

This short feature shows that the Scottish Environment Protection Agency is determined to curb pollution of rivers and streams by the discharge of contaminated minewater.

A recent report by the Scottish Environment Protection Agency (SEPA) suggests that the UK Coal Authority should be given powers of compulsory purchase to acquire land for the treatment of discharges from abandoned mines. The document points out that pollution of Scotland's water courses from abandoned mines and opencast coal sites causes serious damage to the country's rivers.

In the report "Improving Scotland's Water Environment", the agency says that this type of contamination ranks fifth in the causes of water pollution, with over 380 km of Scotland's rivers being affected last year. To address these problems, and a wide range of other environmental issues, SEPA has set tough and demanding new targets to improve the state of the country's rivers.

According to Martin Marsden, SEPA's Water Policy Advisor, the bulk of the environmental damage is associated with abandoned mines and tip heaps (binges).

Mining activity in Scotland over the past two centuries has concentrated on coal, oil-shale and firebrick clay. Most of these mineral resources are located in the Central Lowlands. In the 1950's there were 200 coal mines in Scotland, now there is only one deep coal mine. This dramatic reduction in the number of operating mines had led to widespread river pollution stretching from Fife, on the East Coast, across the Central Lowlands to Ayrshire on the West Coast.

Mr Marsden said: "Once the mines closed and the pumps were switched off, groundwater levels rose and often became contaminated with metals, particularly iron, manganese and aluminium. There are 155 discharges from old mines currently affecting Scottish rivers and the potential exists for further breakouts as groundwater levels continue to recover. Affected rivers become covered with red rust-like deposits which render them unsuitable for many forms of animal life and prevent successful spawning by salmon and trout".

The other main source of pollution associated with mining is opencast coal mines and quarries. SEPA estimates that these affect approximately 60 km of the 380 km of rivers affected by mining.

SEPA's Director of Environmental Strategy, Tricia Henton says: "We intended to achieve

Scottish Environment Protection Agency to take Action on Mine Water Pollution



Discharges of water from abandoned mines can contain high concentrations of iron, which cover river beds with red rust-like deposits and render them unsuitable for many forms of animal life.

major improvements in Scotland's water environment and we have, for the first time, set demanding targets for the future. These will be measured against the extent of pollution in Scotland in 1996 when SEPA was established."

The key messages for the minerals industry contained within the Report relates to the pollution of rivers. The agency says it aims to achieve a 20% reduction in the overall length of poor and seriously polluted rivers by the end of 2000, and will aim to increase this to a 45% reduction by the end of 2005.

To achieve these targets, SEPA needs the help of a wide range of agencies, local authorities, industries and land owners. In the case of pollution from mine waters, the Coal Authority, Local Authorities and opencast coal site operators play an important role. The rate at which pollution from abandoned coal mines can be addressed is largely dependent on the funds made available to the Coal Authority. SEPA and the Coal Authority are currently working together to prioritise existing discharges which will be considered for treatment. Recently, a total of 26 sites have been identified by SEPA as priority discharges requiring treatment. Detailed studies have been carried out at six sites. However, the principal difficulty in progressing the programme is the difficulties in acquiring land for the construction of treatment

systems. SEPA considers that the Coal Authority should be given powers to compulsory purchase land which would support its duties to address the pollution legacy of the coal mining industry. A recent success has been the completion of a new treatment system constructed by the Coal Authority for the Minto discharge in Fife during 1998.

Preventative Measures

Most importantly, the Coal Authority and SEPA are working to ensure that no further breakouts from abandoned mines can occur in Scotland. Indeed, the Coal Authority has already intervened to prevent the uncontrolled breakout of minewater from three recently abandoned mines — Frances/Michael in Fife; Polkemmet in West Lothian and Montonhall in East Lothian. In addition, work is under way to assess the risks of pollution from Bilston Glen near Edinburgh. The recent work by the Coal Authority has probably saved several tens of kilometres of river from the effects of mine water pollution.

Opencast coal site developments also have the potential to deal with the pollution problems caused by abandoned mines. The excavation can remove the mine working in shallow deposits which provide the pathways by which the polluted mine water reaches the surface. Similarly they can remove the spoil tips (binges) from which polluted waters often drain to adjacent rivers. Given the Government's recent guidance on the development of opencast coal sites, SEPA looks to the industry and Local Authority Planning Departments to promote sites which can deliver these environmental benefits.

There is always the contrary risk that changes in groundwater flows following the closure of a site can lead to outbreaks of polluted water. SEPA considers that the opencast mining sector should take a proactive approach and develop procedures for assessing risks as well as ensuring that treatment facilities are provided where appropriate.

Tricia Henton said: "The Scottish Parliament will introduce major changes to the political decision making process in Scotland. SEPA will ensure it contributes objective information on the state of Scotland's environment to assist Parliament in undertaking its functions."

This report and others to come will assist the debate on the future management of Scotland's water environment.

* Copies of the report "Improving Scotland's Water Environment" can be obtained from the Scottish Environment Protection Agency, Enlène Court, Castle Business Park, Stirling FK9 4TR, Scotland