Report of a formal investigation under Section 98 of the Coal Mines Regulation Act 1982 by his Honour Acting Judge J.H. Staunton

SUMMARY OF FINDINGS

CHAPTER 1 - INTRODUCTION

The Accident

At about 5.30 am on 14 November 1996 employees of The Newcastle Wallsend Coal Company Pty Limited, a wholly owned subsidiary of Oakbridge Pty Limited, were engaged in work on the night shift at the company's mine, the Gretley Colliery. Four men of a team of eight were in the process of developing a roadway (known as C heading) in an area of the mine called 50/51 panel, operating a continuous mining machine. The remaining four members of the team were in a crib room a little distance away.

Suddenly, with tremendous force, water rushed into the heading from a hole in the face made by the continuous miner. That machine, weighing between 35 and 50 tonnes, was swept some 17.5 metres back down the heading where it jammed against the sides. The four men were engulfed by the water, swept away and drowned. The remaining team members survived the disaster by reason of being in the crib room, which itself was flooded.

The deceased men were: Edward Samuel Batterham, mining deputy, 48 years of age; John Michael Hunter, miner, 36; Mark Kenneth Kaiser, mechanical fitter, 30; Damon Murray, miner, 19.

The water came from the long-abandoned old workings of the Young Wallsend Colliery. The mine was working to a plan, which had been approved by the Department of Mineral Resources. The plan showed the Young Wallsend Colliery more than 100m away from the point of holing-in.
It is now clear that the plan was wrong. At the commencement of the night shift at 11.00pm on 13 November 1996, the Young Wallsend Colliery was only 7 or 8 metres away.

The workings of the old mine were full of water. Moreover, the water extended to the surface by means of the mine shafts, thereby providing what is known as a head of water. This head of water had the effect of significantly increasing the water pressure.

The Issues

The Court's task under s95 of the Coal Mines Regulation Act 1982 is to determine the 'causes and circumstances' of this tragedy. The Court is enjoined, moreover, to add 'any observations which (it) thinks right to make'

(s98) arising out of its investigation. The hope is, no doubt, that lessons will be learned, and similar occurrences avoided in the future.

CHAPTER 2 - THE PLAN ISSUE

The Danger of Inrush

The hazard of inrush is well known. It arises from the penetration of a reservoir of water (or other material which flows) in the course of mining. Once penetrated the reservoir naturally empties into the mine. It may do so with great force especially if it has a high head of pressure. When an inrush occurs, therefore, fatalities are likely.

Once a mine has been abandoned it is likely that over time water will accumulate in the void. Abandoned mines are, therefore, recognised as a potential source of danger from inrush. When mining in the vicinity, they cannot be ignored. Steps must be taken either to drain the water, or maintain a barrier of unworked coal around the abandoned mine, sufficient to prevent the escape of that water. Whatever the strategy, it is fundamental that the colliery form an appreciation of the location and extent of the abandoned mine.

Now, obviously, a mine full of water cannot be entered and surveyed. Its location must be determined from plans and other documents which may be available in relation to it. Plainly, however, research must be undertaken, and a judgment formed as to the reliability of the material uncovered. The strategy of avoiding inrush is likely to be different, depending upon the level of confidence which the mine management has in the accuracy and completeness of the material it gathers relating to the abandoned mine.

The Broad Nature of the Error

One of the plans held by the Department of Mineral Resources, in respect of the Young Wallsend Colliery, was a copy of the mine plan. The plan carries the following inscription:

> "Copied from the colliery plan
> at the Coalfield Office
> by Herbert Winchester
> 21st March 1892"

The plan depicts areas of coal which have apparently been extracted. The lines on the plan are in two colours - red and black. The areas extracted depicted in red are different from those in black. The workings in one colour appear to have been superimposed upon workings depicted in the other colour. At the relevant time (1996) it was marked Rt 523, Sheet 1.

The Department also has, amongst its records relating to the Young Wallsend Colliery, two other plans. They were plainly of a different era, and much more

modern. They are each copies, not originals. They are reproduced on a plastic sepia material. One plan is inscribed with the words:

"Young Wallsend Coal workings
Top Seam"

The other plan carries the following inscription:

"Young Wallsend Coal workings
Bottom Seam"

Neither plan is dated, nor identifies the party responsible for its creation. At the foot of each plan the following words appear:

"TRACED FROM RECORD TRACING 21st March 1892"

The plans separate the two different colours on the old plan (sheet 1). The area depicted as the top seam corresponds with the area in black (an oval shape) on the old plan. The bottom seam corresponds with the area depicted in red (in the shape of two arrowheads linked by roads).

It appears, therefore, that whoever produced the top and bottom seam sheets made an examination of the old plan (sheet 1), and made two assumptions upon the basis of which Sheets 2 & 3 were then drawn:

- First, it was assumed that the two colours, red and black, indicated workings in two separate seams.
- Secondly, it was assumed that the area depicted in black (the oval shape) was the top seam (known as the Young Wallsend Seam at a depth of 460ft), and the area in red was the Bottom Seam (known as the Borehole Seam at a depth of 521ft).

Both assumptions were wrong. A drilling programme undertaken since the tragedy suggests that all workings were in one seam. But, there is no question that the workings depicted in red were workings in the top seam, whereas they were shown on sheet 2 as being in the bottom seam.

The red workings extended for more than 100m beyond the black in both an easterly and westerly direction. The Gretley Colliery was working the upper seam. Hence, the colliery (whose planning was based upon the erroneous top seam sheet) was always more than 100m closer to the eastern edge of the abandoned colliery than was thought. On 14 November 1996, the new workings of the Gretley Colliery holed into the abandoned Young Wallsend Colliery, thereby causing the inrush.

History of the Young Wallsend Colliery

It was perhaps not unreasonable to infer that the two colours on the old plan represented workings in two seams. However, what was unusual, and disturbing, about the Young Wallsend Colliery mine plan (sheet 1), was that

there was no legend. There was nothing on the plan to indicate what seam was being depicted in black (whether the Young Wallsend or Borehole Seam), and what seam was being depicted in red. Each of the other record tracings before the Court, where multiple colours had been used, identify each seam by reference to a particular colour.

Assuming that the surveyor or mine manager inferred from an examination of the old plan that there were two seams, how might he take the next step, and determine which colour was the top seam, and which the bottom? One means of attempting to solve the puzzle is by undertaking historical research into the Young Wallsend Colliery. Whether due diligence required such a step will be determined later.

The Report examines historical material, old and new, relating to the Young Wallsend Colliery. What then, emerges from such material? The evidence is sparse, and some of it is obscure. Much of it is contradictory. There are scattered clues as to the true position, and some skill, and a degree of luck, would be required to reach the correct conclusion, unless one had access to a file stored in the State Archives [Ex.17.17]. That file was referred to in the Abandonment Register. It was produced by the Department late in the Inquiry. Once produced, it solved the riddle of the plan. It was apparent from correspondence on file that the two colours represented a re-survey of the one seam. All workings (apart from a small area adjacent to the shaft) were in the one seam, the upper seam (the Young Wallsend seam).

The 1:4,000 Series Seam Sheets

When considering who was responsible for the top and bottom seam sheets (RT 523, sheets 2 and 3), it is convenient to deal with a related issue which gives rise to many of the same questions. It concerns the series of plans used by the Mine Subsidence Board.

The Mine Subsidence Board commissioned the Department of Mineral Resources to produce a series of plans, known as seam sheets. These plans, which form part of the 1:4,000 series, were designed as a series of overlays. By positioning the plans, one on top of another, one can see at a glance the location of surface features, and the position of mining at various levels underground.

The seam sheet incorporating the Young Wallsend colliery was sent by the Department to the Mines Subsidence Board in late 1985. The depiction of the old workings of that colliery are now known to have been wrong . The error was the same as that made in sheets 2 and 3.

It seemed likely that whoever produced the 1:4,000 series seam sheets relied heavily (if not exclusively) upon the top and bottom seam sheets. Hence, the error in those sheets was perpetuated, and indeed reinforced by its incorporation in yet another series of plans.

The Creation of Sheets 2 and 3

There was no direct evidence as to the creation of the top seam and bottom seam sheets (RT 523, sheets 2 &3). There was, however, a considerable body of evidence which strongly suggested that the Department was the source of these plans.

The Department suggested various other possibilities. None was persuasive. The Court finds, upon the basis of the evidence set out in the Report, that the Department was responsible for the production of RT 523 sheets 2 and 3.

The Degree of Care Exercised in the Creation of Sheets 2 & 3

What care would one expect the Department to have exercised in the creation of sheets 2 and 3? It appears that sheets 2 and 3 were drawn after an examination of sheet 1. However, the task of creating sheets 2 and 3 was not simply a matter of mechanically tracing the outline of the black and the red workings. It was first necessary to interpret the old plan (sheet 1), and determine what the red and black workings represented.

Interpreting the old plan is not easy. It presents a puzzle, without any obvious answer. Why are there two colours? Why do they overlap? If they represent two different seams, which seam is which? Why is there no legend?

There are pencil notes on sheet 1. One is of some importance. It is written on an angle, and to one side of the workings. The note is very faint. Indeed, it is barely visible. It is partly obscured by one of the other pencil notes on the plan. A forensic examination, with the aid of an infra-red light, demonstrated that the note is in these terms:

"Black (Bo)rehole seam
Red? W? seam"

The note directly contradicts the interpretation which underlies sheets 2 and 3. Two questions arise:

- First, would one have expected the Departmental officer given the responsibility of interpreting sheet 1 (at the time sheets 2 and 3 were produced) to have noticed the faint pencil note?
- Secondly, if so, what significance should he have attached to the words appearing in the note?

One would hope that a competent surveyor, closely examining sheet 1, would notice the very faint words which appear, and would attempt to read them. Having said that, the words are very faint. One would hesitate to condemn someone for having missed them.

However, the approach of a competent surveyor to sheet 1 would probably have been no different, whether or not he noticed the faint note. If the note were not read, then the surveyor would simply have sheet 1 as a guide. Sheet

1 may well suggest two different seams, but provides no basis for determining which is which. If the note were read, it would simply amount to one person's interpretation, which they pencilled on the plan. It would leave unresolved how that view was formed. Being a pencil note, and not part of the plan, it would provide no adequate basis for confidently interpreting sheet 1. Hence, in either case a surveyor would need to look for further information as to what the plan meant and, in its absence, do historical research.

The task of correctly interpreting sheet 1 was of the utmost importance. Lives may ultimately depend upon it being done properly. Due diligence, therefore, required some persistence. It is not unreasonable to expect that the officer from the Department who was seeking to understand sheet 1 should have examined the Abandonment Register, should have noticed the reference to the file, and should have thought to look in State Archives, given the age of the file. It was predictable that the old file was likely to contain important contemporaneous material, which in turn was likely to be invaluable in interpreting sheet 1. We now know that the file was capable of explaining how the copy mine plan had evolved. Had it been consulted, sheets 2 and 3 would not have been drawn. The Court, therefore, accepts that there was an absence of reasonable care by the Department in the production of sheets 2 and 3.

Were the Actions of the Department Unlawful?

The company, in its submission, asserted that the Department acted unlawfully in two respects:

- First, in producing sheets 2 and 3
- Secondly, by classifying sheets 2 and 3 as part of the Record Tracing for the Young Wallsend colliery (RT 523), and thereafter disseminating such documents to, amongst others, the Gretley colliery

The Court is not persuaded by either submission. Nonetheless, the inclusion of sheets 2 and 3 in the Record Tracing was misleading. It would, no doubt, cause people to assume that the Department had examined sheet 1, and determined accurately the disposition of workings in various seams.

The Creation of the 1:4,000 Seam Sheets

The process by which the Department compiled the 1:4,000 seam sheet for the Mines Subsidence Board is examined in the Report. In respect of the seam sheets which related to the Young Wallsend Colliery, the task was inexpertly performed under a system which was defective. The error in sheets 2 and 3 was, therefore, perpetuated and reinforced.

CHAPTER 3 - THE SPECIAL BARRIER ISSUE

The company, in its submissions to the Court, made a number of allegations against the Department, and specific officers of the Department. The allegations were made in the context of the allocation of the lease to The Newcastle Wallsend Coal Company. The complaint was that the Department ought to have recognised (and perhaps did recognise) the potential for error in the depiction of the old workings of the Young Wallsend Colliery, and ought to have provided a special barrier around those workings to alert others to the presence of danger.

Elsewhere in the same submission the company asserted that the failure on the part of the Department was a "contributing cause of the accident". The officers said to be responsible for this failure were Mr I. C. Anderson, Senior Inspector of Coal Mines of the Newcastle office, and Mr G. W. Cowan, District Inspector of the same office.

The company's submission appears to rest upon a number of premises:

- First, that there was a duty upon the Department to consider whether, in the interests of safety, it was appropriate to impose a special barrier.
- Secondly, that in determining that issue, the Department was obliged to research the Young Wallsend Colliery, including plans and other material in its possession.
- Thirdly, that inevitably such research would have revealed the lack of certainty surrounding the extent of the old workings.
- Fourthly, that the Department in such circumstances was obliged to fix a special barrier, and do so on a very conservative basis to take account of that uncertainty.
- Fifthly, that the company would thereby have been warned, and if it sought to mine through the barrier, would have been subjected to a specific approval process.

This submission is framed in terms which suggest that the Department alone (because of its failure to impose a special barrier) must take responsibility for the tragedy. However, it should be recognised that clause 8 of the Coal Mine Regulation (Methods and Systems of Working - Underground Mines) Regulation 1984 obliged the mine manager to carry out research into the abandoned colliery, and that for the purpose of preventing inrush. It is arguably the same research which the company now suggests would inevitably have uncovered the uncertainty surrounding the depiction of the Young Wallsend Colliery. This aspect is dealt with more fully later, when the company's responsibilities are examined.

The Allegations Against Messrs Anderson & Cowan

The Report closely examines the allegations against Messrs Anderson and Cowan. They have no substance. Nonetheless, there is an issue concerning the utility of a Special Barrier in circumstances where a lease involves an abandoned colliery, which is addressed in the recommendations which accompany this report.

CHAPTER 4 - DEPICTION OF THE OLD WORKINGS

A number of issues arise. What was the basis upon which the Gretley Colliery depicted the workings of the Young Wallsend Colliery on its mine plan? What research was undertaken before that depiction? Was that research adequate, judged by the standards of prudent surveying and mining practice, and given that the context was the prevention of inrush?

The Duty of the Mine Manager to Prevent Inrush

The Coal Mines Regulation (Methods and Systems of Working - Underground Mines) Regulation, 1984 Part 3 is headed "PREVENTION OF INRUSHES". That Part contains four clauses, including:

Clause 8: Manager's duties
Clause 9: Bore holes

Clause 8 of the Regulation contemplates a progression through a number of phases. First, there is the research phase. There is, under the Regulation, as there is under the Act, a heavy emphasis upon the manager being in possession of the facts in relation to disused workings. The Department of Mineral Resources is recognised as a crucial source of information (clause 8(3)). The manager is obliged to obtain such information as it may have available.

The second phase requires an analysis by the mine manager of that information. The aim is the formulation of a strategy which will prevent inrush. The duty upon the mine manager is expressed in absolute terms ("the manager of a mine shall ensure .. such steps are taken as may be necessary to prevent any inrush") (clause 8(1)). The submission made on behalf of the relatives of the deceased miners said this:

"An underlying premise of the legislation is, it is submitted, that inrush is avoidable, preventable by the taking of necessary steps in a particular case. ..."

The quality and completeness of the information about the old workings will, no doubt, influence the strategy. In some cases it may suggest that the elimination of the hazard, by draining the old workings, is the only strategy which will prevent inrush. In other circumstances a suitable barrier of unworked coal may be enough. Whatever the plan, the manager is obliged to ensure that it is implemented, and that it works.

The Research & Analysis Phase

Two sources are fundamental, and should be consulted during the research phase:

- First, the Department of Mineral Resources, whose role as the repository of mine plans and other information, is recognised by clause 8(3) of the Regulations.
- Secondly, neighbouring collieries.

Any examination of the original mine plan or tracing must be directed towards three fundamental issues:

- First, is there survey information from which the precise location of the mine can be determined, in terms of its relationship to surface features?
- Secondly, has the plan been accurately drawn, with appropriate survey information?.
- Thirdly, is the plan complete, and up to date?

The Accuracy of the Plan

Putting to one side the fundamental issue as to what the different colours (the black and the red) in the mine plan referred to, and ignoring the faint pencil note on the plan, which suggested that the red workings were in Young Wallsend Seam, what emerges from a close examination of the old plan (sheet 1)? The black workings were the critical workings from the viewpoint of the Gretley mine. They were the workings assumed to be in the Young Wallsend Seam, which was the seam being worked by the mine. In respect of those workings there were significant signposts of inaccuracy. They ought to have been recognised, and they ought to have caused the colliery to approach the plan with a good deal of circumspection. The important matters are these:

- First, unlike the red workings, there are no dates on the black workings.
- Secondly, there is no survey information in respect of the location of the faces.
- Thirdly, Mr Adam (though not other surveyors) was immediately suspicious of the symmetry of the black workings, which stood in contrast to the red. It is an idealised or stylised plan, rather than an accurate survey plan.
- Finally, there were problems in the depiction of the south-eastern corner of the workings. It is not possible to determine which areas have been extracted and which are solid coal.

The company's submission repeatedly stated that the plan of the Young Wallsend Colliery was accurate at the point of inrush. So it was. The point of inrush corresponded almost exactly with the eastern extremity of the red workings. However, the same cannot be said for the black workings. The drilling programme undertaken since the inrush has demonstrated that the plan of the black workings is quite inaccurate. Where one would have expected a void, according to the plan, solid coal was found. Voids were found where none had been charted on the plan.

Further, any examination of the old plan (sheet 1), for the purposes of determining the accuracy of the black working, cannot ignore the red

workings. The depiction of the red workings, likewise, suggested a number of problems:

- First, the shape of the red workings is odd (two arrowheads, connected by a number of single roadways). It is obviously incomplete. The roadways show openings to cut-throughs, but no more. It would have been impossible to ventilate the workings simply from the roadways shown.
- Secondly, the incomplete nature of the workings is the more obvious because of the pencil comments attributed to the Chief Inspector on the plan (18 January 1963). The plan includes a number of pencil lines, which presumably represent the Chief Inspector's surmise as to the extent of workings not shown on the plan.
- Thirdly, the opening for the airshaft on the red workings does not coincide with the airshaft on the black.
- Fourthly, the plan shows a roadway to the north, and at the end of the roadway a date, 4 April 1912. An adjacent pencil note is difficult to read, but certainly includes the words:

"Staple bottom seam
62' "

The red roadway, however, extends considerably further than any black roadway in the vicinity. It is also drawn to a different alignment. There is no staple shaft shown in the black workings (or on sheet 3, which reproduces those workings).

The separation between the Young Wallsend Seam and the Borehole Seam at the central shaft was 61 feet. The pencil note beside the word "staple" said "62' ". A staple shaft ordinarily connects one seam with another. One would, therefore, expect such a connection to be shown in both sets of workings. Its absence in the black workings ought to have disturbed a surveyor examining the plan.

There is another aspect to which attention should be drawn. It affects the entire plan (sheet 1). The portion boundary has been drawn twice. The first boundary was found to be incorrect, and was re-drawn by Mr Mining Surveyor, E. Thomas on Plan M14136. The plan is so inscribed (sheet 1). The mistake is disturbing. One cannot know whether the person responsible for it was also responsible for depicting some of the workings.
Mr Adam, an expert surveyor called before the Inquiry, reached the following conclusion, having examined RT 523 sheets 1, 2 and 3:

"The variation and inconsistencies of the workings shown on the two plans identified as "Young Wallsend Workings Top Seam" and "Young Wallsend Workings Bottom Seam", are such that as a practising surveyor, I would have grave doubts about the accuracy of the information contained on these two plans."

Having dealt with the question of accuracy, the remaining issue is whether the plan is complete, and up to date?

Up-dating of the Plan

Now, in the case of the Young Wallsend Colliery, there was no plan of abandonment. A person critically examining the Abandonment Register, and the copy mine plan to which it referred (then marked M18914), should have recognised that it was not a Plan of Abandonment. That being so, what assurance is there that the copy mine plan (sheet 1) is a complete record of all work undertaken? Is one able to exclude the possibility of unrecorded workings?

Where there is a plan of abandonment so inscribed, the surveyor can, no doubt, assume that the workings are up to date. But that is not this case. It was appropriate therefore, that the copy mine plan (sheet 1) should have been regarded with suspicion. The possibility of unrecorded workings should have been recognised.

The Extent of Possible Unrecorded Workings

Mr Anderson, a Senior Inspector of Coal Mines, gave evidence as to the precautions which a mine should take, as a matter of prudence, where its examination of the plan suggests the possibility of unrecorded workings. He drew attention to Clause 9 of the Coal Mines Regulation (Methods and Systems of Working - Underground Mines) Regulation, 1984 (the Borehole Rule).

Mr Anderson provided a helpful summary from a number of texts, old and new, which dealt with the issue as to when to commence drilling in circumstances where the location of old workings is uncertain. Mr Anderson provided examples, drawn from the history of mining, of inrush, arising from inaccuracy in old plans. He ultimately expressed the view, based upon this research, that, prudently, the company should have commenced drilling 150m to 200m from the old workings as shown on the plan.

The company responded to this evidence in a number of ways. It addressed certain arguments as to the merits. It also mounted a personal attack upon Mr Anderson. The Court will put to one side, for the time being, the personal attack, and deal with the merits.

The Court accepts that a sizeable number of individuals within the mining industry assumed before the inrush that the 50 metre Borehole Rule (Clause 9) offered adequate protection against inaccurate plans. Indeed, the history of the Borehole Rule provides some foundation for that view.
However, it is a distortion of that rule to regard it as a panacea against all errors in old plans, whatever the circumstances. Each case must be looked at on its merits. It is manifestly foolish, even without hindsight, to do otherwise. Indeed, it is instructive to look at the approach of the United States to the same problem. A commentary by the Federal Register upon the US

equivalent of the Borehole Rule (which requires drilling from 200 feet i.e. approximately 60 metres) is consistent with an examination of each plan on its merits, rather than proceeding upon the basis of assumption.

Within the small sample of witnesses called to give evidence there was significant experience of inaccurate plans. They were not inaccuracies that led to inrush. However, they underlined the wisdom of Mr Anderson's approach, which was essentially a mix of commonsense, and caution.

A surveyor approaching the old plan in respect of the Young Wallsend Colliery, therefore, should have taken account of the following:

- First, it was not the original mine plan, but a copy.
- Secondly, there was no plan of abandonment.
- Thirdly, it was an old plan, not signed, not certified, and drawn at a time when it may or may not have been prepared by someone with qualifications or experience in surveying.
- Fourthly, there were no survey books from which the plan might be verified.
- Fifthly, nothing was known of the history of surveying at the mine.
- Sixthly, there were puzzling and anomalous features in both the black and red workings.
- Finally, there was nothing on the plan to indicate that it was up to date.

The Attack upon Mr Anderson

The company accused Mr Anderson of deliberately misstating certain evidence. It accused him of other things besides. Its submissions in respect of Mr Anderson are extravagant. They reveal an attitude to his evidence which is extraordinary in the circumstances.

By reason of the strong and unwarranted attack upon him and the unsubstantiated allegations made against him, the Court feels it necessary to state that it rejects the aspersions cast against Mr Anderson's character and professional reputation and to state unequivocally that his evidence, rather than being found to be deliberately misleading, and containing deliberate inconsistencies, is accepted as having been given honestly with every proper endeavour to assist the Court. The attack upon him does no credit to those who make it and is rejected. It should never have been made and, in the Court's view, it is especially reprehensible because it was not put in terms to Mr Anderson by Counsel for the company as required by the law and practice of the Courts in this State.

Consultation with Adjacent Collieries

Gretley was in possession of a number of certified plans depicting the Young Wallsend Colliery. They included the certified record tracing of the neighbouring colliery. What significance should attach to the certification of accuracy by a mine surveyor? There was a divergence of views. Some witnesses, including mine managers and surveyors, claimed that they were

entitled to accept without investigation all information on a certified plan, so long as the surveyor had not signified that he was in doubt about such information.

No doubt it saves time, and is convenient, to assume that a certified plan is accurate in every detail. However, it is patently less safe to proceed upon the basis of assumption, than upon the basis of an examination and verification of information which is to be relied upon. The Court notes that above ground surveyors, where much less is at stake, do not proceed upon the basis of assumption. Rather, they seek to verify even plans which are certified.

It was asserted that the view of certification set out above was widespread throughout the coal industry, at least before the inrush. If that view is widespread, and has not been completely dispelled by the shock of Gretley, then urgent action is needed to re-educate mine surveyors, managers, and others as to the approach which prudently should be taken to a certified plan. The Court will return to this aspect when formulating its recommendations.

Historical Research

If doubt remains after an examination of material from the Department and neighbouring collieries, how might it be resolved? Should the surveyor undertake research into the history of the abandoned colliery?
The Court accepts that historical research is unlikely to resolve minor uncertainties. Here, in the context of Gretley, the issue is whether it was capable of resolving, or at least illuminating, two issues:

- First, there being no legend on the old plan (sheet 1), what was the significance of the use of different colours in depicting the workings (the red and the black?)
- Secondly, was the old plan up to date? When, in relation to the dates which appear on the plan (between 1910 and 1912), did the mine discontinue operations?

Historical research is important. The Court recognises that hitherto prudent mine managers may or may not have seen the need to embark upon such research, apart from seeking access to the Department's Annual Reports, and other material held by the Department.

The Report, of which this part is but a summary, begins with an historical account of the Young Wallsend Colliery. It is based upon a number of publications, both old and new. As already stated, the evidence emerging from these publications is not entirely consistent and often unclear. However, the quest to understand enigmatic and conflicting evidence is, itself, likely to yield a better understanding of the problem, and to expose assumptions which may have been made. Although the publication Youngy Then & Now (1991) may have gone beyond its source material in asserting that the Borehole Seam had not been worked before 1912, that statement was capable of dislodging an assumption that the two colours in the old plan were referable to two seams. Further, a book by Danvers Power (1912) which is referred to, accurately identified the Young Wallsend Colliery as working in the Young

Wallsend Seam. Contemporaneous newspapers reports were likewise capable of providing insight.

What then did the Gretley mine do, by way of research, before depicting the Young Wallsend Colliery?

The Plans on File after the Inrush

The Court accepts that Mr Murray was held in high esteem by his colleagues, and by those who knew him in the industry. Unquestionably, the absence of Mr Murray's first hand account of his research, his reasons and his beliefs, creates difficulties for the Court. The Court must do its best to determine what material and information Mr Murray actually used in order to depict the Young Wallsend workings in the place and form he did on the mine plan, produced for approval on the Section 138 application.

After the inrush, the Chief Surveyor of the Oakbridge Group, Mr Price, examined the plans within the survey office at Gretley, and produced to the inspectors those plans relevant to the depiction of the Young Wallsend Colliery. Two matters which one would expect to find were missing. First, there was no copy of the old plan (sheet 1) (or any portion of that plan). Secondly, there was no surveyor's file. There were no notes referring to sheet 1, nor copies of extracts from the Department's Annual Reports, nor other historical documents signifying that research had been undertaken.
What evidence is there that Mr Murray (or someone at Gretley) examined sheet 1? Any analysis of the Young Wallsend Colliery which failed to include such an examination would have been seriously flawed. The company, and the Collieries' Staff Association, pointed to three matters which established, in their submission, that Mr Murray examined the old plan. The three matters were these:

- First, the evidence of an undermanager, Mr Coffey, who recalled an occasion in 1993 when he saw Mr Murray in possession of a plan which, from Mr Coffey's description, bore resemblance in some respects to sheet 1 of RT 523
- Secondly, a conversation between Mr Porteous and Mr Murray in 1995 when Mr Porteous was seeking to understand the basis upon which Mr Murray had depicted the Young Wallsend Colliery.
- Thirdly, it was argued that because the examination of sheet 1 was so fundamental to an understanding of the abandoned mine, it is inconceivable that a person of Mr Murray's competence would have overlooked making that examination.

Each matter is examined in turn. The Court is not persuaded, however, that Mr Murray, or anyone at the mine, examined sheet 1.

What, then, did Michael Murray have available to depict the Young Wallsend Colliery? Referring to the material identified by the company the position is as follows:

- First, as stated, the Court does not accept that Mr Murray examined the old plan (sheet 1).
- Second, the Court does not accept that Mr Murray examined the Abandonment Register.
- Third, the Court does not accept that historical research into the Young Wallsend Colliery was undertaken by or on behalf of Mr Murray.
- Fourth, the Court does not believe that the seam sheets in the 1:4,000 series, used by the Mine Subsidence Board, provided a proper basis for the depiction of the Young Wallsend Colliery. Nor did Mr Knight's computer drafted boundary plan. All were plainly derivative from sources not specified.
- Fifth, the various geological reports, which contained plans of the Young Wallsend Colliery, were not drawn with survey accuracy, and also were obviously derivative. They were not a suitable source from which a surveyor could depict the old workings.
- Sixth, the certified record tracing of the Wallsend Borehole Colliery, and of the Gretley Colliery, each incorporated an outline of the abandoned colliery. The information had plainly been derived from other sources, which were not specified. Although certified, they did not furnish an adequate basis for a surveyor to determine with confidence the workings of the Young Wallsend Colliery.

A surveyor, examining these plans, should have recognised the need to go to the source documents. No doubt, a surveyor would have noticed that the depictions in the seam sheets, geological reports, and record tracings were consistent with each other. He may even have been encouraged by that consistency. However, the question as to the source of the depiction would nonetheless remain, and would need to be examined. What else was available to Mr Murray? The only documents not dealt with thus far in this analysis are:

- First, the shaft surveys undertaken by Mr Knight in 1980.
- Second, the top and bottom seam sheets, classified by the Department as part of the record tracing for the Young Wallsend Colliery (sheets 2 & 3).

The shaft survey furnished Mr Murray with an adequate basis to accurately fix the location of the Young Wallsend Colliery, in terms of the ISG grid. The extent of the workings, and the accuracy of the plan, were matters not resolved by that plan. Could a surveyor, acting prudently, rely upon RT 523, sheets 2 and 3 as a basis for dealing with those issues? A number of witnesses attributed a special status to plans which were part of the record tracing, and which were disseminated by the Department. A moment's reflection would surely reveal that there is no basis for such a belief.

Since, on the findings made by the Court, Mr Murray only had available sheets 2 and 3, and did not view sheet 1, the basis upon which he depicted the Young Wallsend Colliery was manifestly inadequate. That inadequacy is underlined by the importance of the task being performed. The mine surveyor knew that the colliery was full of water. He must also have known that accurately depicting the Young Wallsend Colliery was fundamental to the prevention of inrush.

The Actions of Mr Romcke

On 6 September 1994 Mr Romcke submitted an application under S138 of the Coal Mines Regulation Act 1982 to the Department seeking approval to extract coal in a development known as MW39-45. The development included the panel which became the site of the inrush a little over two years later (by which time the number had been altered from MW44/45 to MW50/51).

In fulfilling the obligations under Clause 8, the mine manager may choose to direct the surveyor as to the research which should be undertaken. However, a competent surveyor may, without direction, undertake that task, recognising that it must be performed. What the manager must do is review the completeness and reliability of the material collected. The manager's confidence in the surveyor does not relieve him of that obligation, and nor does the surveyor's guarantee. Here, Mr Romcke substantially relied upon a guarantee from Mr Murray. He was shown only two plans, the top and bottom seam sheets (sheets 2 and 3). The other plans in the possession of Mr Murray, which Mr Romcke chose not to examine, we now know did not provide an adequate basis upon which the old workings could confidently be depicted. Those matters which were relevant, and which were not uncovered by the approach which Mr Romcke chose to take, are as follows:

- First, Mr Romcke did not determine whether Mr Murray had procured all the information available from the Department.
- Second, he did not determine whether Mr Murray had examined the original of any plan held by the Department.
- Third, he did not learn, therefore, that there was an old copy mine plan (sheet 1) even though it was referred to at the foot of sheets 2 and 3 which he was shown.
- Fourth, he did not ask Mr Murray to identify the plans he had obtained, and relied upon. Nor did he ask to see those plans.
- Fifth, he did not ascertain, therefore, whether Mr Murray had consulted the Department's Abandonment Register, or whether there was an Abandonment Plan. He understood, however, that to be fully confident of the position of the workings, the surveyor would need to obtain the Abandonment Plan.
- Sixth, Mr Romcke did not determine whether historical research into the Young Wallsend Colliery had been undertaken, and if so, what had been determined.

Moreover, Mr Romcke, in his conversation with Mr Murray, clearly did not closely examine sheets 2 and 3. He did not look at either with a view to determining whether they were reliable. Aside from the odd shape of the workings in the bottom seam sheet (sheet 2), Mr Romcke did not refer to the many disturbing, and anomalous features of sheets 2 and 3, to which reference has already been made. Even the aspect which originally sparked Mr Romcke's interest, namely the odd shape of the workings, was not pursued. All Mr Romcke really had was Mr Murray's guarantee.

That is not good enough. Mr Romcke ought to have examined the material gathered by Mr Murray, and made his own judgment. The Court believes Mr Romcke did not discharge appropriately the obligations upon him as mine manager.

The Actions of Mr Porteous

Mr Porteous' thinking was conditioned by three assumptions. They were:

- First, he believed that sheets 2 and 3 were plans circulated by the Department as Record Tracings, and could, therefore, be relied upon as being accurate.
- Secondly, Mr Porteous believed that it was appropriate to rely upon certified plans as being correct. Hence, he could accept as reliable the Record Tracings of the Wallsend Borehole Colliery, and the Gretley Colliery.
- Thirdly, in Mr Porteous' experience old plans were accurate. If there were inaccuracies he assumed that they were likely to be no more than "a handful of metres". Protection against that sort of error was provided by Clause 9 of the Methods and Systems Regulation (the Borehole Rule) in his view.

Each of these assumptions was unwarranted. Mr Porteous was by no means alone in making such assumptions. Mr Romcke, and others, approached the same task with much the same frame of mind.

Mr Porteous unquestionably went further than Mr Romcke. However, he did not go far enough. He did not uncover the following matters which were fundamental to the formulation of a strategy which would prevent inrush:

- First, the existence of the old plan, sheet 1. That plan, after all, was identified on the face of sheets 2 and 3, which Mr Porteous saw.
- Second, whether or not there was an Abandonment Plan.
- Third, the terms of the Abandonment Register.
- Fourth, whether all material from the Department had been obtained.
- Fifth, whether the mine surveyor had examined the original plan.
- Sixth, the odd and anomalous features of sheets 2 and 3 which suggested that they may not be reliable.
- Seventh, that no research had been undertaken into the history of the Young Wallsend Colliery.
- Eighth, that the material gathered by the surveyor was incapable of demonstrating either that the workings had been depicted accurately, or that they were up to date.

The Court believes that, as in the case of Mr Romcke, and for much the same reasons, Mr Porteous did not discharge appropriately the obligations upon him as mine manager.

Chapter 5 - THE DRAINAGE ISSUE

The Nature of the Hazard

Mining is universally recognised as being hazardous. Systems must obviously be developed which address the particular hazards within a mine, whether they arise from the coal being extracted, or the strata which encases that coal. These are the daily problems of every mine.

The abandoned workings of the Young Wallsend Colliery were a hazard of a different kind. They were not something which the mine encountered every day. They were old, and known to be full of water under pressure. They had, therefore, a significant potential for harm. If there were an inrush, fatalities were certain.

Moreover, the workings of the Young Wallsend Colliery were likely to preoccupy the Gretley Colliery for a number of years. Developments were planned which, over time, would encircle the old colliery. It was, therefore, fundamental that the mine properly address the hazard.

The Available Strategies

There were two possible strategies for dealing with the hazard arising from the Young Wallsend Colliery. It could be eliminated by drainage, or isolated by a barrier. Whichever option was chosen, it was important that the choice should follow a systematic review of both options. At Gretley, draining the old workings, if feasible, was the safer option.

Feasibility of Draining the Old Workings

The company said this:

"The inevitable result ... in our submission is that approval would not have been granted to dewater from the surface. The Company cannot be criticised for not pursuing a course of action which was bound to fail."

The Court does not underestimate the difficulty in obtaining approval to dewater. It cannot be said, however, that it was inevitable that approval to dewater from the surface would not have been granted. If the quality of the water from the young Wallsend Colliery had been unacceptable for direct discharge from the mine, it seems probable that either it was capable of dilution, or could have been stored elsewhere in the mine.

The Actions of Mr Romcke

Mr Romcke, and his surveyor, Mr Murray, had faith in the accuracy of the plan depicting the Young Wallsend Colliery. As demonstrated, that faith was misplaced. However, it appears to have caused them not to look closely at the safer option, namely draining the old workings.

The Actions of Mr Porteous

Mr Porteous was appointed manager at Gretley on 28 October 1994 . By that time the strategy to deal with the Young Wallsend Colliery by means of a barrier had already been formulated by Mr Romcke, and submitted to the Department for approval.

Mr Porteous reconsidered draining the Young Wallsend Colliery on two separate occasions. The first occasion was in May 1995, when the colliery was about to commence the development work associated with MW 41 and 42. The issue addressed at that time was not inrush, but rather the improvement of the ventilation of the mine. A consultant, Mr Savidis, was retained.

Improving the ventilation of the mine, is, of course, one issue, and an important issue. However, preventing inrush is another. The quality of the water, though unquestionably a potential problem, was plainly not regarded as insurmountable. Had it been impossible to overcome, one would hardly waste money upon retaining consultants to examine possibilities which included draining the old workings. However, the benefits in terms of ventilation were problematical. Mr Porteous chose not to pursue the matter, and therefore draining the old workings was likewise abandoned.

In September 1996 Mr Porteous examined once more the possibility of draining the Young Wallsend Colliery. The re-examination took the form of a discussion with various other mine personnel. Again, it was rejected.

In the development of MW39-45 (MW44/45 later became MW50/51), it was foreseeable that MW50/51 would be the most vulnerable to inrush. On either side of the Young Wallsend Colliery there was a dyke system. The dyke on the eastern side was approximately 14 metres wide, with a further zone consisting of cinders and dyke material totalling 30 metres. The dykes ran from the north-west to the south-east, as was usual in the region. The dyke passing between the Young Wallsend Colliery, on one side, and MW 41 and 43, on the other, constituted a natural barrier to the expansion of the old mine.

Miniwall 50/51 had no such protection. The Young Wallsend Colliery, predictably, was obliged to develop between the two dyke systems, expanding to the south-east, and the north-west. The planned location for MW 50/51 would intrude into the south-eastern area.

Mr Porteous, like Mr Romcke, had misplaced confidence in the accuracy of the plan. If one makes the assumption that the plan was accurate, then a barrier was a simpler, less costly and yet effective solution. On that assumption, there was no need to explore the problems which unquestionably would attend the safer alternative of draining the workings. Hence, the failure to respond appropriately to the depiction issue, caused Mr Porteous, like Mr Romcke before him, to make only a superficial analysis of the drainage option, and to be deflected from further investigation by the difficulties which would arise in the implementation of that strategy.

Chapter 6 - THE BARRIER ISSUE

The Barrier Design Width at Gretley

If the mine were to rely upon a barrier to prevent inrush, how wide should it be? Mr Anderson gave evidence that for a variety of reasons (which he provided) the barrier should be 50 m wide. Having fixed upon 50 m, Mr Anderson believed that the mine manager must then satisfy himself (no doubt with the assistance of his surveyor) that there is, in fact, 50 m of unworked coal (or thereabouts) between the old workings and the proposed development. That required a painstaking examination of the plans of the abandoned colliery. The plans may or may not enable the mine manager to say with confidence that the barrier of the design width is in place. If there is uncertainty as to the accuracy or completeness of the plans, how should it be resolved? Mr Anderson suggested that the old workings should be penetrated by drilling ahead (and by this means the plan verified). The holes should then be sealed and grouted.

The Company's response to Mr Anderson

The company responded to Mr Anderson at length. Certain arguments were directed to the merits. Others were in the nature of a personal attack. The company again accused Mr Anderson of deliberately misstating certain evidence, even though that suggestion was never put to him when he gave evidence. Mr Anderson was accused of other things besides. It is plain from Mr Anderson's response that the company's submission is, in some respects, mistaken. Where it is not mistaken, its accusations as to Mr Anderson's integrity are without merit. The Court accepts that Mr Anderson is a person of integrity. The Report confines itself to the company's arguments on the merits. Those arguments were directed to two issues:

- First, the width of the barrier required to prevent inrush.
- Secondly, the proper construction of clause 9 of the Methods and Systems Regulations, and the practice in industry in respect of drilling ahead.

The Company's Analysis of Barrier Width

Professor Hebblewhite was called as a witness. He is a distinguished Professor of Rock Mechanics at the University of New South Wales. He provided a commentary upon Mr Anderson's evidence. He identified three purposes which a barrier must serve. He appeared to find acceptable various calculations which produced a barrier width of 41 m.

Unfortunately, Professor Hebblewhite's brief, by those who retained him, was simply to provide a critique of Mr Anderson's evidence, and not to suggest an appropriate barrier width. Given the catastrophic consequences which were likely to follow miscalculation, and the consequential need for caution, the difference between the figure of 41 m and 50 m for the first purpose identified by Professor Hebblewhite does not appear to the Court to be large. Mr

Anderson's opinion in respect of barrier width appears to the Court to be reasonable.

Submissions in respect of Clause 9 (the Borehole rule)

Mr Porteous fixed a barrier of 50 m between the end of MW 50/51 and the Young Wallsend Colliery. The barrier was fixed by reference to the plan (sheets 2 and 3). Because Mr Porteous did not intend to mine within the area identified by Clause 9, namely the 50 m, he did not regard himself as obliged to drill ahead. The company sought to defend that decision. Because there was a substantial allowance for inaccuracy in Clause 9, and because that allowance had never previously been exceeded in Australia, therefore, it was argued, the industry including Mr Porteous, were justified in assuming that inaccuracies in plans would continue to be of the same order in the future.

That assumption was unwarranted. It ignored the overseas experience, which was relevant. Even local experience of inaccurate plans, as revealed to this Inquiry, demonstrated that such an approach was incautious. Further, it was an approach which ignored the commonsense implicit in the statement of the U.S. Federal Registry, which distinguished between plans in which the mine has confidence ("where the position of the old workings are known with reasonable certainty"), and those where there is no such confidence ("where old workings are known to exist but their position is unknown or known with little confidence"). Only in respect of the former, is the mine justified in taking the perimeter of the plan, relying upon the 50 m zone to cover whatever inaccuracies may exist within the plan.

Holing-in to the Old Workings to Locate them

Given the experimental nature of re-grouting a barrier at this point in time, Mr Anderson's suggestion may not be practicable. Assuming it were impractical, and yet serious doubts remained concerning the accuracy or completeness of the plans, the manager would then be obliged either to revert to the alternative strategy of draining the old workings, or abandon the area.

Chapter 7 - RISK ASSESSMENT

The Process of Formal Risk Assessment

It is fundamental that mine managers should identify risks or hazards in mining in order that these may be removed or their potential for harm be minimised. In the past mine managers seem to have undertaken that task with minimal formality, calling upon others to provide assistance where that was thought useful.

The process of formal risk assessment is relatively new. It has been described as a "management tool". The manager appoints a team to identify the risks in a proposed development, and to devise a strategy for dealing with them. The advantages of having a team are obvious. Each member brings to the task different expertise and experience.

A risk assessment team, having undertaken the analysis, is obliged to produce a report. That is an important discipline. The report typically will break down the operation into steps or tasks. It will then identify the risks associated with each task, and suggest the means by which those risks can either be eliminated or at least ameliorated.

The company produced, amongst its discovered documents, two risk assessments which had been undertaken at the Gretley mine before the inrush. Both were impressive documents. They demonstrated the value of formal analysis, following discussion.

When should a Formal Risk Assessment be Undertaken?

Neither Mr Romcke, nor Mr Porteous saw the need for a risk assessment in respect of the development MW39-45, and specifically in respect of the hazard posed by the Young Wallsend colliery. Two issues arise:

- First, had a risk assessment been undertaken, is it likely that it would have uncovered the error in the depiction of the Young Wallsend colliery, and have prevented the inrush?
- Secondly, would one have expected a prudent mine manager in the position of Mr Romcke in 1994, and of Mr Porteous in 1994-6, to have undertaken a risk assessment in respect of the Young Wallsend colliery?

Is it likely a Risk Assessment would have detected the Error?

Mr Romcke, and indeed, Mr Porteous either assumed or made no enquiry in respect of the following:

- That Mr Murray had been to the Department of Mineral Resources
- That Mr Murray had obtained from the Department all the material it had available relating to the Young Wallsend Colliery
- That Mr Murray had viewed the original plans
- That Mr Murray had examined the Abandonment Register
- That Mr Murray had determined whether or not there was an Abandonment plan
- That Mr Murray had undertaken historical research into the old colliery
- That Mr Murray had determined that the plan was up to date and accurate

For the reasons given earlier, the Court believes that Mr Murray did none of these things. It is highly likely that a team with responsibility of formulating a strategy in writing for the manager would have explored these, and related issues. Although the depiction of the Young Wallsend Colliery was entrenched, as a result of the circulation of sheets 2 and 3, it only needed one individual to enquire about the source documents for the mystery to begin to unravel.

Should Gretley have undertaken a Risk Assessment?

The technique of risk assessment was, before November 1996, a relatively new phenomenon. It was not required by legislation. It was not required by the Department as part of a Section 138 application. There was no published industry standard defining when it should be employed. It is perhaps not surprising, therefore, that its use was patchy. Some managers embraced it more readily than others.

No doubt the nature of the risk, and the particular circumstances ought to determine whether risk assessment should be used in a particular case. Here, the risk was serious. Fatalities and catastrophe for the mine were certain if there was an inrush. The obligation upon the mine manager was expressed in absolute terms under Clause 8 of the Coal Mines Regulation (Methods and Systems of Working - Underground Mines) Regulation 1984. He was obliged to take such steps as were necessary to prevent inrush. As it happens, time was not pressing. A number of panels had to be extracted (MW 39-40) before the mine would begin its encirclement of the Young Wallsend Colliery. Indeed, Mr Pala said this: (T5735)

Q. But is there any disadvantage in doing a risk assessment?
A. I couldn't think of any disadvantage.

Mr Romcke and Mr Porteous were both familiar with the technique of risk assessment. Both had employed it to advantage in the past. The Court, in these circumstances, would have expected Mr Romcke and Mr Porteous to have recognised the importance of using risk assessment in reaching an understanding of the hazard of an old colliery, and in formulating an appropriate strategy to deal with that hazard. By failing to use risk assessment they denied themselves the benefit of an expert analysis. The analysis which they chose to conduct without such assistance was, in each case, flawed. In the case of Mr Romcke it rested upon a guarantee from the mine surveyor which was accepted without investigation. In the case of Mr Porteous it rested upon limited investigation and a series of unwarranted assumptions. Had the mine surveyor been exposed to the discipline of the risk assessment process, the need for a more solid foundation for his views would more than likely have emerged. That, in its turn, would have made it more likely that the issue would have been determined by the manager on its actual merits, rather than upon the basis of assumptions. The merits suggested uncertainty, and the need for caution.

The Court is not suggesting that risk assessment will always deliver the wisdom which will avoid accidents. The report in respect of the explosion at Moura Number 2 Underground Mine on 7 August 1994 (in which eleven men died) demonstrates that, even where risk assessment has been used, accidents may still occur. Risk assessment is but one step in the systematic review of hazards. It is nonetheless an important step making it less likely, to use Mr Kininmonth's words, that matters will be overlooked.

Informing the Miners

Each risk assessment undertaken by the Gretley colliery before the inrush made provision for the workforce to be told of the risks, and to be put on alert.

There were symptoms of the impending disaster shortly before it occurred, although it must be acknowledged that they were subtle. A number of deputies noticed abnormal water in the weeks before the inrush.

Mr Porteous knew that the Young Wallsend Colliery was full of water, and that there was a head of water. His undermanagers (including the undermanager in charge), however, did not know, although each assumed that the old workings contained water. Very few of the miners who worked in 50/51 panel knew that the old workings were full of water. Plainly they should have been told. The miners would have been fully briefed had a risk assessment been undertaken. They should have been similarly briefed even though no risk assessment was undertaken.

Chapter 8 - THE DEPARTMENT

The Obligation of the Department

Once the Department receives an application to extract coal it is obliged to make an assessment under Section 138(1) of the Act. The Chief Inspector, Mr McKensey, in an introduction to certain guidelines which the Department uses, defined his role (and that of subordinate officers) in these words:

"It is the responsibility of the Chief Inspector of Coal mines to have the proposal fully appraised and assessed and only if adequate, to approve the proposal subject to the observance of conditions considered appropriate."

The application passes through a number of hands. There is a system of "multi-level review". The separate duties of each level of review are defined within the guidelines known as Quality Assurance Work Instructions. The application first goes to the district inspector. The district inspector is obliged to satisfy himself that it conforms to the guidelines. He then distributes copies to persons described as "in-house experts". One is the Principal Subsidence Engineer (Dr Holla). The other is the Senior Inspector, Special Duties (Mr Anderson).

The application, and report of the district inspector are then passed to the senior inspector for review. Ultimately the application reaches the Chief Inspector.

The Gretley Application

On 6 September 1994 an application under Section 138 in respect of MW39-45 was lodged by Gretley. It was a substantial document, perhaps one inch thick including the annexed plans. The report required by the guidelines runs to 11 pages, of which 21/2 pages are devoted to mine safety. In respect of the danger from inrush of water from old workings, the report provided one short paragraph.

The Report of the District Inspector

The application was reviewed by the district inspector, Mr Flett. He prepared a report. In respect of the danger of inrush, Mr Flett said:

"INGRESS OF WATER

Adjacent old workings to miniwall 39 are currently being dewatered and the manager advised this dewatering will be complete before extraction commences."

Pausing there, this was a reference to the danger of inrush from another set of abandoned workings, the Wallsend Borehole workings which were also at least partly full of water. The report continues:

"In accordance with the requirements of Clause of Coal Mines Regulation (Methods and System of workings - Underground Mines) Regulations bore holes are drilled ahead when approaching within 50 metres of then (sic) old workings."

Mr Flett was intending to refer to Clause 9 of the Methods and Systems Regulation. This short paragraph is the only material in the whole of the Department's Section 138 file which deals with the danger of inrush. There was no reference, as such, to the Young Wallsend colliery. Mr Flett recommended approval of the application.

Criticisms of the Department

The Department's handling of the Section 138 process was trenchantly criticised by a number of parties. Certain comments were directed to particular officers. Others dealt with the system established by the Chief Inspector. It is convenient to deal with these submissions under the following headings:

- First, there was criticism of Mr Anderson in his role as Senior Inspector (Special Duties), specifically in relation to a meeting on 11 October 1994 at the mine.
- Secondly, there were a number of criticisms of the system established by Mr McKensey, and in particular the acceptance without investigation of the Approved Plan.
- Thirdly, there was criticism of the Department's review procedures and in particular of Mr Flett in respect of his appraisal of the application. Those officers obliged to review his report (Messrs Morgan and McKensey) were also criticised for failing to recognise and correct the alleged deficiencies in Mr Flett's analysis.

In respect of Mr Anderson, three aspects of his conduct excited adverse comment from the company. They were:

- First, the limitation which Mr Anderson chose to place upon his role in respect of geotechnical assessments.
- Secondly, the failure of Mr Anderson to draw attention to the inadequate barrier between the Young Wallsend Colliery, and miniwall 44-45, as shown on the Approved Plan, (it being less than 50 metres).
- Thirdly, the failure of Mr Anderson to say anything to Mr Flett concerning the possibility that the plans may be grossly inadequate to the point where drilling ahead 200 metres may be regarded as prudent.

The Report considers each matter at some length. There is no substance in any of the complaints. Perhaps reference should be made to the third criticism. The company asserted that if Mr Anderson had knowledge before the inrush that plans may be grossly inaccurate (as to which it was obviously sceptical) then it was his duty to call attention to the potential for harm arising from the proposed barrier. It was common ground that Mr Anderson administered no such warning.

The criticism, however, is unwarranted. Mr Anderson simply asserted that one should approach the issue of reliability of the plan without making assumptions as to the extent of possible inaccuracy. He was right to approach the issue in that way. There was no warrant for assuming that because the level of inaccuracy leading to inrush in New South Wales had never exceeded 26 metres in the past, that it would not do so in the future. It can be said, without hindsight, that it was demonstrably wrong to approach the important issue of the prevention of inrush with a fixed idea that Clause 9 would deal with whatever inaccuracy there may be within the plan.

The Court accepts that Mr Anderson was not hampered by these assumptions, and that his approach was in line with that recommended by the U.S. Federal Register, to which reference has been made. Each plan had to be examined, and a determination made as to whether it was reliable. If it was unreliable, it would be perfectly appropriate to turn to textbooks, as Mr Anderson did, for insight as to the way in which that issue might best be handled.

There is, fortunately, an illustration of Mr Anderson's approach which predates the inrush by some five years. It relates to the Gretley colliery. Mr Anderson's review of an inspector's report in respect of a Section 138 application, where there was the danger of inrush, demonstrates that he was conscious of the need to consider the reliability of the plan.

Criticisms of the System

Four matters were raised which may be thought to reflect upon the process established by the Chief Inspector for the assessment of Section 138 applications:

- First, Section 138 gave the power to impose conditions. The Chief Inspector recognised the merit of risk assessment as a process, and

encouraged its use. However, he did not believe it appropriate to direct a mining company to undertake a risk assessment as a condition of approval, even where, as in this case, a substantial hazard was evident. Why did the Chief Inspector take that view?

- Secondly, the Chief Inspector saw the Department's role in respect of the issue of subsidence as quite different from its role in respect of safety. What was the basis for that distinction, and was it appropriate?
- Thirdly, and most importantly, Mr McKensey believed that he and his officers were entitled to accept the Approved Plan as accurate. It was, after all, certified by the mine surveyor, and accepted by the mine manager. In the absence of specific information that might suggest it was wrong, or manifestly in error, the Chief Inspector considered that his Department was entitled to accept the accuracy of the plan.
- Fourthly, the company suggested that the approval process ought to have required an examination by the Department of the material in its possession (including RT 523 sheets 1, 2 and 3) in order to satisfy itself that nothing had been overlooked.

The Philosophy of Non-Intervention

It was evident that Mr McKensey was philosophically inclined towards self-regulation rather than prescription, and that this philosophy affected the way in which he exercised the power to impose conditions when giving approval under Section 138.

When Mr McKensey reviewed the Gretley's application in respect of MW39-45, he recognised that it did not include a risk assessment. He believed, therefore, that one had not been performed. He accepted that it was unlikely that one would be performed, unless he were to so direct. Yet Mr McKensey refrained from giving that direction. He ought not to have done so.

Mr McKensey believed that greater intervention and control was justified in the area of mine subsidence than in respect of mine safety. There is no warrant in S138 for that distinction. Indeed, the distinction carries with it the unfortunate suggestion that property is more important than human life. The distinction between mine subsidence and mine safety may to some extent explain the lack of intrusion by the Department into the discretion of management as to the way in which it should approach its task. The Court does not suggest that the Department should have assumed the manager's role. However, had the same rigour been applied to the issue of safety as was applied to subsidence, safety would have been enhanced.

Reliance upon the Approved Plan

Mr McKensey acknowledged that the Department had a responsibility under Section 138(1) to examine each application with care. Its duty was to ensure that the proposal was "safe and sound". Now, the application in respect of MW39-45, of course, proposed a development which would partly surround the Young Wallsend Colliery, known to be filled with water. A barrier was the means by which the mine sought to prevent inrush. It was, therefore,

fundamental to the success of that strategy that the plans of the old colliery were reliable. Yet the Department approached its task upon the basis that it was not required to examine that issue. It could simply accept the certified plan provided by the mine.

In the context of inrush, such a view emasculated the Section 138 process. It removed from consideration the very issue central to the Gretley application. The words of Section 138(1) provide no warrant for limiting the review process in that way. Nor, indeed, do the Department's guidelines. Such a limitation is not consistent with ensuring that the proposal is "safe and sound". The Department's faith in certification mirrors the view of a number of mine surveyors that certified plans could be accepted, and relied upon. That view has already been the subject of comment. The assumption of accuracy is unwarranted, and dangerous.

What should the Department have done? No doubt its examination of the issue concerning the accuracy of the plan would begin with a request to the company for its analysis, and the documentation upon which it relied. If that material were comprehensive, and furnished some basis for confidence in the plan, it may not then be necessary for the inspector to personally examine the documents held by the Department.

The Criticism of the Department's Review Process

This criticism relates to the alleged failure by the different inspectors, including the Chief Inspector, adequately to appraise and review the application.

That obligation required those involved in the review process to have regard to the salient facts. Mr Hall QC suggested that the relevant matters, which the Department should have addressed, included the following:

"i. Whether drainage was feasible thereby removing the hazard altogether.

ii. What the basis was for determining the location and extent of the old workings.

iii. The need for an appropriate plan to drill ahead as a secondary precaution."

The report of the District Inspector, so far as it concerned the danger of inrush, was indeed brief. It deals with none of the issues identified by Mr Hall. There was no analysis of the logic behind the decision to drain the Wallsend Borehole Colliery, and yet not drain the Young Wallsend Colliery. The Wallsend Borehole Colliery was said to contain 500 megalitres of water. Young Wallsend Colliery contained only 25 megalitres. The Wallsend Borehole workings were recent, and well documented. The mine plan of the Wallsend Borehole Colliery had been found to be accurate when holing-in at Main West in 1992. The Young Wallsend Colliery, on the other hand, was old, having been mined between 1890 and 1912. It was a colliery in respect of

which little was known. Why, in these circumstances, drain a massive new colliery, about which a great deal was known, and yet not drain a relatively small and very old colliery, about which little was known?

Mr Flett's report did not deal with the approved plan, and its reliability. This can, in part, be explained by the system established by the Chief Inspector already described. Part of the explanation also lies in the fact that Mr Flett approached his task hampered by certain assumptions. He held the belief, shared by a number of others, that plans which came from the Department were accurate. Mr Flett, again like others, assumed that the "cushion" within Clause 9 for inaccuracy would accommodate any inaccuracy that there may be in the mine plan.

Mr Flett's review of the application, so far as it concerned inrush, is unsatisfactory. The Court accepts Mr Hall QC's identification of the salient facts. Mr Flett's report needed to review those issues, and did not do so. Neither the review of Mr Morgan (senior inspector), nor that of Mr McKensey, as Chief Inspector, corrected these shortcomings. A flawed strategy for dealing with the hazard was thereby approved.

Chapter 9 - THE REPLACEMENT SURVEYOR

Mr Robinson's Appointment

In May 1995 (that is 18 months before the inrush) Mr Robinson was appointed as a casual surveyor at Gretley. In September 1995 Mr Murray went on leave. The colliery is obliged under the Coal Mines Regulation Act 1982 (Section 44) to have a mine surveyor. Mr Robinson was appointed mine surveyor during Mr Murray's absence.

When Mr Robinson began at Gretley in May 1995, the development of MW39-45 was already well underway. Approval having been given by the Chief Inspector on 5 January 1995, a number of panels had been extracted. What research, if any, would one expect a person appointed to the position of mine surveyor to undertake in respect of a development which was then well advanced?
It is reasonable to suppose that Mr Robinson, when he first took up the position, simply had a caretaker role. Mr Murray was expected to return. However, from 1 April 1996 he was in that statutory position without interruption up to the inrush. Mr Knight's evidence, which the Court accepts, establishes that a statutory mine surveyor in the position of Mr Robinson is to be judged by the standards of a mine surveyor of ordinary competence carrying out his duties with reasonable care. In Mr Knight's opinion, which the Court also accepts, Mr Robinson had the obligation to familiarise himself with the workings of the mine and to assess for himself to what extent his predecessor had researched the Section 138 application.

Mr Robinson does not seem at first at any rate to have accepted that he had this responsibility. He said he had no reason to doubt the accuracy of the plans of the Young Wallsend mine held in Gretley files. Later he stated that he

had no reason to doubt the accuracy of the work performed by Michael Murray in preparing plans showing Young Wallsend Colliery old workings in the Young Wallsend seam.

Mr Robinson said it was obvious to him that the issue of the depiction of the old workings had been thoroughly assessed and researched. However, when asked the basis for saying this was obvious, he said it was his faith in Michael Murray as well as his knowledge that "when people put workings on the plan, they do it accurately."

Mr Robinson was not aware of any efforts by Mr Murray to verify the accuracy of the Young Wallsend mine plans. He never saw a file at Gretley that was specifically related to the Young Wallsend Colliery. He never came across any surveyor's notes relating to the Young Wallsend Colliery. He did not agree that as the new surveyor it was his duty to give some thought to the basis upon which Mr Murray had depicted the Young Wallsend Colliery, except in the sense that he must become familiar with the workings in the mine. Reminded of the question, Mr Robinson said he had done that, and referred to the Section 138 process, assuming apparently that it must have been researched and thoroughly assessed.

Thus, Mr Robinson seems to have proceeded as mine surveyor having no doubts or concerns about the location and extent of the Young Wallsend Colliery workings until September 1996. In his statement dated 25 February 1997 he set out:

"In September 1996, although I had no reason to query Michael Murray's work ... acting as a professional mine surveyor, I would endeavour to ascertain information which would reconfirm my acceptance of Michael Murray's work..."

For the purpose of determining whether he fulfilled his responsibilities with respect to the safety of the mine from the operations being conducted in 50/51 panel in its development towards the Young Wallsend Colliery old workings, it is sufficient to note that Mr Robinson in the evidence quoted above recognised that "acting as a professional mine surveyor" he had the responsibility of "reconfirming" Mr Murray's work.

"Reconfirming" Mr Murray's work required Mr Robinson to examine the available material, including that held by the repository of mine plans, the Department. This was not done.

The Court therefore finds that Mr Robinson's failure independently to investigate the basis upon which Mr Murray depicted the Young Wallsend Colliery workings on the Gretley mine plan was a breach of his responsibility as mine surveyor.

The Failure to Comply with Statutory Obligations

The last record tracing furnished by the mine to the Department before the inrush was in February 1995. It covered the period to 31 December 1994. It was not until three months after the inrush (17 February 1997) that this position was corrected. It appears that during much of 1995, and the whole of 1996, the mine was unable to produce either the mine plan or the record tracing, as required by the regulations.

This episode reflects poorly upon the Gretley survey staff. No doubt the illness of Mr Murray was a substantial part of the problem. However, Mr Robinson, as mine surveyor, should have ensured long before February 1997 that the problem was addressed, if not by computer then manually.

There is a further aspect which should be mentioned. It was evident that many of the plans reproducing the Young Wallsend Colliery (including the record tracings) were imperfect, failing to include roadways and other details contained in the Top Seam sheet. This likewise reflects poorly upon the Gretley survey staff. It was said to arise from a computer software problem. Although the problem was recognised, it was not corrected. Over a number of years, plans, which were plainly inaccurate, were reproduced and circulated, including the application under Section 138 to the Department. The staff seemed to have had a lackadaisical approach to their important duties with no proper supervision by the mine managers.

Chapter 10 - THE WATER ISSUE

The Issues raised by Submissions

In the weeks preceding the inrush there were reports of water in 50/51 panel, culminating in a report from a mine deputy, Mr McLean, on 13 November 1996, the day before the inrush, which included this:

"Coal seam is giving out considerable amount of water seepage at face C hdg"

The submission made by Mr Hall QC, on behalf of the Relatives, was that the presence of water in MW Panels 50/51 was an obvious sign which, though brought to the attention of management, was effectively ignored, resulting in the loss of a critical opportunity to have prevented the disaster that occurred on 14 November 1996.

The company, and mine manager, on the other hand, asserted that Gretley was a wet mine, and that the water which was reported was in no way unusual. It is only with hindsight that it can be recognised as a symptom of the tragedy which lay in wait. Accordingly, they say that there was no breach of duty. The inrush was caused by an error in the plans. It was not the product of any absence of diligence by the company, or its officials, whilst mining was taking place.

The Observations of the Miners

There is no question that Gretley is a wet mine. It was common ground, however, that 50/51 Panel was one of the driest panels in the mine.

The Coal Mines Regulation Act 1982 establishes a regime whereby reports of conditions in the mine are passed from one level of management to the next. These elaborate provisions recognise the importance of timely information in accident prevention.

In the period shortly before the inrush, there were observations of water in 50/51 panel. There were four reports of water in the first week of November 1996. They were:

- A statutory report of Mr McLean on 1 November 1996.
- A report by a mine deputy, Mr Bernard, to the undermanager in charge, Mr Alston, on 4 November 1996.
- A conversation between Mr McLean, a mine deputy, and the manager, Mr Porteous, on 4 November 1996 in the course of inspection by the district inspector, Mr Van Dijk.
- A further statutory report after the completion of Mr McLean's shift on 4 November 1996.

These reports were made ten days, and in one case thirteen days, before the inrush. The Court will comment separately upon the further report of Mr McLean made the day before the inrush.

The Inspection by Mr Van Dijk

Dealing with the conversation between Mr Porteous, the mine manager, and Mr McLean on 4 November 1996, it occurred during the course of an inspection by the district inspector, Mr Van Dijk. Mr Porteous recalled Mr McLean saying these words:

" "There is water gathered in 7 cutthrough. We are not close to the old mine are we?" I said: "We are not close to the old mine. It is about 200 metres away from here." Mr. Van Dijk was nearby at the time of this conversation. I said to Mr. McLean; "While we are here we will go up and look at this water." I said to Mr. Van Dijk: "Come on, let's have a look at this water". We then left the face area and walked back to 6 cutthrough which was about 80 metres away. ..."
(emphasis added)

The Court is in no doubt that Mr McLean was expressing concern about the water in 7 cut-through, and whether it signalled that the abandoned colliery was closer than the plan suggested. Mr Porteous did not need to read Mr McLean's mind to discern that clear message. The misgivings of an experienced deputy about a serious potential hazard, namely inrush, ought to have made Mr Porteous pause, and reflect upon what was being said. Instead, he brushed Mr McLean's concern to one side, glibly referring to the plan. A warning went unheeded which, had it been taken seriously and

investigated, may have exposed the inadequate basis upon which the Young Wallsend Colliery had been depicted.

At the end of the shift Mr McLean once again drew attention to the water in 7 cut-through, emphasising, by his choice of words, the build up since his report of 1 November 1996. He said:

"Large amount of nuisance water in C-B 7 ct."

There were, before the Court, many statutory reports by deputies. The reports of Mr McLean of 1, 4 and 13 November (the last being the report from the day before the inrush) are indeed unusual. Superficially, the water was merely a nuisance. The accumulation in 7 cut-through to a level of 600 mm did not represent a safety hazard, as such. However, that was not the only issue. Did the water, and the build up of water, represent a "danger signal"? What was its source? What, if anything, did it suggest in relation to the flooded old workings which lay ahead?

Certain steps were taken or planned by the mine in the days that followed. The issue is whether these steps were a reaction to the reports of water, and a concern about the location of the Young Wallsend Colliery, or whether they were unrelated. The steps were:

- First, a proposal to drill ahead which, in November 1996, became part of the strategy for 50/51 Panel (although, tragically, was not carried out before the inrush)
- Secondly, contact by Mr Robinson with the Mine Subsidence Board seeking information to enable him to confirm the position of the Young Wallsend Colliery.

These steps, whether or not they were connected to the reports of water, were too little too late. Only Mr McLean appeared to give serious thought to the source of the water, and the wider ramifications it may have had in respect of the accuracy of the plan. Even Mr McLean, when he gave evidence, seemed somewhat embarrassed that he alone had applied his mind to these issues. He sought to discount his observations in various ways, which were not convincing. The Court is in no doubt that Mr McLean was a conscientious deputy who made careful observations. The reports of Mr McLean recorded the observations of an experienced deputy, and were deserving of greater attention than they were apparently given.

What should have been the response of management to the observations of Mr Bernard and Mr McLean in early November 1996? Mr Anderson, whose evidence is accepted, believed that water should have been monitored. However, no one at the mine saw the need to monitor the build up of water in 7 cut-through with a view to determining its likely source, and whether there was a need to change the strategy in order to prevent inrush.

Proposal to Drill Ahead

It was always planned to drill to the side of the development to confirm the location of the dykes. The planning minutes for the week commencing 5 November 1996 included such drilling. However, drilling in advance was new. The question is: why did the mine, in early November 1996, decide that drilling ahead should be undertaken?

The picture which emerges from the evidence is as follows:

* First, the issue concerning drilling ahead was handled by the undermanagers. Mr Porteous was not informed. Indeed, he did not know of the proposal to drill ahead until after the inrush.
* Secondly, there was an impediment to the adoption of drilling ahead as part of the strategy to prevent inrush. Mr Alston, the undermanager in charge, did not see the need for it. It was not part of his strategy to prevent inrush. Even when the issue was raised by Mr Pritchard in early November 1996, Mr Alston remained unconvinced.
* Thirdly, Mr Pritchard, on the other hand, was concerned about water. The Court believes that he did recognise the possibility that the plan may be inaccurate. However, he was not yet in charge, and would not assume control until after 8 November 1996, when Mr Alston went on leave.
* Fourthly, meanwhile Mr Alston gave no direction to suspend mining, and monitor the build up of water, as he ought to have done. He did not discuss the matter with the manager. Instead, mining proceeded. On 5 November 1996 B heading was completed to 7 cut-through, thereby liberating the water which had accumulated. The symptoms of the problem, or possible problem, disappeared from sight.
* Fifthly, the concern felt by Mr Pritchard, therefore, never became alarm because the problem was not adequately investigated. Indeed, Mr Alston did not apparently inspect the water himself. When, before his departure on 8 November 1996, Mr Alston last inspected 50/51 Panel cannot be determined. He did not complete a daily report with respect to the general safety of the mine after each inspection, notwithstanding the Regulation which provided for that to be done (Clause 56, Managers & Officials Regulation 1984). One could only agree with the comment by Mr Hall QC, on behalf of the relatives, that Mr Alston's breach of the Regulation reflects an alarmingly casual attitude, made all the more serious when he is in a position of leadership.
* Sixthly, part of the reason for the apparent lack of concern by Mr Alston may be a conversation with Mr Robinson, where he provided certain reassurance in respect of the location of the Young Wallsend Colliery following the investigation of that issue by reference to material provided by the Mine Subsidence Board. The Court will now deal with that aspect.

Two Competing Versions

Shortly before the inrush Mr Robinson approached the Mine Subsidence Board for assistance. He wished to confirm the position of the Young Wallsend Colliery old workings. He spoke to Mr Hartley. There are serious differences between the account given by Mr Robinson, and that of Mr Hartley as to what was said, and the assistance provided.

The points of difference between the two accounts are:

- First, there is a difference as to what was said. Mr Hartley asserted, and Mr Robinson denied, that Mr Robinson referred to a problem with water at the mine, which management was in a hurry to resolve.
- Secondly, there is a difference as to when the conversation took place. That difference is important. Mr Hartley suggested that the conversation occurred in the week beginning 4 November 1996. By the morning of 4 November Mr Bernard had made his report to Mr Alston concerning water in 7 cut-through, and Mr Pritchard had suggested drilling ahead. However, submissions made for Mr Robinson asserted that the conversation with Mr Hartley occurred no later than 31 October 1996. If that were right, then management's attention had not yet been drawn to the water in 50/51 Panel. If there were a reference to water during the conversation, therefore, it must have been a reference to water somewhere else.
- Thirdly, there is a difference between the two accounts as to the assistance provided. Mr Hartley asserted, and Mr Robinson denied, that RT 523 sheet 1 (in three sheets) was provided.

The Attack upon Mr Hartley

It is instructive to begin with the question which the submission on behalf of Mr Robinson poses, namely, why should Mr Hartley lie?. Indeed, since Mr Hartley's evidence is supported by Messrs Hansen and Smith, of the Mine Subsidence Board, the question must be amended: why should Messrs Hartley, Hansen and Smith deliberately lie to the Court?

The submission for the Australian Collieries' Staff Association attempted to suggest a motive. However, for reasons provided by the Report, their submission is rejected. Mr Hartley impressed the Court as a truthful witness. His evidence is accepted. Mr Hansen and Mr Smith were likewise truthful witnesses. Their evidence is also accepted. Where Mr Robinson's evidence conflicts with that of Mr Hartley, Mr Hartley's evidence is preferred.

The Court finds, therefore, that Mr Robinson did refer to a water problem at Gretley in his conversation with Mr Hartley. However, that finding does not resolve all issues between Mr Hartley and Mr Robinson. Although there was reference to a water problem, was Mr Robinson referring to the Glendale region of the mine (where there was a water problem) rather than 50/51? The resolution of that issue rather depends upon when the conversation took place. Although Mr Hartley is accepted as a truthful witness, is it possible that he is mistaken in his recollection that the conversation took place in the week beginning 4 November 1996? Is there any chance that his truthful recollection that RT 523, sheet 1 was supplied may be wrong? To deal with these issues the Court will now examine what prompted Mr Robinson to approach the Mine Subsidence Board, and when that approach was made.

Mr Robinson's Approach to the Mine Subsidence Board

After a detailed analysis of the evidence, the following findings of fact are made in relation to the events of 4 November 1996:

- That on the morning of 4 November Mr Bernard (in company with Mr Pritchard) observed the build up of water in 7 cut-through, which he later reported to Mr Alston, then undermanager in charge
- That on the same morning Mr Pritchard discussed the water with Mr Alston and suggested drilling ahead.
- That Mr Robinson was present during these discussions, or a significant part of them.
- That later the same morning Mr Robinson telephoned the Mine Subsidence Board, seeking plans which would enable him to confirm the location of the Young Wallsend Colliery
- That in the course of that conversation Mr Robinson spoke to Mr Hartley and said that Gretley had a water problem

These being the facts, the Court is left with the choice between two hypotheses. The first is that Mr Robinson's inquiry of the Mine Subsidence Board was made for no reason except in fulfilment of his professional duty, and that if he did mention water (which he denies), then he must have been referring to the water problem at Glendale, since he had no knowledge of any water problem in 50/51 Panel.

The Court prefers the second hypothesis. It believes, as a matter of probability, that these events are connected. Mr Robinson witnessed Mr Pritchard urging Mr Alston (who needed persuading) to drill ahead on 4 November 1996. He heard the reference to water in 7 cut-through. He recognised that drilling ahead was being suggested because there was the possibility that the plan may be inaccurate. He, therefore, decided to check the plan. He rang the Mine Subsidence Board that morning (4 November 1996) and spoke to Mr Hartley. In the course of that conversation he referred to a water problem at Gretley. He was referring to 50/51 Panel, not Glendale.

The Plans provided by the Mine Subsidence Board

What plans were provided by Mr Hartley to Mr Robinson? For a number of reasons which are set out in the Report, the Court believes, as a matter of probability, that RT 523, sheet 1 was included in the plans made available to the mine by the Mine Subsidence Board.

The Duty of Mr Robinson

As stated above, the Court believes that Mr Robinson, having heard the discussion between Mr Pritchard and Mr Alston concerning drilling ahead, recognised that there was an issue as to the accuracy of the depiction of the Young Wallsend Colliery, and resolved to investigate the location of the old workings.

The Court has already determined that well before November 1996 Mr Robinson was under a duty to ascertain the basis upon which Mr Murray had depicted the Young Wallsend Colliery, and the adequacy of the research

which underpinned that depiction. It is plain that Mr Robinson did not appreciate that he was under that duty. He assumed that he could rely upon Mr Murray having properly done his job.

However, by November 1996 Mr Robinson did recognise that there was an issue concerning the depiction of the Young Wallsend Colliery. He went part of the way in resolving that issue. He satisfied himself that the position of the Young Wallsend Colliery was accurate. However, he should not have stopped his investigation at that point. Once there was doubt in his mind, it was his duty, first, to inform the manager, and secondly to resolve that doubt completely (or disclose to his superiors that it was incapable of resolution, because of the paucity of material). An opportunity to make good the defects of Mr Murray's research, and his own, was therefore lost.

Chapter 11 - THE DEPUTY'S REPORT

The Issues arising from Mr McLean's Report

Mr McLean was the deputy on the day shift on Wednesday 13 November 1996, the day before the inrush. His shift began at approximately 6.30 am. Shortly after 3 pm (that is, a little over 14 hours before the inrush) he handed his statutory report to the day shift undermanager, Mr Coffey. On any view, Mr McLean's report was unusual. It included the words already referred to, namely:

"Coal seam is giving out considerable amount of water seepage at face C hdg."

When the report was handed to Mr Coffey, he directed a number of questions to Mr McLean. Having heard his answers, Mr Coffey resolved to do nothing. The conversation took place in the presence of the undermanager for the next shift, Mr Shacklady. He likewise formed the view that nothing was required to be done.

Before dealing with the obligations of Messrs Coffey and Shacklady, and whether they were in breach of such obligations, it is first necessary to determine the following issues of fact:

- First, what did Mr McLean in fact observe in C heading on 13 November 1996?
- Secondly, what was said by Mr McLean, when questioned by Mr Coffey, about his report?

What did Mr McLean observe?

Mr McLean repeatedly suggested that he had used the wrong words in his report. He claimed that what he saw was a trickle. It was not considerable. However, the Court does not accept that Mr McLean used the wrong words. He quite deliberately chose the phrase "considerable amount of water seepage at face" because those words accurately described what he saw.

The Court takes this view for a number of reasons which are set out in the Report. They include his comments to members of the crew working alongside him during the shift (especially his observation to Mr Stewart: "There's water in that face") which are consistent with the words which he ultimately used in the statutory report.

What did Mr McLean say to Mr Coffey?

What did Mr McLean say in response to Mr Coffey's questions about his report? Resolving that issue will be assisted by an appreciation of the way in which Mr McLean viewed the water seepage which he described in his statutory report. Mr McLean permitted his men to remain in C heading, and the face to advance a further 12 metres, during the course of the shift. It is, therefore, accepted that he saw no immediate danger arising from the presence of water.

The Court believes, nonetheless, that Mr McLean was concerned by what he saw. His conversations with Messrs Collins, Stewart and Brown during the shift demonstrate that concern. He saw the link, or possible link, between the water and the old workings, and recognised that it may be a symptom of danger. He was right to do so. Any water inflow in the vicinity of abandoned mines, whatever the water quality and whatever the indicated barrier width, should be considered a danger signal.

The danger seen by Mr McLean on 13 November 1996 was the same danger which he had drawn to Mr Porteous' attention on 4 November 1996. Did the presence of water suggest that the plan may be inaccurate, and the old workings closer than depicted?

Mr Coffey, when presented with Mr McLean's report, had the same concern. He immediately turned to the mine plan, and measured the distance between the face, as established during the day shift, and the Young Wallsend colliery. Mr Shacklady, too, made the link between the presence of water, and the possibility that the plan may have been inaccurate. He immediately inquired about drilliing ahead.

Mr McLean placed the report on Mr Coffey's desk, without comment, and turned to leave. What significance should attach to that fact? Walking out simply meant that Mr McLean did not recognise an immediate threat to safety. It does not mean that he did not see a potential threat to safety. For the reasons given, the Court believes Mr McLean did see such a threat. However, he was content to allow the system in respect of statutory reports to deal with his observation, and concern.

The Court does not accept Mr McLean's assertion that, when questioned, he, in effect, withdrew his report, saying that the water seepage was not considerable. The Court also does not accept Mr Coffey's assertion that Mr McLean said (referring to the description of water): "It is not anything to worry about." It is significant that those words do not appear in Mr Coffey's first account of this conversation to the inspectors.

Nonetheless, the Court believes that something must have been said by Mr McLean which qualified the words in his report, or the impression which they created. Something was said which, in Mr Coffey's mind, transformed the report from something which no-one (including Mr Coffey) could ignore, into something which Mr Coffey (and Mr Shacklady) chose to ignore.

Four aspects of Mr Coffey's conduct were the subject of comment:

- First, the adequacy of his investigation, in terms of his questioning of Mr McLean.
- Secondly, was there a need for further investigation? Should Mr Coffey have inspected the face himself, or arranged for Mr Shacklady (who was about to commence his shift) to do so? Should the water have been monitored?
- Thirdly, should Mr Coffey have notified the undermanager in charge?
- Fourthly, Mr Coffey having made a determination that no action was called for, should he have made a report which would then have been available to those on subsequent shifts?

The Adequacy of Mr Coffey's Investigation

Mr Coffey's investigation of the observations of Mr McLean was superficial. Having recognised from Mr McLean's report the symptoms of danger, they were dismissed too readily. Because Gretley is a wet mine, Mr Coffey was prepared to assume that a trickle of water was of no consequence. Because the Young Wallsend Colliery was 130 metres away, according to the plan, considerable seepage at the face (manifesting itself in a continuous trickle) was likewise of no concern.

However, something more than a superficial assessment was called for in circumstances where mining was taking place in the vicinity of old workings, known to be full of water. The terms of Mr McLean's report were startling, and different. They were the observations of an experienced deputy. The panel was known to be the driest in the mine. How long had Mr McLean observed the considerable seepage at the face? What was the flow rate of the trickle? Had the water reappeared after production ceased? What was the likely source? If the Young Wallsend Colliery was a possible source, what did that suggest? Might the plan be wrong?

None of these questions was asked nor answered. Mr Coffey, as an undermanager, was obviously not responsible for the mine plan. He had plainly not undertaken the research into the depiction of the old workings. He believed that the depiction of the old workings was accurate (at least to within a couple of metres). However, that belief was based upon faith rather than knowledge. He ought to have been prepared to question that faith, when confronted by a report as disturbing as that of Mr McLean of 13 November 1996. At the very least, he ought to have inspected the face, or arranged for its inspection. The maintenance shift (where there would be no production before midnight) provided an ideal opportunity to monitor the face, and the

flow of water, if it were to reappear. The undermanager in charge ought to have been informed.

The Inspection of Mr Hegarty

The afternoon shift began at approximately 2.30 pm. The deputy was Mr Hegarty, who had considerable experience.

Mr Hegarty's attention was not drawn to Mr McLean's report. Nonetheless, as a mine deputy, he was obliged to read the report of the outgoing deputy. He did so, initialling Mr McLean's report upon the copy which was kept underground. Mr Hegerty found a trickle of water. There was no obvious source. It continued throughout the shift. Mr Hegarty's report at the end of the shift made no reference to Mr McLean's report, or to water he had seen, which is surprising. Given that Mr McLean's report was "significant" (to use Mr Hegarty's word), and disturbing, one would have expected some comment. Had there been a comment, those on later shifts would have had their attention drawn to Mr McLean's report, which they may otherwise not have read.

Mr Shacklady's Role

Although the responsibility for recognising the issue arising from Mr McLean's report, and responding appropriately, was primarily that of Mr Coffey, being the person to whom Mr McLean handed that report, nonetheless, Mr Shacklady also had a responsibility as the undermanager on the next shift. He inherited the problem. He acknowledged that Mr McLean's report was a "highly significant report". He knew that Mr Coffey had not been underground, and made his own inspection, following the presentation of that report. He knew that the only investigation made by Mr Coffey was a brief conversation, approximately 2 minutes with Mr McLean. He should have recognised that he did not have enough information to conclude that there was no problem. Much would depend upon whether the water reappeared once production was suspended. In these circumstances, he ought to have inspected the face himself. At the very least, he ought to have questioned Mr Hegarty about what he had found. He did neither.

The Nightshift of 13/14 November 1996

The inrush occurred during the course of the nightshift (5.31 am on 14 November 1996). The shift began at 11.30 pm. The undermanager for the shift was the undermanager in charge, Mr Pritchard. Mr Pritchard was not told of Mr McLean's report, nor Mr Coffey's conversation. He did not himself read Mr McLean's report, although he did read that of Mr Hegarty, the deputy on the preceding shift.

It would certainly have been good practice for Mr Pritchard to have read the reports of the last production shift. However, the primary duty to pass on

information about matters which may affect safety on his shift rested with Mr Shacklady. Because Mr Shacklady (like Mr Coffey before him) had wrongly dismissed Mr McLean's report, he failed to alert Mr Pritchard to that report, and to Mr Coffey's "investigation". Had Mr Pritchard been told of Mr McLean's report, he may have linked Mr McLean's observation with the water he had seen ten days earlier in 7 cut-through. He may in those circumstances have examined the area himself.

At 5.20 am, Mr Nichols parked the shuttle car in 7 cut-through. He made his way down B heading to the crib room (at 6 cut-through). He arrived at 5.30. Within ten seconds he noticed water coming underneath the trapdoor in the stopping. After a further 10 or 15 seconds the door burst open and water rushed into the crib room with force so great that he found it hard to stand up. The tragedy, therefore, was complete. The Mines Rescue Team began its work, seeking to determine whether there were any survivors. The rescue effort was rapid and professional. The only real blemish was the failure of the mine to notify the Police and Ambulance Service once it was recognised that men were missing.

Causes of the Tragedy

The evidence before the Inquiry has demonstrated serious shortcomings in the performance of the Department of Mineral Resources, in the context of Gretley, and that of the mining company, The Newcastle Wallsend Coal Company Pty Ltd. In the case of the mining company, the shortcomings were widespread. They affected every level of management, namely successive mine managers, mine surveyors and certain undermanagers. They are dealt with in detail throughout the Report and are collected in the Summary of Findings. Those which appear to the Court to be the most important and clearly linked, directly or indirectly, to the tragedy are as follows:

- First, the Department was responsible for the creation of RT 523, sheets 2 and 3, which misinterpreted sheet 1. The failure properly to interpret sheet 1 was the consequence of a lack of care on the part of the Department. These plans were potentially dangerous, available and intended to be distributed by the Department from time to time to mining companies. A potential problem would become an actual problem, unless it were recognised beforehand.
- Second, there was a failure by the then mine surveyor (the late Mr Murray) properly to research the Young Wallsend Colliery before depicting the colliery on the mine plan, and in the section 138 application to the Department.
- Third, there was a failure by the mine manager, Mr Romcke, to determine the basis upon which the colliery had been depicted, and to recognise that the task had not been properly performed.
- Fourth, there was a failure by Mr Porteous, who succeeded Mr Romcke as mine manager, to discharge the same obligation, namely to determine the basis upon which the old colliery had been depicted, and recognise that it had not been properly researched.

- Fifth, there was a failure by both Mr Romcke and Mr Porteous to prevent inrush by devising an appropriate strategy, and in failing to use the technique of risk assessment to assist them in determining that strategy.
- Sixth, there was a failure by the Department properly to appraise and evaluate the application by the company under s138. A flawed system was approved.
- Seventh, there was a failure by the new mine surveyor, Mr Robinson, to investigate the basis upon which his predecessor had depicted the Young Wallsend colliery, and to recognise that the issue had not been properly researched.
- Eighth, Mr Robinson in November 1996 did recognise that there was an issue concerning the depiction of the Young Wallsend colliery, but failed properly to investigate that issue.
- Ninth, in early November 1996 Mr Alston, the undermanager in charge, failed properly to investigate reports of water in 50/51 panel made to him by at least two deputies.
- Tenth, that on 13 November 1996, the day before the inrush, Messrs Coffey and Shacklady, both undermanagers, failed properly to investigate the issues raised by the report of Mr McLean, a mine deputy, and failed to inform the undermanager in charge, Mr Pritchard, of the contents of that report.