

SCOTTISH ENVIRONMENT PROTECTION AGENCY

PREVENTION OF POLLUTION FROM CIVIL ENGINEERING CONTRACTS: GUIDELINES FOR THE SPECIAL REQUIREMENTS

Version 2 June 2006

1. Purpose

These Guidelines are supplementary to SEPA's "Special Requirements", which are a definitive list of clauses for incorporation into contractual documents. **These guidelines are intended to be used for advice only and are not such a definitive list.**

Engineering or construction work carried out in or in the vicinity of inland waters now requires authorisation from SEPA under the Water Environment (Controlled Activities) (Scotland) Regulations 2005. Your local SEPA office to discuss any requirements under these regulations.

Further guidance to assist those in the civil engineering industry on how to minimise the environmental impact of their activities can be found in the range of Pollution Prevention Guidance Notes (produced by SEPA, the Environment Agency and the Environment and Heritage Service Northern Ireland). Note that the Contractor is fully responsible for the design, construction and maintenance of pollution prevention facilities on the construction site. The Agency's formal authorisation under the Water Environment (Controlled Activities)(Scotland) Regulations 2005 must be obtained by the Contractor before the commencement of any engineering activities that fall under the requirements of these regulations.

2. The Water Environment (Controlled Activities)(Scotland) Regulations 2005

The Water Environment (Controlled Activities)(Scotland) Regulations 2005 were passed by the Scottish Parliament on 1 June 2005. These regulations mean that from 1 April 2006 it will be an offence to undertake any of the following activities without a CAR authorisation:

- Discharges to the water environment (including discharges to land)
- Abstractions from the water environment
- Impoundments (dams and weirs) of surface waters or wetlands
- Engineering works in inland surface waters and wetlands (not in coastal or transitional waters)

The water environment is defined in the Water Environment and Water Services (Scotland) Act 2003. The water environment includes wetlands, rivers, lochs, transitional waters, (estuaries), coastal waters and groundwater.

3. Guidelines for the special requirements for the prevention of pollution from civil engineering contracts

3.1 Pre-Construction Requirements

- (i) It is essential that the Contractor contacts SEPA at the planning stage prior to submitting his bid price for the work. Contractors should establish with SEPA the type of pollution prevention measures that are required for the project, as certain works may call for the acquisition of additional land area requirements, over and above that needed for construction, in order that appropriate treatment facilities may be installed (if required). Moreover, the contract may be suspended until facilities have been installed to the satisfaction of SEPA. If pollution occurs, the Contractor could be prosecuted under the Water Environment (Controlled Activities)(Scotland) Regulations 2005.

- (ii) In addition to consulting with SEPA at an early stage, Contractors must contact riparian owners, fishery and angling concerns in the vicinity of and downstream of the proposed project so that the interests of these parties, which are completely separate to those of SEPA, are protected.

3.2 Responsibility

The party or company to whom the contract is granted will normally be solely responsible for pollution prevention during the project and, in some instances, for a specified time following the completion of the work. This responsibility will include the actions of any third party who is contracted or otherwise involved in the project. If a Contractor is exempted from third party responsibility within the contract document, they should advise SEPA of this arrangement prior to construction commencing.

3.3 Main Polluting Sources of the Water Environment

There are a number of ways in which civil engineering contracts may lead to the pollution of the water environment and these can generally be categorised as follows:-

- (i) The discharge or entry into the water environment of contaminated site run-off or pumped contaminated surface/groundwater.
- (ii) Direct disturbance of the beds of the water environment by excavation or fording of watercourses.
- (iii) Loss of oil from machinery, during delivery or from storage areas.
- (iv) Cement and cement wash from batching plants, storage areas and other areas where cement grout or concrete is being applied. Guidance on how to minimise the risks of pollution from civil engineering works can be obtained in the various PPGs referred to in Section 4 of this document. This document focuses on minimising the risks of soil erosion.

3.4 Preventing Soil Erosion

- (i) Erosion is the process whereby soil is transported by wind and/or water. Erosion does occur naturally but usually at a very slow rate. Activities which alter the landscape, such as road building, house construction and industrial site developments, can greatly accelerate this process. The removal of established vegetative cover can lead to the loss of large quantities of soil particles to watercourses which can then cause significant pollution of water. The discharge of eroded soil may not only result in pollution but can also induce long term damage to fish stocks and to the general biology of a watercourse. Fine solids may kill fish by coating their gills, or may reduce growth rates and resistance to disease. In addition, accumulation of sediment on the bed will adversely affect the biological diversity of a watercourse, thereby reducing the abundance of food available to fish. The successful development of fish eggs and larvae may also be inhibited. It is essential that the degree of land disturbance and subsequent erosion is controlled and kept to a minimum. Therefore, any earth moving works or other similar operations giving rise to contaminated drainage must be carried out in accordance with

BSI Code of Practice for Earth Works, BS6031:1981. Before any discharge of contaminated site drainage is made, prior agreements must be made with SEPA regarding the quality and quantity of effluent to be discharged. Where appropriate, SEPA may grant a temporary authorisation to discharge treated site drainage to the water environment, following the submission of an application for such authorisation.

- (ii) Sedimentation is the settling out of soil particles which have been transported by wind and/or water. The rate of deposition depends primarily on particle size and run-off flow rates. Heavier particles, such as gravel and sand, settle out quicker than fine particles, such as clay, which may become electrostatically charged and stay suspended in water for long periods, contributing to water turbidity and discolouration.

- i) An “Erosion and Sediment Plan” should be prepared for each site and fully discussed with SEPA prior to the commencement of any mechanical works. Such a plan should incorporate the following:
 - a) Pollution risk assessment for the site.

 - b) Planning and design of appropriate control measures.

 - c) Management of the system, including the safe disposal methods for settled sludge and dirty water.

 - d) Contingency planning and emergency procedures. This should include relevant telephone numbers (e.g. SEPA Emergency Hotline number on page 5, downstream landowners and water users etc.) and record the availability of equipment to carry out any emergency remedial work.

- iv) Principles of control are based on the protection of the soil surface from rainfall and run-off, and on containing eroded soil particles on-site. Fine particles can be very difficult to contain once they have been mobilised and the best way to control the generation of sediment is to prevent erosion from taking place. The following principles should be incorporated into the planning, design, construction and management of any measures to control

erosion and sedimentation:

- a) Obtain all necessary agreements and consents **before** starting work.
- b) Schedule construction activities to minimise the area and period of time that soil will be exposed. Account should be taken of the time of year and, in the case of sensitive operations, the weather forecast. Limit the area of construction.
- c) Stage the project where practicable e.g. in 100 metre lengths, with complete rehabilitation of each stage before progressing to the next. Only those areas which can be fully developed in a construction season should be worked.
- d) Intercept run-off from undisturbed areas surrounding a site (e.g. by using cut-off trenches) and divert this around the works. Temporary, erosion proof, outfalls should be utilised where necessary. Isolate the works. If drainage water is clean, keep it clean. Work in dry areas by diverting/pumping the water body around the working area or alternatively by forming temporary culverts through the working area, after obtaining agreement from SEPA.
- e) Keep run-off velocities low and reduce erosion by the provision of appropriate drainage, buffer strips of vegetation, and short slopes with low gradients. Removal of vegetative cover increases the volume and rate of run-off.
- f) If some erosion is unavoidable, then contain resultant suspended particles on site. Plan and implement control measures before undertaking earthworks.
- g) Stabilise disturbed areas as soon as construction has finished. This may be achieved through structural methods, utilising synthetic fabrics, hydroseeding and other quick stabilisation/re-vegetation techniques as necessary.

- h) Inspect all control measures regularly for structural defects and associated leakage. If not properly maintained, some control measures may cause more damage than they prevent. Regular inspections should also be undertaken to ensure that the water environment has not become polluted. The frequency of inspections should be increased at times when the risk of pollution is high, such as during and after heavy rainfall.
- i) Ensure that developers, Contractors and others involved in earthworks which could pollute the water environment are aware of their statutory responsibility not to cause water pollution or damage habitats. All such persons should be aware, and should make their employees aware, of the likely causes and consequences of environmental pollution and should be familiar with any control measures and emergency procedures to be deployed.
- j) Develop and maintain a contingency arrangement to deal with environmental pollution incidents (as part of the Erosion and Sediment Control plan). A sketch plan showing the location of the drainage system should be prepared and equipment should be available for emergency situations to plug drains, dam ditches, excavate catchpits or retain oil spillages by placing oil absorbent materials or wooden scum (or baffle) boards across watercourses.
- k) Be aware that sediments commonly act as transporting agents for other contaminants. Usually the finer grained sediments are prominent in this regard, as they take longer to settle than coarser particles. Consequently, the standard techniques for controlling erosion and sedimentation may not be effective in limiting the off-site transfer of contaminants. Thus, other measures may be necessary, such as tankering off-site for suitable disposal to a licensed landfill site or the use of chemicals to promote settlement prior to discharge.
- l) Where necessary, provide settlement ponds or lagoons to remove the sediment which will invariably be present in site drainage (although minimisation of the amount of erosion must always be the first priority). Such facilities will also be required for the drainage from borrow pits and

any on-site quarrying activities. The design and satisfactory operation of settlement ponds or lagoons depends on a number of factors, including the anticipated flow rate of the drainage, the settleability of the soil particles, influence of wind and wave action and the quality which the discharge must meet in terms of SEPA's requirements. Developers/contractors should consider long term rainfall figures for the area where construction is taking place as this varies significantly in different regions and is an important criterion when determining the size of settlement ponds/lagoons. The location of settlement ponds/lagoons on natural watercourses should be avoided and, where practical, the location of treatment facilities for the construction phase should be considered with a view to these facilities being utilised as method/treatment systems for any permanent drainage from the site. Discharges to the water environment from treatment facilities will require the formal authorisation of SEPA under the Water Environment (Controlled Activities)(Scotland)Regulations 2005.

- m) Provide temporary culverts and/or bridges to enable vehicles to cross waterbodies and thus prevent disturbance of the river bed.
- n) Locate stockpiles and spoil heaps as far away as possible from waterbodies and drainage ditches.

3.5 Miscellaneous

- Blast furnace slag is not considered suitable for use in shot blasting adjacent to the water environment (such as bridge works).
- The demolition of old concrete structures such as culverts can give rise to potentially toxic dusts and care should be taken to prevent these from entering the water environment.

4. References

- PPG2: Above Ground Oil Storage Tanks
- PPG4: Disposal of Sewage Where No Mains Drainage is Available

- PPG5: Works In, Near, or Liable to Affect Watercourses
- PPG6: Working at Construction and Demolition Sites
- PPG8: Safe Storage and Disposal of Used Oils
- PPG13: High Pressure Washers and Steam Cleaners
- PPG18: Managing Fire Water and Major Spillages

The telephone number of SEPA's three Regional Headquarters are:

North Region (Dingwall) 01349-862021

East Region (Edinburgh) 0131-449-7296

West Region (East Kilbride) 01355-574200

SEPA may be contacted 24 hours-a-day on an **Emergency Hotline – 0800 - 80 70 60.**