run-off. This run-off can have a severe impact on the flora and fauna of local watercourses. Silt can coat plants, fish eggs and the stream bed resulting in reduced productivity, suffocation and death to the bottom dwelling creatures that fish feed on. Silt is also directly harmful to fish due to gill damage and, indirectly, by coating the stream bed which destroys egg laying sites.

You should identify discharge points and get a permit from us before you start work. This may take up to four months, so you need to apply early or your work could be delayed. We don't automatically grant permits. You should take action to reduce silt run-off, such as covering stockpiles. You will probably need to treat the run-off using settlement facilities and, depending on if there are local sensitive environmental areas you may need further treatment.

b. Wheel wash facilities

You're likely to need wheel washes to prevent silt and mud being left on roads at crossings. These should be securely constructed, using a recirculatory system with no overflow, and the effluent should be contained for proper treatment and disposal.

c. De-watering

You will normally need to de-water the trench, valve pits and excavations for thrust blocks and anchor points during construction. You shouldn't make de-watering discharges without our prior agreement. Some form of treatment such as a settlement lagoon or a grass plot to remove silt may be necessary. If you carry out work in contaminated land, trench liquors will require comprehensive chemical analysis and possibly more specialised treatment or even disposal off site by specialist contractor. In all cases you need to agree dewatering operations with us while you're planning your construction.

d. Concrete and cement

Water contaminated with cement is highly alkaline and can cause severe pollution. Putting concrete in, or close to, any watercourse must be controlled to minimise the risk of contaminated water discharging to the watercourse.

Effluent produced from the washing out of any concrete mixing plant or cleaning of ready mix concrete lorries mustn't be allowed to flow into any drain or watercourse.

e. Oil storage

i. Above Ground Tanks, in England these must comply with the Control of Pollution (Oil Storage) (England) Regulations 2001.

Detailed guidelines for above ground oil storage tanks are available from us, reference 6. In general any oil storage tank or oil stored in drums must be sited on an impervious base within a secondary containment system. No damp course should be provided in secondary containment walls and there must be no drainage outlet. The secondary containment must be capable of containing at least 110% of a single tank, 110% of the largest tank or 25% of the total tank volume for multiple tanks or 25% of the drum volume. Any fill or draw pipes and sight gauges must be enclosed within the secondary containment. Any tank vent pipes should be directed downwards into the secondary containment.

ii. Mobile Bowsers must also have secondary containment to avoid the risk of spills entering a watercourse or groundwater. Vandalism and theft are frequently a problem, so bowsers should be secured to prevent unauthorised access and stored within a security compound with an impermeable surface when not in use.

Keep a supply of sorbent materials at refuelling points that you can use to deal with a minor spills.

f. Site sewage disposal

You should provide a means to collect, treat and dispose of sewage from site offices and accommodation. For more details see reference 7.

If you're planning to discharge sewage you'll need a permit. You should apply for the permit at least 4 months in advance.

4. River crossings

River crossings pose a high risk of pollution occurring, see reference 8 for pollution prevention guidance. You should use techniques which avoid in-river work such as thrust bores and directional drilling where possible.

Using machinery in the river can cause silt and oil pollution and will damage the river bed and banks. The use of concrete and cement may also cause difficulties due to their highly alkaline nature and problems can arise with "release" oils used on shuttering.

If you can't avoid in-river work you'll need to mitigate the effect. These could include using oil booms and straw bales downstream, temporary overpumping or diversion of flow.

5. Commissioning

Problems have occurred during the testing and commissioning of pipelines due to unsatisfactory procedures. You should do initial pipeline tests using water or gas and not with product. If you plan to use water from surface waters or groundwater you may need an abstraction licence from us. If you will need more than 20m³/d you should apply for the licence at least six months in advance.

Water pipelines need to be sterilised before they're brought into service. You will need to neutralise the biocide before it can be discharged to a watercourse. In some cases, the test water may have a low level of dissolved oxygen, may contain solids or oil and will require appropriate treatment prior it's discharged. In all cases you must have agreement from us well in advance and give us at least 24 hours notice before any discharge is made.

6. Operation

a. Failures and leakage

Depending on the product carried in your pipe a leak or failure could result in a significant pollution incident. Up to 2 million litres could be lost in 30 minutes. It's essential that the design and operation of the pipeline minimises the risk of failure. Automatic shutdown and isolation facilities should be installed and all systems monitored and properly maintained and tested. Emergency plans should be prepared in consultation with us. You should consider holding joint emergency exercises should be held at regular intervals.

b. Use of herbicides

If you need to use herbicides to control weeds for fire precautions and maintenance you should only use non-persistent herbicides. You must have our permission before you use herbicides near a watercourse.

7. Contacting the Environment Agency

If you contact us early in your pipeline planning process it can save you time and resources. Where you will need a consent or permit from us, you should apply well in advance to avoid delays.

Contact the Region where the majority of the work you're planning will be carried out or where your project management office is based. Call us on 08708 506 506 to find your local office.

8. Emergencies

Make sure you write a pollution incident response plan for your pipeline. This may need to be different for the construction and operating phases. Guidance is available in reference 9.

You should share a draft of your response plan with the us and the Fire and Rescue Services (FRS) along your pipeline route as they will need to respond if you have an incident and may be able to suggest improvements. You should also make your final plan available to us, the FRS and any other responders identified in the plan. The FRS will need supplies of pollution control equipment suitable for use with the products your pipeline carries. You may need to provide supplies of suitable equipment as an incident involving a pipeline leak could very quickly use up all the resources the FRS have available. Work with the FRS and us to see where these supplies would be best located.

If you have a potentially polluting discharge contain the material if possible. You should notify us immediately on the emergency Freephone number below.

9. References

1. Working at construction and demolition sites: PPG6
2. Waste management – The Duty of care – A code of practice: ISBN 0-11-753210-X: The Stationery Office Tel 0171 873 9090
3. [GP3 Groundwater protection: Policy and practice](#), parts 1 - 4
4. Working at construction and demolition sites: PPG 6
5. Environmental Handbook for civil engineering projects – Construction Phase CIRIA special publication 98. ISBN 0 86017 378X. Tel: 0171 222 8891
6. Above ground oil storage tanks: PPG2
7. Sewage disposal at sites where no foul sewer is available: PPG4
8. Works and maintenance in or near water: PPG 5
9. Pollution incident response planning: PPG 21

The Pollution Prevention Guidelines (PPGs) are available free by calling our enquiry line on 08708 506 506 or from our Website www.environment-agency.gov.uk/ppg

Phone **0800 80 70 60** free to report any pollution incidents.