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Putting the legacy of mine water discharge into perspective and the progress in tackling the issues in a fair and consistent manner

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Abstract

In some respects the progress made by the Coal Authority in addressing the mine water legacy has been so successful that the issue has now dropped down the environmental and political agenda. This paper will look at the situation inherited in 1993 and review some of the key events in the work carried out to date, particularly from an environmental regulators' perspective.

Key words: mine water, pollution prevention, remediation, rebound

INTRODUCTION

It is difficult to envisage, ten years on, the state of play pre-1993 in the mining industry. Great changes had already occurred throughout the 1970s and 1980s, but wholesale privatisation and the resultant pit closures took this to a different level. The period was one of complete contrast, with the author being fully involved with the opening of the Selby complex, from 1978 to 1983, and the closure of all the remaining pits in South Yorkshire/Northeast Derbyshire in 1993. This final change was, from an environment regulators' perspective, potentially catastrophic (for another perspective on this issue the film 'Brassed Off', gives a view on the closure of one of the pits).

Prior to 1993 there was little that could be done to alleviate the pollution caused by abandoned mine waters, as these were specifically excluded from the legislation in existence at that time. There was no single organisation that would, or indeed could, be held liable for the responsibilities of tackling the problem. At that time even the scope and scale of the problem was not clearly understood, which was probably in itself a factor in delaying any progress, as any action may have been perceived as accepting some form of overall liability for the issue.

In 1993 the Environment Agency (EA) (as the National Rivers Authority) and British Coal established a Memorandum of Understanding (MoU) which set the framework for dealing with the further round of pit closures in late 1993. This was the first stage of the process, as pumping regimes were changed for the pits that would remain operational and those that were facing abandonment. It should also be noted that the MoU was written in such a way that British Coal was to get the most favourable economic outcome and the EA the best environmental outcome. However, these two goals were invariably mutually exclusive and it was a credit to all involved that negotiation was so successful, in that the decisions made have subsequently stood the test of time.

In 1994 MoUs were established with the then RJB (Mining) Ltd. (now UK Coal) and the Coal Authority (CA) as the new parties to take over most of British Coal's responsibility for the above. In addition Lord Strathclyde made a statement in the House of Lords that the CA would go above and beyond its statutory duties in protecting the environment.

Such general statements are all very well, and particularly welcome from the political front, but what were the implications? The view at that stage was that we had several thousand abandoned mines that would cost up to one billion pounds to remediate – and this figure was purely from a mine water perspective. In addition to this would be the cost of contaminated land amelioration and the costs required for economic regeneration packages. The questions that needed to be answered were obvious – which sites should be tackled, in what order, on what criteria would a site not be tackled, who should bear the cost and would a given solution for a particular site be sustainable?

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In 1995 the NE Region EA initiated a project to quantify the scope and scale of the problem in the region, using an impact methodology developed in Welsh Region. This was quickly expanded into a national scheme, identifying the top 50 or so significant mine waters in the country. There was a great deal of negotiation within the EA about the ranking and hence who would get the 'schemes'. This resulted in a much better understanding of the problems existing at the time. Over three hundred mine water discharges across the country were evaluated and there were only just over 50 that warranted any real action. The problem had been scoped and scaled properly and this allowed the real costs and benefits of tackling the issue to be quantified for the first time.

The CA accepted these results and proceeded to carry out scoping and feasibility studies for the treatment of mine waters at these sites. The MoU, the remediation list and the Strathclyde Principal forms then formed the basis for the ongoing actions, with the CA, on dealing with the polluted discharges from abandoned mines.

The MoU and the prioritised programme of actions had not yet covered in detail the potential for future groundwater rebound and pollution that this might cause to the environment. This is partly covered, for the future closure of mines, by the new Mines (Notice of Abandonment) Regulations 1998. This legislation sets out the requirements to be met by mine operators prior to closure and removes their exemption from liabilities for causing pollution. However, there still remained the issue of significant numbers of potential discharges from recently closed mines for which no programme of action had been agreed.

A revised MoU was signed in December 1999 that addressed how the EA and the CA proposed to work together, to continue to deliver the schemes within the remediation programme and to start to deal with these remaining issues.

MEMORANDUM OF UNDERSTANDING BETWEEN THE ENVIRONMENT AGENCY AND THE COAL AUTHORITY (1999)

Aims and objectives

The principal aims and objectives of the two organisations in entering into this MoU are to:

1. prevent any significant new pollution of controlled waters from outbreaks of mine water from abandoned coal mines;
2. enhance the environment by reducing pollution of controlled water from existing discharges from abandoned coal mines in the ownership of the CA;
3. provide a coherent framework to bring together the available resources of the two organisations and develop an action plan to fulfil objectives 1 and 2 above;
4. ensure, so far as their duties and powers allow, that operators consider and deal responsibly with potential pollution in respect of closure of licensed coal mines;
5. further the understanding of the processes involved in mine water rebound and sustainable prevention and treatment of pollution from mine waters.

These simple ideals require a complex mix of skills ranging from those in academic research through specialist mining consultants, the experience and understanding of the CA and the regulatory regime of the EA. Further collaboration is required in order to continue building the joint understanding of all these specialists, but we have at least made a good start by having undertaken a comprehensive monitoring programme and by starting to prioritise areas potentially affected by mine water rebound.

Monitoring and prioritisation

Both the EA and the CA are keen to ensure that all issues relating to actual and potential pollution from mine waters are dealt with in a consistent and cost effective manner. In order to achieve this aim, a series of programmes has been established, covering all potential issues that could arise. These programmes are:

1. a **monitoring programme** which covers all mine waters and assesses the need for preventive or remedial action before going forward to the other programmes as appropriate. This will include monitoring the potential impact of future coal mine closures;
2. a **preventive programme** where potential significant new outbreaks have been identified and prioritised for action to prevent pollution;
3. a **remediation programme** through which significant existing discharges identified and prioritised in the monitoring programme are progressed to the provision of works to reduce pollution;
4. **operational works**, which are the final stage in the process, where all pumping and treatment plants require ongoing management with the aim of controlling pollution.

The monitoring programme falls into two parts:

- Mine water rebound monitoring to help decisions on where the next potential outbreaks will occur and the likely significance of any outbreak; and

- Mine water impact assessment to ensure that the current discharges are properly ranked in order of priority based upon a socio-environmental methodology.

Both these programmes are still in their infancy and evolving as new information becomes available.

The CA and their consultants have been monitoring rebound over the past two years, and although our understanding of the current state of mine water rebound in the mining zones across the country has improved significantly, it is still a long way from completion. The ability to consistently prioritise mine water-rebound actions is not yet in place. Whilst some zones have already been identified as 'priorities', this is either because we do not know enough, so additional monitoring is required, or the time-scale for potential outbreak is so short that we must start to consider possible actions immediately. This situation needs to be addressed in the near future, but the specific solution will require considerable expertise if we are to get a ranking system that is robust enough to target our actions and which does not require a disproportionate cost to maintain.

The first mine water remediation ranking methodology was developed in 1997, and has been discussed at previous mine water conferences. Initially it was based on the Welsh methodology that ranked the impact almost solely on intrinsic environmental values. This was enhanced over the next few years to take more account of the social values that could be gained from the improvements, using an adaptation of the Multi-Attribute Technique (MAT) already in use by the EA for ranking improvements to the Water Companies Asset Management Programmes (AMP). This has been successful up to 2002, when it was found not to provide a robust enough tool to separate out the lower ranking schemes for progression to scoping and feasibility studies.

The basic problem was that the weighting for purely environmental values was still too significant and many of the newer outbreaks, particularly in the North West, which were of obvious significant impact to the local population did not rank as highly as others where the social impact was minimal. The cost of reviewing the impacts using the current detailed methodology would have been in excess of £80,000 and could not have been completed in time to let contracts for the new round of scoping and feasibility studies. The solution was to derive a simpler and more balanced ranking methodology that maintained and built on the characteristics of the old one but gave a better balance to the outcomes required (i.e. environmental and social) at a reasonable cost (approx. £5,000). The CA has used the revised methodology to review the priorities for the scheme programme from 2002/03. This revised methodology has not yet been put into a sufficiently 'professional format' for general release, although this is expected soon.

CONSENTS FOR MINE WATER TREATMENT SCHEMES

The EA is primarily a regulatory body and within the MoU it has stated how it will deal with the issue of consents for mine waters as follows:

- The EA will ensure a consistent approach to the application of consent conditions.
- The EA will issue consents to protect the environment, but in doing so will recognise the aims of the wider programmes and will not involve the Authority in excessive costs. Descriptive consents will be issued wherever possible.
- Should any review of a consent be proposed, the EA will provide sufficient prior notice to allow both consideration of the impact on the wider programmes and cost implications of any works necessary to ensure compliance with suggested revised conditions.
- For its part the CA will strive to operate the plant or facility in accordance with good operational practice, so as not to cause pollution.

Whilst this may seem an easy task, there are considerable difficulties in balancing the strict regulatory role with the aspirations of the CA to deal with the problem. There is no strict liability in law for the CA to tackle mine water pollution. The legislation was not written in the context of a 'body' which would carry out work requiring a discharge consent (or indeed an abstraction licence) purely for environmental gain and not involving some other motive. The process has not gone as smoothly or as consistently as both parties would have wished, but they are still working together on this issue. The current position cannot be presented at this time, due to delays arising from the major reorganisation that has been taking place within the EA. However, the relevant bodies will be notified of any changes to this position as soon as possible.

FUTURE ABANDONMENT PLANS FOR OPERATIONAL MINE

There are a number of guidance documents available to support EA staff and the operators on this issue. The main documents are:

- A Technical Framework for Mine Closure Planning, EA R&D Technical Report P245 (also known as MIRO Technical Review Series 20);
- The Mines (Notice of Abandonment) Regulations 1998, Guidance Notes for Mine Operators;
- Environment Act 1995 – The Mines (Notice of Abandonment) Regulations 1998, Procedures for Handling Section 58 Notifications, EA Internal Guidance produced by Welsh Region.

Whatever else may happen, it is essential to the process to make early consideration of the potential longer term full closure plans in designing underground roadways and shaft sealing strategies to minimise possible future polluting outbreaks and environmental impacts.

The NE Region of the EA is currently involved in the closure programme for the Prince of Wales Colliery, near Castleford, and the medium-term closure planning for the Selby Complex. Further in the future is the progressive closure of the Nottingham Coalfield with major implications for the rivers of South Yorkshire that currently receive the mine waters (mainly of good quality) that provide dilution for significant sewage works discharges. The long-term implications will only be realised in forty or so years time, but the actions taken now will in many ways determine the likely problems that will face future generations.