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Historical Background

To

Mine Surveying

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"HISTORICAL BACKGROUND TO MINE SURVEYING"

By R K CAIRNS

November, 1998

ABSTRACT:

Coal mining commenced in NSW within 20 years of settlement. The early miners were inexperienced and methods were primitive. Many mine workings commenced at various locations on the outcrop of seams and in close proximity to waterways where the product could easily be shipped to market destinations.

Coal mining developed rapidly and without regulation. Experienced miners were gradually introduced from overseas. Early mining regulations were based heavily on overseas legislation and it was some time before formal surveying and plan requirements were introduced. Surveying and plan drawing standards developed over time and the high standards in use today are not representative of those in use of only a few decades ago.

An appreciation of the development of survey and plan regulations over time will assist the researcher in better understanding historical mine survey records.

This paper attempts to trace and relate the development of coal mining in NSW, the evolution of mining legislation, the history of surveying and drafting instructions and the appointment of competent mine surveyors at collieries in NSW.

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INTRODUCTION:

On Tuesday 7 July 1998 Judge JH Staunton handed down his findings following an exhaustive inquiry into the death in November 1996 of four miners at the Gretley Colliery following an inrush of water from old mine workings. The judge provided his findings as part of a Coronial Inquest and also as a Court of Coal Mines Regulation. Judge Staunton made Forty three recommendations as a result of the inquest and inquiry.

The Minister for Mineral Resources announced on Friday 10 July 1998 that the NSW Government will implement all 43 recommendations of Judge Staunton's report. In August 1998 the Department of Mineral Resources released a report titled "Gretley – A plan of action – Governments response to the report of the Gretley Coal Mine public inquiry". In a ***Summary Of Implementation Of Recommendations*** it was announced that in response to recommendations 1,2, and 3 that the Department would, with the assistance of industry groups, ***"Run a series of seminars to educate all current mine surveyors and management in the use of historical data".***

This paper attempts to provide:-

i. a brief insight into the history of coal mining in NSW;
ii. the evolution of mining legislation
iii. the history of the surveying and drafting instructions, and
iv. the appointment of competent mine surveyors at collieries in NSW,

so as to give an appreciation of the value of historical survey and plan records when researching old mines.

MINE SURVEYING TECHNOLOGY:

A quotation from ***The Compleat Collier***, Published in 1708, "...he ought to know Lineing and Levelling well, as also the method of Coal-Working, together with the knowledge of the Nature of Coal for there is very great Occasion for all these four Qualifications." The reference to "lineing and levelling" clearly indicates that the importance of mine surveying was recognised at a very early stage.

In more recent times the extension, concentration and mechanisation of underground workings has placed an ever-increasing demand on mine surveying technology.

Definition of Mine Surveying:

The International Society of Mine Surveying defines minerals surveying as a branch of mining science and technology which includes all measurements, calculations and mapping which serve the purpose of ascertaining and documenting information at all stages from prospecting to exploitation. Throughout the life of a mine, the surveying department acts as a central resource, providing information for all the other mining disciplines.

The principal activities of a minerals surveyor are: -

i. The interpretation of the geology of mineral deposits and surrounding strata in relation to the assessment of mineral reserves and the economics of their exploitation;
ii. The acquisition, sale, lease and management of mineral rights;
iii. The making, recording and calculation of mine surveying measurements, to provide the basis for the planning and control of mine workings, to ensure economical and safe mining operations;
iv. Mining cartography, often strictly controlled by legislation;
v. The investigation and prediction of the effects of mine workings on underground strata and the surface. The study of rock and ground movements caused by mining operations, their predictions and precautions against deformation damage;
vi. Mine planning in the context of the local environment and rehabilitation of land affected by mining operations.

Importance of Mine Surveying:

Plans and sections are essential for any engineering project. In mining they are a prerequisite for efficient and orderly prospecting, exploration and exploitation of the earth's natural resources. This fact is not always fully acknowledged and there have been many examples of mining projects which would have been developed far more quickly and profitably, had adequate plans and sections been available prior to commencement of the project.

The main function of plans and sections is the recording and communication of data in a graphical form. It is important, therefore, that mining engineers are capable of reading them in order that all the information is readily appreciated and the three dimensional picture is clearly visualised. Once a particular mining development is decided upon, it must be set out, during the process of excavation, to the predetermined plan. The mine surveyor must keep careful check on the directions, levels and sizes of all development drifts, shafts and other drivages. From these measurements, underground plans and sections are prepared to show the information graphically. The master or statutory working plan provides the base from which all other plans for ventilation, rescue, abandonment etc are prepared. It is an essential key to all future discussions, developments and problems of organisation.

COAL MINING AND SURVEYORS[2]:

The first recorded coal discovery by white men in Australia was made by a party of escaping convicts about 36 hours sail north of Port Jackson on 30 March, 1791.

Another early coal discovery was noted in June, 1796 "...The people of a fishing boat returned from a bay near Port Stephens, and brought with them several large pieces of coal...(found) lying in considerable quantity on the surface of the ground."

In June, 1797 coal was accidentally discovered by three shipwrecked sailors south of Sydney near Bulli.

Shortly afterwards, Lieutenant John Shortland, RN, entered and named the Hunter River, where Newcastle now is. "...In this harbour was found a considerable quantity of very good coal, and lying so near the waterside as to be conveniently shipped..." he wrote in September, 1797.

Governor King decided to set up a coal works near Newcastle and a mining expedition in the charge of Lieutenant Grant, set of on 10 June, 1801. Others in the party included Ensign Francis Barrallier, who acted as surveyor. A description of the Hunter River mouth was given by Barrallier "...coal is found on the south side of the mainland called Colliers Point and is also found on Coal Island (now known as Nobbys). It is got with great ease and the more they approach the level of the water the better its quality..." Primitive conditions prevailed and coal was won from the area now known as Fort Scratchley. Surgeon Martin Mason who took command in September, 1801, obtained some improvements and by November his tunnels, which were up to 30 metres underground, were producing nine tonnes a day. ***Regular mining ceased temporarily in 1802. Governor King withdrew the soldiers and convicts but ships occasionally called in to obtain coal.***

In 1804, the Commandant at Hunter River, Lieutenant Charles Menzies, reported that "...an excellent mine has been opened..." although "...the mines have hitherto been dug by individuals in a shameful manner..."

Various other tunnels and shafts were dug within a radius of two or three kilometres of the original diggings in the period up to 1820. None of the officers in command was an experienced miner, so it is possible that the charges of poor working methods made in 1825 were justified.

In 1820 it was recommended to the Home Government that all coal mines be leased to private individuals. The Australian Agricultural Company (AA Co.) was given monopoly rights to all coal mining for 31 years commencing in 1828. The A.A. Co.'s mine commenced production in 1831 with 7000 tonnes being produced in the first year of operation.

The first evidence of mine surveying being conducted prior to 1840 can be gleaned from James Dwight Dana. Dana obtained from James Steel, Superintendent of the A.A. Co.'s Coal Works, a plan of the workings showing the pattern of faulting. Dana's report outlined the mining methods of the era. ..."Operations have been carried out by means of a single shaft, from which excavations have been extended around over 24 acres (Abt. 10 hectares). A second shaft was just completed...they were removing coal that had been left to support the roof..."

The Reverend Lancelot Threlkeld, of the London Missionary Society, had set up a mission for aborigines on the present site of Belmont. He moved to Ebenezer...on the western side of Lake Macquarie, in 1829. The Government eventually withdrew support for the mission, but this was anticipated by Threlkeld, who applied for permission to work coal at his mission. By 1841 Threlkeld's mines where Skye Point now is, was shipping coal to Sydney.

The AA Co. had kept mine plans and recorded some geological features in the 1830's, but this good practice does not appear to have been kept up. By 1853 its mines were in urgent need of reorganisation. In 1854 a detailed examination of the AA Co.'s mine was made by Frederick Oderheimer "...one of the most eminent men in his branch of science in Europe". Oderheimer's report insisted on the necessity for a skilled colliery manager, accurate surveys and maps of the workings.

The mine survey methods employed at the time were very crude. The compass was used to determine direction and, as its needle is very sensitive to the nearby presence of metal objects and certain rock types, the plans of the excavations could only be approximate. The exact circumstances would vary from mine to mine, but the majority of underground surveys were carried out by English miners who had no formal training.

The later problems of subsidence faced by the Government Mining Department can be appreciated by realising that when many mines closed, whatever plans they had prepared were often lost or destroyed.

Sir Charles Fitzroy, Governor of NSW from 1845 to 1855, requested that a geological surveyor be appointed because of continued coal discoveries and the unconfirmed reports of gold discoveries. Samuel Stutchbury, arrived in Sydney in 1850 to commence duty. He completed extensive surveys of north of Sydney in arduous and unfamiliar conditions without a lot of encouragement from the Government. After Stutchbury returned to England in 1855 there was no official geological surveyor for 20 years.

The Department of Mines was inaugurated in September, 1874. Very soon after the geological survey was established under Charles Smith Wilkinson, a surveyor, who mapped the developing Lithgow – Wallerawang area. That same year Tennant William Edgeworth David embarked on surveys of tin bearing areas of New England. Later he examined the coal measures of the Lower Hunter Valley, especially the economically important Greta seam. David resigned in 1891 to become Professor of Geology and Physical Geography at the University of Sydney. A man of tremendous energy whose devotion to scientific study was remarkable.

Then Examiner of Coalfields, John McKenzie, in an 1887 report, referred to the busy 1880's period, when at least 40 collieries worked in the Newcastle area, with a production of over 2 Million tons (per annum).

Despite the efforts of men like Sir Edgeworth David, the mining fraternity had still to be convinced about the value of accurate mapping and sound geological knowledge. It was not until the Lithgow Valley and Ferndale Colliery disasters and a near disaster at Maryville Colliery in 1886 that Royal Commissions emphasised the need to possess this basic information.

The hazard of mine subsidence often had to be accepted by people. *The Surveyor* of 1890 reported "A deputation from the Wickham Municipal and Vigilance Committee recently waited on the Minister For Mines to bring under his notice the question of undermining on behalf of Linwood and Wickham Collieries, and whilst stating their grievances they made use of the following hyperbolic language: 'There was no security for persons who had bought land and gone to the expense of building, many of the buildings being of valuable character.' It was considered that it was a reflection on the surveyors for not accurately indicating to the owners whether they were being undermined."

The Minister in his reply to the deputation, said "arrangements are now being made for a surveyor to make a thorough survey of the mine to ascertain definitely the extent of the undermining." He produced the following comments about the lack of proper controls and qualified surveyors: "...In this Colony any competent man may call himself a mining surveyor, and there is no law to prohibit the employment of such by colliery proprietors, although this short-sighted policy is often at the risk of the general public and the safety of the mine. The title '*mining surveyor*' as conferred by the Department of Mines on qualified licensed surveyors is something of a misnomer for such a professional carries out only surface surveys of mining leases. Normally he has no experience whatever of underground work. It is time that this misapplied designation was altered into something more appropriate. Underground surveys should be done properly so that plans show the actual state of the workings, both horizontally and vertically. Equally so, the surface above the workings should be shown. In this way the relation of one section to the other is apparent and the plans become a safe and economical guide to the whole operation."

In several issues *The Surveyor* deplored the unsatisfactory situation: "this important work...if not altogether neglected...is done in such a rough-and-ready imperfect manner as to be well-nigh useless. As a rule, it is relegated to incompetent and unqualified men, who know nothing of the instruments they use or of the principles which should be their infallible guide..."

Mining surveys do not receive that attention which their importance demands, either at the hands of the colliery or mine proprietors, the profession or the government. Mine managers are so slow to realise their necessity, that they will only have them attended to when works are in close proximity to the boundaries of the property, or to satisfy the requirements of the law; and then they will only execute a rough kind of survey with chain and compass, which is practically of no use whatever."

The advantages of having good surveys done were further extolled: "...It shows at all times how much coal has been taken from the various districts of the mine, and allows the manager to project his roadways, bords and headings on the lines of a previously well considered design, and shows him where new work can be located to suit all conditions...It guards against the occasional destruction of human life; for on mines where survey has been neglected the old workings are always an unknown quantity and are a continual menace to the miner; they frequently become filled with water or hold large volumes of stagnant foul air, which makes it necessary that the new work should never at any time open into them. This is where accuracy is of such prime importance to ensure the safety of workings in the vicinity of such spots. It shows the position of the underground with relation to the surface, so that in hollow ground the manager may take such precautions...as to prevent the surface from being disturbed and valuable buildings injured..."

The Coal Mines Regulation Act of 1912 went part-way towards rectifying the situation. It required plans of collieries to be kept and updated...but still there was no formal requirement for underground surveyors to be licensed. In 1923 an article in the Queensland Surveyor recorded; "The question is being mooted today as to whether Underground Surveyors should not be registered as are Licensed Surveyors. This is done in Western Australia, and should be in New South Wales. Any loss of coal and loss of life owing to underground workings holing unexpectedly into old ones full of water or noxious gases through faulty surveying and mapping is a national matter. The registration of our mining surveyors would tend to prevent this."

No formal standards of accuracy for mine surveys and drafting existed until the introduction on 10 September, 1976 of the Surveying and Drafting Instructions for Colliery Surveyors (Underground) which were published in the Government Gazette. These instructions required all mine surveys to be carried out to accuracies similar to those prescribed for normal surveys by the Survey Practice Regulations, 1933. The open cut instructions followed in 1977.

Many mine surveys conducted prior to 1977 were no doubt professionally and accurately completed, and subsequently drafted in a very competent manner. There being no standards in place, however, the researcher must satisfy himself as to the reliability of any old surveys and plans that may be placed before him.

NCB (PRODUCTION CODES AND RULES:

In 1951 the National Coal Board (Production Department – London) published ***"Surveying Practice and Statutory Plans"***, a definitive code for plans and surveys of mines in Great Britain.

The following is quoted from that publication: -

"Acknowledgement – Certain parts of this code are based on recommendations contained in the report on Standards of Accuracy and Limits of Error for Plans and Surveys of Mines, jointly prepared by the Royal Institute of Chartered Surveyors and the Institute of Mining Surveyors, and published in 1935. The Board wish to acknowledge their indebtedness to these two societies for permission to use this material."

"Section 1: SCOPE AND DEFINITIONS

1.1 This volume constitutes Part I of a Code which will set up a national standard of practice and attainment for the surveying of mines and the preparation and maintenance of mine plans. It sets out the principles on which the Statutory Working Plan is to be based, standards of accuracy in making surveys and in plotting, action to be taken to ensure safe working in certain circumstances, and standards for the preparation and maintenance of rescue, fire fighting and electrical plans, and geological records. The provisions of the code are additional to and in amplification of, and not in substitution for, the Coal Mines Act 1911or Statutory Regulations..."

"Section 5: MEASURES TO GIVE WARNING OF DANGER

Working in the Proximity of Unconsolidated Surface Deposits
Working in the Proximity of Old Workings in the Same Seam or Approximately the Same Plane
Working in the Proximity of Bodies of Water on the Surface or Underground."

COAL MINES REGULATION ACTS

Coal Mines Regulation Act, 1902

Sec.28. - Plan of mine to be kept at office.

Sec.32. - Plan of abandoned mine or seam to be sent to Minister.

Coal Mines Regulation Act, 1912

Sec.35.(1) - Plan of Mine to be kept at Office (CMRA 1902, S,28); "The...manager of every mine...shall keep in the office of the mine an accurate **plan of the workings** of the mine, showing the workings up to date...direction and rate of dip of the strata...all faults, dykes and other dislocations of the seam or seams together with a section of the strata sunk through, or, if that is not reasonably practicable, a statement of the depth of the shaft...and in addition to the above-mentioned plan there shall also be provided a **tracing of a surface plan** on the same scale showing thereon all streets...buildings...rivers...or other natural feature ...which, if disturbed by mining operations, is likely to cause damage to or danger in the mine..."

Sec.39 – Plan of abandoned mine or seam to be sent to Minister (CMRA 1902, S.32, Amended 1931); "(1) Where any mine or seam is abandoned...the manager of the mine or seam at the time of abandonment shall...send to the Minister-

(a) an accurate plan of the mine or seam showing...(i) the boundaries of the workings of the mine or seam including not only the working faces but also all headings in advance thereof, up to the time of abandonment...

Every such plan shall be of durable character and shall be on a scale of not less than 1:2000, or on the same scale as the plan used at the mine at the time of its abandonment."

Sec.35A(1) – Plans to be furnished - New subsection added 1913; "the...manager of every mine shall...furnish...a plan of the lands within the **colliery holding** of such mine which are freehold and leasehold lands held by the owner of such mine or which are lands in which such owner has the right to mine for coal..."

Sec.39A – Accuracy of plans to be certified – New section added 1931; "(1) The accuracy of any plan, section and tracing which is made after the first day of January, one thousand nine hundred and thirty-three, for the purposes of section 35...35A...36, or...39 shall be **certified by...a surveyor**..."

Sec.6 (1) –Certificates of Competency -New paragraph added 1941 –
(e) "certificates of fitness to be a mine surveyor..."

Sec.35.(1A) – New subsection added 1947; "The...manager of the mine shall forward to the Under Secretary for Mines an accurate tracing of the plan required to be kept at the office of the mine under subsection (1), showing the mine workings up to date...and titled the **mine record tracing**. Such tracing shall show a surveyed connection to some measured portion on the surface of the mine together with the azimuth adopted..."

Sec.38A – Barriers to be provided - New section added 1964; "1(a) The.. ..manager of a mine shall not work or cause to be worked any seam of coal in a mine without leaving—

i. **a barrier of the prescribed width** against the external boundaries of the colliery holding...against the outcrop of the seam...between the open cut working and the underground workings; and
ii. if the Minister...directs, a barrier...or a protective pillar...against the mean high water mark...or...surface improvements...including abandoned workings within the colliery holding."

Sec.35.(1) – New paragraph added 1953, amended 1974; "...the plan required to be kept...under this subsection shall show **a fixed datum** on the surface near the mine entrance related to standard datum and reduced levels at points not more than 100 metres apart on the floor of each seam being worked in all accessible underground workings."

THE SURVEY AND DRAFTING INSTRUCTIONS:

1968 – The first draft of the *Provisional Surveying and Drafting Regulations for Colliery Surveyors* appeared under cover of a letter from the Chief Draftsman, NSW Department of Mines, dated 23rd August, 1968. They were circulated to mines with the comment that *"colliery surveyors in your employ be given the opportunity to comment on the regulations as constructive criticism from this source in the past has already led to improvement of several sections of the regulations."*

"During the past few years this Department has recognised the need for the introduction of comprehensive survey and drafting regulations for colliery surveyors and after much investigation and testing, a provisional set of regulations has been prepared....The aim of the new regulations is to ensure uniformity and standardisation in the preparation of colliery mine plans and record tracings..."

1972/73 – the "STANDARD PLAN FORM AND INTEGRATED SURVEY SHEET SYSTEM" was circulated between 20 September, 1972 and 2 January, 1973. "The use of the plan form is...recommended to you for the drawing of the plan of the workings of your mine and the record tracing, when a base line with Integrated Survey Grid co-ordinate values, has been established at your Colliery."

1975 – Provisional Surveying and Drafting Instructions for Coal Mine Surveyors – NOT gazetted.

1976 – Surveying and Drafting Instructions for Coal Mine Surveyors (Underground) Gazetted on 10 September, 1976.

1977 – Surveying and Drafting Instructions for Coal Mine Surveyors (Open Cut) Gazetted.

1982 – Coal Mines Regulation Act, 1982 No. 67 assented to 20th May, 1982.

1984 – Coal Mines Regulation (Survey and Plan) Regulation, 1984 Gazetted on 21 February, 1984.

1984 – Survey and Drafting Instructions for Coal Mine Surveyors (Open Cut) 1984, Gazetted 13 November, 1984.

1984 – Survey and Drafting Instructions for Coal Mine Surveyors (Open Cut) 1984, Gazetted 13 November, 1984.

1993 – Proposed amendments to the Survey and Drafting Instructions – Annexure 'U' – NOT gazetted.

1994 – Survey and Drafting Instructions (U/G) Amended Draft 6 June, 1994 – NOT gazetted.

1994 – Survey and Drafting Instructions (O/C) Amended Draft 6 June, 1994 – NOT gazetted.

CONCLUSIONS:

Although coal mining commenced in the colony almost 200 years ago it should be noted that the first Coal Mines Regulation Act requiring plans of mines to be kept did not appear until a century later, in 1902. During this period many mines came and went and it is doubtful whether surveys were undertaken and plans kept in any reliable form. Remember the first mine manager was a Naval Lieutenant and the first surveyor a Naval Ensign. The second manager was a Surgeon.

Even after the CMRA of 1902 requiring that plans of mines be kept, there was no requirement for surveyors to be appointed and no standards for surveys and drafting. Even when the CMRA was amended in 1931 requiring accuracy of plans to be certified, there were still no standards in place for conduct of surveys, drafting of plans or competency of coal mine surveyors.

In 1941 certificates of fitness were introduced for mine surveyors but still there were no standards for conduct of surveys and drafting of plans.

The first Record Tracing was catalogued in the Mines Department in 1944 (RT No.1 Oaky Park Colliery, 18 September, 1944) and 1947 saw the Mine Record Tracing introduced into legislation, but still no standards were in place for conduct of surveys and drafting of plans.

It was not until 1972 that we saw the Standard Plan Form and ISG sheet system introduced that we finally had a surveying standard to apply uniformly to all coal mine surveys, but where were the drafting standards?

Finally, it all came together in 1976 with the gazettal of the Surveying and Drafting Instructions for Coal Mine Surveyors.

It is therefore important, when investigating an old survey or examining an old plan, to consider the era in which it was done and take careful note of the legislation that was in place at the time, and the standards that may have applied to the conduct of surveys and the preparation and drafting of plans of coal mine workings.

Although many old surveys have proven to be extremely accurate, the fact that no standards existed until 1976 compels the researcher to examine thoroughly any survey or plan of survey that he may need to rely upon and to determine rather than assume its worth.

ACKNOWLEDGEMENTS:

1) Hodges, D J – *Mine Surveying Technology* – a paper presented at the Royal School of Mines in 1992.
2) *Surveying the Hunter* – The Hunter Manning Group of the Institution of Surveyors, Australia.
3) Coal Mines Regulation Act, 1902
4) Coal Mines Regulation Act, 1912
5) Coal Mines Regulation Act, 1982
6) *The Role of the Surveyor in Mining Safety* – a paper by...anonymous
7) Coal Mines Regulation (Survey and Plan) Regulation, 1984 – Survey and Drafting Instructions for Coal Mine Surveyors, 1984.
8) Coal Mines Regulation Act, 1912 - Survey and Drafting Instructions for Coal Mine Surveyors, 1975.
9) Terry Brennan, Department of Mineral Resources, personal comments.
10) John O'Brien, Secretary, Coal Mines Qualifications Board, Department of Mineral Resources, personal comments.

Certification

And

Endorsement

BY PHILLIP ORR

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1. Abstract

Recommendation 2 resulting from the investigation into the accident which occurred at Gretley Colliery centered on the issue of endorsement of plans that are open to doubt.

The recommendation was as follows:

> "That the Department take steps to encourage mine surveyors more freely to identify by endorsement aspects of plans or drawings produced by them which are open to doubt."

This paper will outline the surveyors responsibilities with respect to certification and endorsement and provide some encouragement and practical solutions for endorsing information required to by shown on survey plans.

2. Introduction

Throughout the proceedings of the "Gretley inquiry" the widely held view that the surveyors certification on the face of a plan only applied to one's own work was challenged.

A surveyor is required to show all "current workings" and "abandoned, disused or worked out" workings on the colliery working plan. If the surveyor has any doubts with respect to the location of any of this information the plan is to be suitably endorsed. Clearly it is probable this information may not come directly from a survey completed by the surveyor or under his supervision. This information however is still covered by the surveyors certification.

Plans produced and certified by a colliery surveyor are extensively used for planning by collieries, adjacent collieries, town planners, local governments, land developers and building developers. Plans are interpreted by many persons having quite specific areas for interpretation. If any information depicted on the plan is in any doubt whatsoever then it is important this information be endorsed.

There must be sufficient information on the plan to highlight any area of information that may require further investigation by other persons who may be required to interpret and use the survey plans.

3. Meaning of Certification and Endorsement

What is the actual meaning of the above terminology?

Certification : the act of certifying.....

Certify:	1) to attest as being true or as represented of as meeting a standard... 2) to inform with certainty...
Attest:	to affirm to be true or genuine...
Affirm:	to state positively...
Endorsement:	the act or process of endorsing...
Endorse:	to inscribe as an official document with a title or memorandum...
Inscribe:	to write, engrave or print as a lasting record...

Clearly the surveyors responsibility with respect to certification and endorsement is not an issue to be taken lightly.

Certification is the process of assuring to the public the information shown on a plan is to the accuracy prescribed within the appropriate legislation. This certification is either in the form of a statement or completion of a "schedule of certification of accuracy".

Endorsement is the process of drawing attention to aspects of a plan that may require special consideration from subsequent users of the plan. An endorsement may for example draw attention to information that has been derived from deputy reports and not a full survey.

4. Requirements for Certification and Endorsement.

What specific legislation requires a surveyor to certify and endorse a plan that he may produce?

The primary areas of legislation that stipulate certification and endorsement are summarized as follows:

Coal Mines Regulation (Survey and Plan) Regulation 1984 Coal Mines Regulation Act 1982 .
....Clause 8(f).

Survey and Drafting Instructions for Coal Mine Surveyors (Open Cut) 1984
....Clause 3.10.
....Clause 5.2(k)

Survey and Drafting Instructions for Coal Mine Surveyors (Underground) 1984
....Clause 2.6
....Clause 2.9
....Clause 4.1(b)
....Clause 5.9 (c)(v)

There are other directions issued by the Chief Inspector of Mines that also require certification by the colliery surveyor i.e.

> Mine Operation Plans for Open Cut Mines,
> Section 138 applications etc.

However, in addition, Clause 8(f) of the Coal Mines Regulation (Survey and Plan) Regulation 1984 Coal Mines Regulation Act 1982 requires:

> "prepare or supervise the preparation of all plans, drawings and sections required to be prepared or kept by this regulation or the Survey and Drafting Instructions and shall certify the accuracy of all such plans, drawings and sections in writing thereon:"

This clause clearly requires certification for a number of plans required to be produced by the surveyor.

Certification is not restricted to the colliery working plan and the record tracing only.

The survey plans that are required to be certified can then be grouped as follows:

> 1) Plans required under Survey and Plan Regulation 1984.
> e.g. Plan of ingress and egress, Geological Map, Ventilation plan etc.
>
> 2) Plans required under the Survey and Drafting Instructions 1984.
> e.g. Colliery Working Plan, Mine Record Tracing, Closing plans etc.

3) Plans required to be produced in accordance with directions issued by the Chief Inspector of Mines.
e.g. Section 138 applications, Mine Operation Plans for Open Cut applications etc.

4.1 Certification

When a plan has been certified it means the surveyor is stating the plan complies with the legislation and meets any standards required.

The process of certification can be as a statement on the face of the plan or as in the case of the mine plan and record tracing, completion of the "Schedule of Certification of Accuracy".

If the "Schedule of Certification of Accuracy" is examined it is noted the table is clearly broken into dated periods. The certification of the plan is made against one of these dated periods.

It must also be noted that if the mine plan consists of more than one sheet, only one sheet is required to be certified. This means that all sheets are covered by the one certification.

An Example:

If an adjoining colliery's workings are drafted onto your colliery working plan in a given dated period, what does the surveyors certification actually mean with respect to these adjoining workings?

Clearly these workings were not surveyed by the surveyor in question.

These adjoining workings are required to be shown under legislation and thus are included in the surveyors certification of the plan.

4.2 Endorsement

Legislation requires a surveyor to endorse a plan where "the position of the workings is in doubt".

This endorsement can be a simple statement identifying information that may be in doubt.

Referring to the previous example, the surveyor should endorse his plan stating where the location of the adjoining colliery workings were obtained. This endorsement should include sufficient details to allow someone using the plan to trace the source information.

Similarly, when compiling a Ventilation Plan the origin of the information should be stated on the plan. With collieries now having ventilation officers the surveyor's role should be to produce the ventilation plan using the ventilation officer as the origin of the detail.

Have the Ventilation Officer sign the plan giving his concurrence to the data the surveyor is representing.

Endorsement thus becomes the vehicle which allows a surveyor to satisfy his statutory obligation of certification whilst still not accepting responsibility for work that cannot be carried out by himself.

5. Provision for Additional Information

The Surveying and Drafting Instructions for Coal Mine Surveyors (Open Cut) 1984 Clause 3.7 and The Surveying and Drafting Instructions for Coal Mine Surveyors (Underground) 1984 Clause 2.9 have provision for "Additional Information" to be shown on Colliery Working Plans (and Mine Record tracings).

All surveyors are encouraged to use this provision.

Any information that may be helpful in the future with respect to any facet of the plan can only be viewed as being beneficial and professional.

If necessary this "additional information" can be endorsed as to its source and even its accuracy.

Examples of additional information may include:

1) Any major deviation to the working section in an underground mine i.e., sump areas etc.

2) If additional survey work has been undertaken between adjoining collieries for the purpose of verification of colliery azimuth and datum.

3) Showing tailings emplacement areas on the Mine plan.

6. Liability

Clause 9 Coal Mines Regulation (Survey and Plan) Regulation 1984 refers to the liability of a mine surveyor.

How does this liability fit with certification and endorsement?

It is quite clear that Clause 9 limits a surveyors liability to the work carried out by any one surveyor only.

However, what the Gretely inquiry highlighted was that if a surveyor uses another surveyors information to create a plan then the surveyor creating the plan is required by legislation to certify the plan. This certification then covers the other surveyors work.

In this instance the need to endorse the plan suitably to indicate where the information has been derived is obvious.

Surveyors should not be held responsible for the work of other surveyors, however they are responsible for any interpretation of another surveyors work. If there is any doubt concerning the interpretation of another surveyors work then the plan has to be suitably endorsed.

7. Supervision

The Coal Mine Regulation (Survey and Plan) regulation 1984 states that the surveyor shall "supervise" the preparation of all plans etc.

The Surveying and Drafting Instructions (Open Cut) and the Surveying and Drafting Instructions (Underground) uses the terminology "immediate supervision".

What are the implications of these terms given the surveyor must certify a plan?

In the case "Land Titles Office -v- J M McNamara August 1992" the issue of supervision was determined during an appeal hearing in the District Court of NSW.

This case involved a cadastral surveyor completing a survey and producing a plan under the "Survey Practice Regulations 1933".

Regulation 7 of this legislation requires the surveyor to complete the survey (and subsequently certify the plan) himself or under his supervision.

The judge in his determination found the following:

"..where a survey is not made by the surveyor himself or herself, but is made under the supervision of a surveyor, Regulation 7 fairly and squarely imposes upon the surveyor a requirement to personally attend on the ground ("the ground") to be surveyed and personally supervise (exercise... immediate oversight and personal direction) the survey of that land. I cannot see how a surveyor could meet the requirements of Regulation 7 without attending on the land and supervising the survey of that land. I cannot see how a surveyor, if he or she did not make the survey himself or herself, could certify as to the accuracy of the survey without attending on the land and supervising the survey of that land." (AZIMUTH FEB 1992 page 4)

Whist this determination is directed to a survey completed in accordance with the Survey Practice Regulations, the similarities are only too evident to surveys completed by colliery surveyors.

It is interesting to note that the determination was based on legislation stating "under supervision". The term "Immediate supervision" is used in the Survey and Drafting Instructions.

Thus when the surveyor certifies the mine plan he is by legislation certifying that the "surveys shown on the plan ... have been completed by him or under his immediate supervision..".

8. Future Issues To Be Considered

1) The year 2000 will herald in a new survey datum.

N.S.W. will be converting to a new geodetic datum "Geodetic Datum of Australia (GDA94).

Will colliery surveyors be required to produce new plans based on the new datum as was the case when ISG came in?

Colliery surveyors may be required to certify these new plans that depict old workings on the new datum.

2) The proposed change to Digital Record Tracings

The Survey and Drafting Instructions are proposed to be modernized to allow for the lodgment of Digital Record Tracings.

How will the old record tracings be converted to digital?

If the colliery surveyor converts the hard copy record tracings to digital form then his certification for that digital plan will be for all the workings depicted on the plan.

3) Compliance with supervision requirements in an environment where commercial pressure is impacting surveying personal.

This issue is directly related to the prior section "Supervision".

4) Requests from other government bodies for survey information i.e. Mine Subsidence Board.

The public are entitled under legislation to obtain copies of mine working plans. It must be acknowledged this information is available at several sources within the community. However, surveyors and managers must not rely on these plans. The plans must be obtained directly from the Department of Mineral Resources or the Mine.

9. Conclusion

Certification and Endorsement are tools used to ensure surveys and survey plans can be relied upon as useful tools for further development. These plans are not restricted to mining issues and as such need to be interpreted by a large cross section of the community.

Colliery surveyors and managers are entrusted by the community to supply and maintain the relevant survey information.

Legislation is quite specific with respect to survey accuracy's and standards.

To comply with community standards and expectations, legislation requires the surveyor to certify his surveys and plans. This is a form of guarantee to the community that the work completed can be relied upon.

The findings of the Gretley inquiry have made it necessary for the industry to be reminded of its obligations.

The challenge for all surveyors and managers is to provide information that is a little broader than simply mine location and extent of workings. These plans are an historical repository for information in relation to a particular mine.

GUIDE

FOR SEARCHING

COAL MINE RECORDS

in the

NEW SOUTH WALES

DEPARTMENT OF MINERAL RESOURCES

Alec Ramsland
Terry Brennan

November 1998

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1. Abstract

The need for and value of a guide such as this was evident from the recommendations of the Inquiry held by Justice Staunton into the fatal accident at Gretley Colliery in November 1996.

This guide has been written with respect to Recommendation 3, "Historical Research", to assist Colliery Surveyors, Colliery Managers and other persons who need to undertake a search of the Department's coal mining records. The guide identifies and describes the various types and sources of these records and how this information may be accessed.

2. Introduction

The Department of Mineral Resources through files, index systems, registers, maps and plans has an invaluable history of coal mining in NSW. In many instances this material is "primary source" information.

Information may be gathered in respect of the extent, accuracy and history of coal mine workings by searching a range of material held in the Department's Titles Branch located on Level 4 Minerals and Energy House, 29-57 Christie Street, St Leonards.

Contact staff are - Mr Alec Ramsland, Manager (telephone 9901 8493), Mr Terry Brennan, Manager Drafting Northern Region (telephone 9901 8243) and Mr Michael Golden, Drafting Officer (telephone 9901 8566).

3. Colliery Names Index

This Index has been in existence for many years and contains the names of every colliery in alphabetical order. The Index contains the catalogue number of the Mine Record Tracing. The Index also records other brief information relevant to the mine including details of its location and history.

In addition the Index shows the history of any change in the name of a colliery. It has been the practice of the Department of Mineral Resources that each colliery has a unique name which is not used again to name another colliery. There are occasions where "No1", "No2" etc is used after a name to distinguish different mines. Other examples are to use the word "Extended" or "Main" to also give that distinction.

Using details from the Colliery Names Index, mine workings can then be located on a Parish or District workings map. The Mine Record Tracing should be directly inspected for current workings.

4. Indexes of Colliery Workings Maps and Colliery Holdings Maps

These Indexes contain a list of Parish maps that have been put into use by the Department over many years onto which have been charted the extent of coal mine workings (in the Colliery Workings Map Index) and the external boundaries of Colliery Holdings (in the Colliery Holdings Map Index).

The Colliery Workings Map Index also indicates if workings have been charted onto a District map instead of a Parish map. The Colliery Holding Map Index lists those District maps which are held by the Department showing Colliery Holding boundaries.

5. Departmental Series Maps

(i) District Workings Maps

These are compiled hard copy small scale workings maps showing the approximate positioning of colliery workings on a seam by seam basis within a particular coal mining region of the State, relative to cadastral boundaries. Each map contains an index listing the Colliery name, Mine Record Tracing number and the name of the seam worked. The extent of workings in each seam is shown by a distinctive colour scheme. The Department maintains maps for the Newcastle, Maitland - Cessnock - Greta, Singleton, Western, Lithgow, Capertee - Rylstone,

Burragorang and Southern Districts. In some instances the District maps will not show workings in a particular parish because a parish map on a larger scale has been used to show the detail.

(ii) Parish Workings Maps

The Parish workings maps cover coal workings areas generally not included in the areas covered by the District map series. As indicated above in some instances parish maps within a District coverage are in use because of the large amount of detail required to be shown. This series uses parish maps published by the Surveyor General's Department (previously part of the Department of Lands) and contains similar information as provided on the District maps. Each map contains an index listing the Colliery name, Mine Record Tracing number and name of the seam worked with each seam shown by a distinctive colour scheme.

Perusal of these two map series allows for further searching to be undertaken of individual Record Tracings and plans of abandoned colliery workings. Both these series of workings maps do not show current colliery workings although the older workings of some current collieries are shown. It has been the practice of the Department for about ten years for these maps to be only updated as collieries are abandoned. For workings of current collieries the Record Tracing should be accessed directly.

The Department is developing a new Index to Colliery workings. This will be part of the new Titles Administration System (TAS2) which is a computer based system.

(iii) Colliery Holding District Maps

This series of maps is similar in form to the District Workings maps but show the extent of the boundaries of colliery holdings instead of coal mine workings and any special notes in relation to those colliery holdings. There are District Colliery Holding maps for the Newcastle, Maitland-Cessnock-Greta, Singleton, Lithgow, Capertee-Rylstone, Burragorang and Southern Districts. These maps have not been updated for some time and will not be further updated as all current colliery holding boundaries are charted onto the 1:25000 Series Titles maps. Colliery Holding boundaries will be part of the information contained in TAS2.

(iv) Colliery Holding Parish Maps

This series of maps is also similar in form to the Parish Workings maps but show the extent of colliery holding boundaries instead of coal mine workings. The practice was that there be a colliery holding parish map introduced as part of the

mapping system for every parish in which a colliery was situated. Hence there are situations where there are parish maps beyond the coverage of the District maps. Colliery Holdings were always shown on a Colliery Holding Parish map. Where there was a Colliery Holding District map in use, Colliery Holdings were shown on that map as well. As with the Colliery Holding District maps, the Parish Colliery Holding map series is not kept up to date.

These Parish Colliery Holding maps also contain special notes relevant to colliery holdings. From 1970 onwards they listed a schedule of companies invited to apply for coal leases within the boundaries of the Parish map. These maps also show areas of Crown and privately owned coal (by blue and red colour respectively) up to the introduction of the Coal Acquisition Act, 1981. That Act and subsequent related Acts have affected coal ownership, so the maps should only be used as a guide and any authoritative information about coal ownership should be obtained by searching property title records at the Land Titles Office.

(v) Titles Series Maps

The 1:25000 topocadastral series Titles maps show, amongst other mining titles, the coal mining leases which form the external boundaries of colliery holdings. These maps have also become historic as the Department's titles records have now been captured into the computer database.

Perusal of these maps allows for the location and name of both old and current collieries to be ascertained. Using the name of the colliery the Mine Record Tracing number can be obtained from either the Colliery Names Index or the Colliery Holding Registers.

6. Colliery Holding Registers

The Colliery Holding Registers are a set of statutory records of collieries maintained by the Department. These Registers were formerly required under Section 35A of the Coal Mines Regulation Act 1912. The ambit of that Section was transferred across to the Coal Mining Act, 1973 in 1984 (S.115A) and from 1992 the provisions are set out in Section 163 of the Mining Act 1992.

These Registers show details of leasehold and freehold titles, barrier and pillar extraction approvals, plans of location and other miscellaneous notes; Colliery Holding and miscellaneous file numbers on which are recorded the history of the mine; the Mine Record Tracing number; and the name of the operator of the mine. The Registers do not graphically show details of mine workings but there may be information of interest in this regard on the Colliery Holding file.

Currently when a colliery is abandoned the loose-leaf sheets of the Register for that colliery are transferred into the Abandoned Colliery Holdings Register. The Department keeps historical sets of colliery holding, abandoned and superseded Registers. The original set of Registers it is understood were established in the era from about 1912. These are bound books labelled Northern Collieries (4 Volumes), Southern Collieries (2 Volumes) and Western Collieries (2 Volumes). Generally these Registers contain title details, a plan of location of the colliery and notes on its history.

It is further understood that another set of "narrow loose leaf" registers was introduced in about the 1930's which were in place until 1964 when a new wider system of "loose leaf" Colliery Holding Registers was introduced. In 1964 there was also the development of the separate but parallel system of wide loose leaf registers known as the Barrier and Pillar Extraction Registers which recorded details of pillar extraction approvals, longwall mining approvals and barrier requirements. The current Colliery Holding Registers contain a combination of both leasehold and pillar extraction, longwall mining approvals and barrier details for each working colliery.

7. Colliery Holding, RT and Other Departmental Files

The information recorded in the Colliery Holding Registers includes a reference to Departmental file numbers which relate to the information recorded in the notes column of the Register. There is a Colliery Holding file for each colliery which records details of the original recording of the Colliery Holding and subsequent transactions of additions and deletions of areas in respect of that holding.

These files may either be recorded as a Departmental file number or recorded by Colliery Holding name. These Colliery Holding files are stored in either Titles Branch, in the Records Section of the Department or at State Archives. The files contain a range of information relevant to the colliery including correspondence in relation to the commencement of operations, colliery ownership, title details, notices of cessation of colliery workings and at times issues in relation to Record Tracings and the extent of coal workings.

The Department also maintains a set of files containing information on the movements of each Record Tracing to and from the mine site, catalogued under the Record Tracing number. The files record valuable information in respect of the survey of workings of each colliery and correspondence between the Department and the colliery surveyor and mine manager.

Other Departmental files dealing with establishment and mining of barriers; special barriers such as High Water Mark barriers around Lake Macquarie; Dam Safety issues; applications for pillar extraction and longwall methods of mining; mining lease applications etc are all sources of further details about specific issues.

8. Mine Record Tracings and Field Notes

The Department holds Record Tracings for current, discontinued and abandoned mines. As well the Department may hold Record Tracing sheets that may have been superseded by sheets charted at another scale or for other reasons. All of these tracings have been audited and the information recorded in a database.

The Record Tracing is a copy of the Mine Working Plan, prepared and certified by the colliery surveyor as an accurate record of the colliery mine workings. Since 1976 Record Tracings have been prepared in accordance with the Surveying and Drafting Instructions issued by the Department and can be accurately correlated to surface cadastral boundaries and other survey features. Record Tracings prior to 1976 were prepared in accordance with the regulations of the day and should show sufficient information to correlate with surface surveys. There are some Record Tracings however which may not have sufficient information for this purpose.

The Record Tracings for current mines held by the Department are forwarded to the mine for update each six months. Where a mine has discontinued working the Record Tracing is charted to date of discontinuance by the colliery surveyor and is then held by the Department pending further action by the mine. Similarly where a mine is abandoned the Record Tracing is charted to date of abandonment by the colliery surveyor and then forwarded to the Department for safe keeping.

Associated with the preparation of the Mine Working Plan and the Mine Record Tracing is the recording by the colliery surveyor of field notes. The Department stores a number of surveyors field notes for collieries and regions throughout the State in Titles Branch. The Department also retains an index of colliery surveys and colliery survey baselines.

9. Survey Plans

Titles Branch maintains an extensive range of plans related to surveys of mining leases. These plans of survey date back to the 1800's. Every survey undertaken for a mining lease under the mining legislation of New South Wales is catalogued in the system.

As part of the system of survey plans Titles Branch maintains Index Registers for the "M", "P", "G", "S" and "T" system used for plan cataloguing. Mining lease surveys for coal mining operations would normally be found in the "M" and "P" Index Registers with some older surveys in the "S" system.

The Index Registers list all the mining surveys on a parish basis. The relevant mining portion survey number is obtained from these registers. Insofar as coal is concerned these are usually ML(no), PML(no) or MPL(no).

In addition to the above, Titles Branch also has all colliery surface baseline surveys catalogued in the system. The baseline surveys are particularly in respect of collieries operating since the 1960's.

There are also a range of other miscellaneous surveys which are catalogued in the system. These include, for example, correlation surveys of old Colliery shafts in the Newcastle district.

There is a Miscellaneous Index which catalogues all of these miscellaneous surveys.

10. Other Information Sources

Other information in relation to the history of a colliery may be searched in the Department's library (eg Annual Reports were very detailed for about 100 years from the 1870's), at any Council or State library, at State Archives or in consultation with any known historians and researchers. Previous coal mine surveyors, mine managers, colliery proprieters/operators, coal mine inspectors and staff of the Department of Mineral Resources could also provide valuable information and explanations.

There are old Record Tracing Index movement cards kept in Titles Branch which record the despatch of record tracings to and from collieries for charting to date in the mid 1900's which may be useful in establishing dates when a colliery was operating. The Coalfields Inspectorate holds various old registers and card systems which may also be of benefit.

Titles Branch also holds series maps produced by the Department for the Mine Subsidence Board in the early 1980's showing the location of coal mine workings at 1:4000 and 1:25000 scale which are also available for inspection.

Guide for Searching Coal Mine Records - Titles Branch

Name of Coal Mine	Establish name of the old or current mine
⇩	
Colliery Names Index	Search index for Parish & County name, RT number
⇩	
Indexes of Workings/ Colliery Holding Maps	Check for map name and/or catalogue number
⇩	
Parish and District Workings/ Colliery Holding Maps	Refer to individual maps for extent of old workings within colliery holding boundaries, seams worked & RT numbe
⇩	
Parish/1:25000 Titles Maps	For current colliery boundaries refer to 1:25000 map via Parish map
⇩	
Colliery Holding Registers	Check registers for titles, dealings & file numbers of old and current colliery holdings
⇩	
Colliery Surveys Index/ RT Audit/Survey Plan Registers	Refer to index & audit for field notes, survey plans, file numbers, field books & baseline surveys related to mines. Refer to M, P & S series of registers for mining portion surveys
⇩	
Record Tracings/Field Notes/Field Books/Plans of Survey	Examine survey records including any superseded RT's
⇩	
Colliery Holding/ Record Tracing Files	Examine files stored in the Department or order files stored at State Archives/ repository
⇩	
Other Information Sources	Search other available sources for relevant information

Historical Research

&

Methodology

By David H. Dial

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1. Abstract

At the conclusion of the "Gretley Inquiry" Judge Staunton made a number of "*recommendations*". This paper will concentrate on *Recommendation 3*, "Historical research" and it will show that any historical research into an abandoned colliery is capable of providing an insight into the past working history of the abandoned colliery up to the cessation of mining operations and the time of the colliery's abandonment.

This particular field of historical research requires a high degree of research skills and a knowledge of possible source material to obtain the required information.

These research skills; and that knowledge, are not taught in surveying or mine management courses.

This paper will outline the methodology which should be used in researching abandoned collieries, or mine working, and the source material available to enable the research to be carried out.

2. Introduction

When undertaking historical research of abandoned collieries the following guidelines and procedures should be used:-

Identify all possible sources which may contain the historical information of the abandoned colliery or workings which are being researched.

It must be remembered that research can only be carried out on colliery records, documents, maps and plans if these items have been properly preserved and archived for future reference and can be located and readily accessed by the researcher. There may not be any records, documents, maps or plans still in existence that show or record the presence of past mining operations (surface or underground).

Always remember that the colliery records, documents, maps and plans that may be "*discovered*" during the research may not be the most complete, accurate or up to date material in existence.

The result of any historical research is dependent upon the quantity and the quality of the research undertaken.

3. Sources of Information

Historical and archival material which may assist in the historical researching of abandoned collieries and mine workings may be found at the following sources:

Department of Mineral Resources Titles Branch:-

- Colliery Card Index
- Colliery Names Index
- Colliery Workings and Colliery Holdings Map Indexes
- Departmental Series Maps:
  - District Workings Maps
  - Parish Workings Maps
  - Colliery Holding District Maps
  - Colliery Holding Parish Maps
  - Titles Series Maps
- Colliery Holding Registers/CAS Database
- Colliery Holding/Record Tracing Files
- Mine Record Tracings/Field Notes/ Field Books
- Other information

Mines Subsidence Board:-

- Departmental Series Maps:-
  - District Workings Maps
  - Parish Workings Maps
  - Colliery Holding District Maps
  - Colliery Holding Parish Maps

State Library:-

- Archival material relating to coal mining in the state which is usually donated by mine companies, individuals or historians and available in hard copy, microfilm, microfiche, PC disk or cd-rom format

- Maps of surface and underground mine workings of abandoned and operational mines, but be aware that these may not be the most up to date copies of the maps.

- Books written and published about coal mining operations and coal mining history in the state.

State Library
(Continued)

- Regional newspapers, usually on microfilm, from mid 1800's to present. These may, and usually do, contain useful information about the abandoned colliery being researched, covering the day to day operations, disputes, accidents and explosions up to the time of the mine's closure.

- Photo data base containing photographs of local mines' above ground infrastructures, workings etc.

Regional Libraries:-

- Archival material relating to coal mining in local area, usually donated by mine companies, individuals and historians and available in hard copy, microfilm, microfiche, PC disk or cd-rom format

- Maps of surface and underground mine workings of abandoned and operational mines, but be aware that these may not be the most up to date copies of the maps

- Books written and published about coal mining operations and coal mining history in the local region

- Regional newspapers, usually on microfilm, from mid 1800s to present. These may, and usually do, contain useful information about the abandoned colliery being researched covering the day to day operations, disputes, accidents and explosions up tot eh time of the mine's closure.

- Photo database containing photographs of local mines' above ground infrastructures, workings etc.

State Archives:-
Mines section

- General records (correspondence, special files)

- Records relating to commissions and inquiries (Dudley Colliery Explosion, Mount Kembla Colliery Disaster, July 31, 1902)

- Charting Branch (mining surveyors' lease survey field books, 1806-1938, 7 volumes)

State Archives
Mines Section (continued)

- Photographs of coal mines, 1885-1894 (pit-tops, loading and transport facilities for Hunter Valley collieries, and seven photographs taken on August 10, 1940 of smashed timbers and coal falls in the Lithgow State Coal Mine.

- Colliery Holding Files, 1896-1947

- Correspondence Files, 1903-1906 (include reports of inspections of collieries and investigations into safety standards and accidents)

- Registers of accidents in coal mines, 1902-1924 (including name and location of mine, number of men employed on surface and underground, dates of inspection, details of special observations and rules with reference to relevant papers, fatal and serious accidents including explosions, fall of ground, suffocation, falling, shaft and surface accidents, etc)

- Maps, plans and related records (include plans of colliery workings, 1892-1966)

- Cancelled Maps showing colliery workings

- Colliery Holding Maps

- Cancelled Parish Maps showing coal mines working

- Plan Catalogue Books, 1874-1946.

Regional Museums:-

- Archival Material relating to coal mining in local area, usually donated by mine companies, historians etc and available in hard copy, microfilm, microfiche, PC disk or cd-rom format.

- Maps of surface and underground mine workings of abandoned and operational mines.

- Books written and published about coal mining operations and coal mining history in the local region.

- Regional newspapers, usually on microfilm, from mid 1800s to present. These may, and usually do, contain useful information about the abandoned colliery being researched,

covering the day to day operations, disputes, accidents, explosions etc up to the time of closure.

- Photo data base containing photographs of local mines' above ground infrastructures etc.

Mining Museums:-

- Archival material relating to coal mining in local area, usually donated by mine companies, historians etc and available in hard copy, microfilm, microfiche, PC disk or cd-rom format

- Maps of surface and underground mine workings of abandoned and operational mines

- Books written and published about coal mining operations and coal mining history in the local region. Regional newspapers, usually on microfilm, from mid 1800s to present. These may, and usually do, contain useful information about the abandoned colliery being research, covering the day to day operations, disputes, accidents, explosions etc up to the time of closure.

- Photo database containing photographs of local mines' above ground infrastructures etc.

Historical Societies:-

- Archival material relating to coal mining in local area, usually donated by mine companies, historians etc and available in hard copy, microfilm, microfiche, PC disk or cd-rom format

- Maps of surface and underground mine workings of abandoned and operational mines

- Books written and published about coal mining operations and coal mining history in the local region

- Regional newspapers, usually on microfilm, from mid 1800s to present. These may, and usually do, contain useful information about the abandoned colliery being research, covering the day to day operations, disputes, accidents, explosions etc up to the time of closure.

- Photo database containing photographs of local mines' above ground infrastructures etc.

University Libraries and Mine Surveying Departments:-

- Archival material relating to coal mining in local area, usually donated by mine companies, historians etc and available in hard copy, microfilm, microfiche, PC disk or cd-rom format

- Maps of surface and underground mine workings of abandoned and operational mines

- Books written and published about coal mining operations and coal mining history in the local region

- Regional newspapers, usually on microfilm, from mid 1800s to present. These may, and usually do, contain useful information about the abandoned colliery being research, covering the day to day operations, disputes, accidents, explosions etc up to the time of closure.

- Photo database containing photographs of local mines' above ground infrastructures etc.

Company Records:-

- Maps, plans and related records including plans of colliery workings

- Company's Mine Surveyor's field note books and calculations

Private Surveying Companies:-

- Maps, plans and related records including plans of colliery workings

- Mine Surveyor's field note books and calculations

Department of Land & Water Conservation:-

- Registered Surveyor's field note books and calculations

Adjoining Colliery Records:-

- Maps, plans and related records including plans of colliery workings

- Mine Surveyor's field note books and calculations

Past Employees:-

- Maps, plans and related records including plans of colliery workings
- Mine Surveyor's field note books and calculations

Historians and Private Coal Mining Memorabilia Collectors:-

- Archival colliery records, documents, maps, plans, field note books and calculations

4. Research Material at The State Archives

Refer to Appendix

5. Research Material at Newcastle Regional Library

Refer to Appendix

6. Methodology

When commencing the historical research of an abandoned colliery:

- Make a list of the source material to be accessed
- The possible location of the material to be researched
- Establish targets and goals for the research to be undertaken and completed
- Prepare a schedule or timetable of the research activities to be undertaken
- Estimate the time to be taken to complete each phase or part of the research programme
- Estimate a budget cost for the necessary research work to be undertaken and completed

Always remember that the result of any historical research is dependent upon the quantity and the quality of the research undertaken.

Methodology

(Continued)

Before visiting the source of information to commence research activity:

- Phone or fax to ascertain that the material you require for your research is available so that research can be commenced.

When you visit the sources for information to research, there should be a "*reference officer*" available to assist you.

Ask the "*reference officer*" for the location of the material you require to commence your research.

Locate the relevant records you require to research.

Most sources of information create and maintain databases, guides and other reference tools called "finding aids" to help the researcher identify the relevant records or data that they are seeking eg Newcastle Region Library's "*NONI*" information network. See appendix.

In most cases the "*reference officer*" will know what information the source has and where it is located.

Remember the "*reference officer*" is there to answer any questions which you may have which will assist or help with your research.

Once the information you require is round, read it thoroughly with an "*eye for detail*".

Note the title of the document or map, date of compilation or publication, number of page in which information is contained and a short description of information found.

Check with the "*reference officer*" about copying the information you have found. There may be restrictions on copying.

Take into consideration costs for photocopying, image scanning, etc.

Once all the research information has been obtained from the source, it must then be collated and put together for presentation.

6. Conclusion

In conclusion, when undertaking historical research into an abandoned colliery an adequate time frame must be allowed to enable the researcher to thoroughly explore all possible sources of information, and then to put it all together.

Remember that you can only research what there is to research from.

NEWCASTLE REGIONAL LIBRARY

COAL MINING PUBLICATIONS

Listing from Card Index System
(Pre 1986)

NEWCASTLE REGIONAL LIBRARY

COAL MINING PUBLICATIONS

Listing from Card Index System
(Pre 1986)

"A Saga of Coal," M.H Ellis
(The Newcastle Wallsend Coal Company's Centenary Volume)
1969

"Happenings Under Belmont"
(The history of John Darling Colliery and the story of its people
Hilary R Fallins, 1992
(Colliery Surveyor 1945 to 1974, then Chief Surveyor for BHP Collieries until 1978)

"Glendell Coal Ltd, Environmental Impact Statement Vol 1 & 2"
Prepared by Croft & Associates Pty Ltd

Hebburn Colliery Booklets - "Hebburn No.2 Rules"
December 1912 - Present Rates and Conditions

1938 - Special Rules for Hebburn Colliery

1924 - Special Rules for the Installation and Use of Electricity

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Hebburn Colliery - "Special Rules for the Conduct and Guidance of the Persons Acting in the Management of the Hebburn Colliery"
1906

Hebburn Colliery - "Special Rules for the Conduct and Guidance of the Persons Acting in the Management of the Hebburn Colliery"
1923

Hebburn Colliery - "Special Rules for the Installation and use of Electricity Hebburn Colliery"
July 1908

Hebburn Colliery - "Terms and Conditions of Supply of Electric Current"
Circa 1931

Hebburn Colliery - "Memorandum and Articles of Association of Hebburn Limited"
1914

"System of Working of Coal in Newcastle and Maitland Districts"
By Arch Gardiner, C.E

(Paper read before the Northern Engineering Institute of NSW - Newcastle 28/6/13

"Burwood Colliery Through The Years",
By John F Grothen
1983

"Hetton Bellbird Colliery Records",
1901-1974

"Notes on the Working of Submarine Coal in and About Newcastle"
By W Humble

(Read before the Newcastle Division Institute of Engineers, Australia on Saturday 24 April 1920)

"The Impact of Coal Mining on the Upper Hunter"
By John Hunt
July-December 1978

(Commissioned by the Hunter Regional Advisory Council)

"The Institute of Mining Electrical and Mining Mechanical Engineers (IMEMME) Annual Convention 1986, Newcastle Branch

---

"First Planning Focus Ironbark Colliery Project 2nd Meeting Sydney 26 October 1983"

("Summary of Major Issues and Comment by R W Miller & Co Pty Ltd")

"First Planning Focus Responses by Government Departments to Proposed Development of Ironbark Colliery"
By R W Miller and Co Pty Ltd
11/10/83

Australian Coal Industry Research Laboratories Ltd

"Rock Mechanics Investigations of Structural Stability in the Young Wallsend Seam at Wallsend Borehole Colliery"
By Frank Jaggar
September 1977

"Gretley Colliery Lease Extension-Environmental Impact Statement."
Prepared for: The Newcastle Wallsend Coal Company Pty Ltd
Prepared by: Croft and Associates
December 1983

"Report on Environmental Impact Study for Ironbark Colliery"
RW Miller and Company Pty Ltd
March 1975

Prepared by James B Croft and Associates

"Environmental Impact Statement for the Wallsend Borehole Open Cut Extension Newcastle, NSW for R W Miller and Company Pty Ltd
October 1981
J B Croft and Associates

"Environmental Impact Statement For the Development of a 1 MTPA Underground Mine South of Swansea, NSW "
Volume 1 and 2.
The Newcastle Wallsend Coal Company Pty Ltd
September 1981
J B Croft and Associates

"Lambton "B" Colliery, Redhead "
Photographs and Newspaper Cuttings
October 1986

"Sea Pit Colliery"
Photographs and Newspaper Cuttings
September 1986

"Richmond Main Colliery - The Showpiece of J & A Brown"
By M Mahon
May 1998

"The Closure of Lambton Colliery - General Information and Conservation Plan Supplement"
June 1992

"The Marks of Mineral Wealth "
NSW Coal Volume 2 1976-1978
Prepared by Trade Union Research Centre, Trades Hall, Union Street, Newcastle
Newspaper and Magazine Cuttings and Clippings.

"The Marks of Mineral Wealth "
NSW Coal Volume 3 1979
Prepared by Trade Union Research Centre, Trades Hall, Union Street, Newcastle
Newspaper and Magazine Cuttings and Clippings.

"The Marks of Mineral Wealth "
Supplement to Volume 2 - 1976 - 1977
Supplement to Volume 2/3 1978-1979

"The Marks of Mineral Wealth "
Volume 5 - May 1980 - August 1980
Volume 6 - August 1980 - November 1980
Volume 7 - November 1980 - January 1981

"The Continuous Miner and Its Application to Pillar Extraction"
By C H Martin and N R Monger
For the Australasian Institute of Mining and Metallurgy
Proceedings No. 184, December 1957

"Plans to Accompany the Report of the South Maitland Caulfield Coal Conservation Committee Plans No 1, 2, 4, 7, 11, 14, 17, 19.

Relative Location of colliery holdings and mine workings in part of the Cessnock-Greta Collieries;

Plan Of Workings - Aberoare Extended Colliery
Plan Of Workings - Aberoare Colliery
Plan Of Workings - Aberoare Central Colliery
Plan Of Workings - Abermain No.2 Colliery
Plan Of Workings - Abermain Colliery
Plan Of Workings - Bellbird Colliery
Plan Of Workings - Elrington Colliery
Plan Of Workings - Hebburn No.2 Colliery

"Description of Western Coal Fields Operation"
Volume 1 and 2
1 March 1979
For Austen and Butta Ltd

1950-51

"Parliament of NSW Report of the South Maitland Coalfield Coal Conservation Committee together with plans"
(Ordered to be printed, 29 May 1951)

Includes:1. Sketch plan outlining a method of working the main Greta seam with extraction of pillars following closely behind the first working in the solid.

2. Sketches of Sealing Stopping

"Working plan of Aberdare Extended Colliery"
9 East District

"Working plan of Aberdare Colliery - 2L.H, North No. 21
Gannon December 1950

"Working Plan Of Abermain No.2 Part 1, South West District"

"Working Plan Of Elrington Colliery, No.1 North
No 2 Hebburn Colliery
3rd West District No. 1 Panel."

Pillar Extraction Methods

1847
NSW Coal Inquiry
"Report from the Select Committee on the Coal Inquiry with Appendix and Minutes of Evidence."

1911 (Second Session)
Legislative Assembly
NSW

"Report of the Royal Commission of Inquiry Into the Best Methods of Working the Thick Coal Seams of the Maitland - Cessnock District, Etc.
Printed 1912

1885-1886
"Royal Commission on Collieries
Third Report:"

"The Condition of the Collieries Adjacent to Ferndale,"
1886

1929-30 - Legislative Assembly NSW
"Report of the Royal Commission Appointed to Inquire Into and Report Upon the Coal Industry, Together with Appendices."
1930

1914 - Legislative Assembly NSW
(Second Session)

"Report of the Committee of Inquiry into the Best Means of Dealing with Coal Dust in Collieries of this State."

"Coal Export Strategy Study"
Report of Task Force
March 1979

"The Story of the Newcastle - Wallsend Coal Company
1860 - 1960

"The Australian Agricultural Company's Coal at Newcastle,"
By A P Pulver
1980

"The Stockton Colliery Disaster of 1896 - Reviewing the Evidence"
By G Prietto
1996

"The Price of Progress - Who Pays?"
By J Collins (Ed).
(Papers delivered at the fifth annual public discussion on the development and impacts of the Coal Mining Industry in the Shire of Singleton).
1981

"Singleton Enters the Eighties"
(A record of the 1980 public discussion on the development of coal mining in Singleton Shire).
1980

Papers Presented at the Symposium on :
"The Development and Impact of Coal Mining in the Upper Hunter"
Published by the Board of Environmental Services, University of Newcastle
August 1977

"Northumberland - Newstan 1887-1987 100 Years of Coal Mining"
Compiled by Ed Tonks
1987

"Lecture Notes for WEA Course - Mines, Wines and Cemeteries."
Ed Tonks
About 1980

"The Story of Coal Mining in Newcastle"
Written and Narrated by Ed Tonks, (8 Minute audio cassette)
March 1987

"Wallsend and Pelton Collieries - A Chronology of the Newcastle - Wallsend Coal Company"
By Ed Tonks
October 1990

"United Project - Transportation Supplement to Environmental Impact Statement, Proposed United Colliery at Warkworth, in the Shire of Singleton, NSW"
February 1983

"A History of the Australian Agricultural Company"
By W E R Wilson, BA
Circa 1965

"The Wyee Whisper"
(Wyee State Mine Magazine)
Numbers 1, 2, 3, 4, 5, 6, 7, 8, 9,
January 1986 to December 1988

"Humble's Index of Coal Mining Matters from the Annual Reports of the Department of Mines, NSW for the Years 1880 to 1927".

"Indexes to the Australian Agricultural Company's Papers"
Volume 1
Volume 2, - Miscellaneous letters index 1861 - 1862, 1878-1884
Volume 3 (pt1) - Coal Papers (1830-1913)
Volume 3 (pt2) - Coal Papers (1855-1934)
Volume 4 - Newcastle Municipal Papers 1857-1904
Volume 4 - Royal Commission on Earth Subsidences at Newcastle, 1908
Volume 5 - Warrah Papers

"The Australian Agricultural Company, 1824-1875"
By Jesse Gregson
1907

"J & A Brown and Abermain Seaham Collieries Ltd"
Annual Report
1956

"The Newcastle Coal Mining Company Ltd Half Yearly Reports and Balance Sheets from 20 April 1877 to 31 December 1899"

"Australian Coal Year Book 1987"
(An Australian Coal Miner Magazine Publication)

"Historical Notes on South Maitland Coalfields"
National Trust
Circa 1995

"Proposed Glendell Coal Mine"
(Environmental Impact Assessment)
November 1982

"Coal & Allied Operations Pty Limited Briefing Paper for Visit by Newcastle City Council to Company Operations 16 May 1987"

Coal & Allied
"Environmental Impact Statement, Extension of Coal Washery Project Emplacement for Hexham Coal Preparation Plant
April 1987
Prepared by Longworth and McKenzie Pty Limited and Johnstone Environmental Technology Pty Limited

---

"Mine Subsidence Technological Society 3rd Triennial Conference Proceedings
Feb 1995"
"Buildings and Structures Subject to Ground Movement".

"South Maitland Coalfields Field Study Notes"
By Ed Tonks Circa 1980
(Department of Education - Hunter Region In-service Training)

"Coal - What it is,
How it is won,
How it is used
Its future - A brief story of coal and of the coal mining industry of Australia with particular reference to NSW."

"The Bailey Charges and Glebe Pit Inquiry (with plan)"
By J W Bailey and B Dobe
1900

"In the Matter of an Investigation in Pursuance of the Coal Mines Regulation Act 1982 into an Accident Which Occurred at Gretley Colliery on 14 November 1996 and its Causes and Circumstances:

Report of a Formal Investigation under section 98 of the Coal Mines Regulation Act, 1982."
Volume 1 & 2
June 1998

1912
Legislative Assembly NSW

"Killingworth Colliery Explosion
(Report of the court of investigation on the, together with, evidence and appendices.)"

1908
(Second Session)
Legislative Assembly NSW

"Report of the Royal Commission on Earth Subsidences at Newcastle."

"Royal Commission on Earth Subsidences at Newcastle - Minutes of Evidence and Proceedings.
Volume 1 - 1st day to 10th day (Monday 3 February 1908 - Friday 14 February 1908)
Volume 2 - 11th day to 16th day (Monday 17 February 1908 - Tuesday 3 March 1908)
Volume 3 - 17th day to 22nd day (Wednesday 4 March - Thursday 12 March 1908)

1897
Legislative Assembly NSW

"Stockton Colliery Disaster (Return respecting)"

Report On:

"Underground Monitoring of Roof Movement at Stockton Borehole Colliery"
By R T Hall, (Australian Coal Industry Research Laboratories, 1976)
Report No. 413

Report No. 78-5 by B K Hebblewhite
"Rock Mechanics Investigations of Structural Stability in the Young Wallsend Seam at Stockton Borehole Colliery."
(Australian Coal Industry Research Laboratories 1978)

Report "Roof Bolting Investigations at Stockrington Number 2 Colliery,"
By B J Howe (Australian Coal Industry Research Laboratories, 1966)

Report Number PR77-14 - "Rock Mechanics Investigations of Structural Stability in the Young Wallsend Seam at Wallsend Borehole Colliery."
By Frank Jaggar (Australian Coal Industry Research Laboratories, 1977)
1977

Report Number 12/31 Parts 1 & 2

"A Survey of the Discharge of Water from Colliery Premises in NSW & QLD (bound with Part 2). A Survey of Water Contained in Some Old Underground Workings."
By F Pollard (Australian Coal Industry Research Laboratories, 1973-1974)

Coal Miners - Safety Measures.
"The Joint Coal Board and Department of Mines. NSW Safety Symposium, Newcastle 1971."
(Papers Presented at the Joint Coal Board & Department Of Mines, NSW Safety Symposium, held at Newcastle Town Hall, 8th November 1971."

MICROFILM

LH:IE

"Mining Disasters and Rescue Work," By R Thomas.
Paper read before the Northern Engineering Institute of NSW 20 April & 18 July 1912

LH
338.01994

"Notes on Ocean Boring at Newcastle, NSW"
By C W B King
(Paper read before the Northern Engineering Institute of NSW 9 October 1909)

NEWCASTLE REGIONAL LIBRARY'S

NONI

(Newcastle On-Line Network for Information)

On-Line Public Access Catalogue (OPAC)

USER GUIDE

(For computer access to library post 1986 - Prior to this a card catalogue index was used - card catalogue index still in use.)

HOW TO LOCATE AN ITEM

The following are pages on computer screen used to access the library information.

CIRCULATION MODULE

Welcome to the Newcastle Region Library catalogue.
Please select one of the options below:

1. Title Alphabetical
2. Title Key Word
3. Author
4. Author Keyword
5. Magazine Title
6. Subject List
7. Series Keyword
8. Series List
9. Keyword any Field
10. Review Patron Record
11. Quit Searching

1. Title Alphabetical

This option allows you to search by the exact title of the book/magazine/compact disc/cassette/video.
Eg You would like to see if the library holds a copy of "Coal Measures in the Hunter River District."
TYPE IN: Coal Mine

Your Search: COAL MINE

#	Selected (may be truncated)	Titles
1.	The Coal Masters The History of Coal & Allied 1844-1994	1
2.	Coal Measures in the Hunter Rivers District.	1
3.	Coal Mine Fires	1
4.	Coal Miners	1
5.	Coal Miners Daughter	1
6.	Coal Miners Daughter Selections	1
7.	Coal Miners Daughters/	1

... More on next screen

Enter a line number for more information

SO = Start Over, B = Back, P = Previous Screen, <enter> = Next Screen

2. Title Key Word

This option allows you to search by one or more words of the title. Eg. You are searching for a book about coal mining, but you only know that it has 'coal' and 'mining' in the title.
TYPE IN: Coal Mining

10 October 1998

Local & Family Services
Public Access Catalogue

Your Search: COAL MINING

AUTHOR	TITLE(shortened)	PUBLISHED
1. COLE, G.D.H	Labour in the Coal Mining Industry	1923
2. BRANAGAN, David	Geology and Coal Mining in the Hunter Valley	1972
3. TURNER, J.W	Coal Mining in Newcastle, 1801-1900	1982
4. COMERFORD, Jim	Coal and Colonials: The Founders of the Australian Coal Mining Industry	1997

... 51 Items UNSORTED - Page 1 of 4 - More on Next Screen...

Enter an item number for more detail

SO = Star Over, B = Back, SL = Sort List, RS = Review Search, ? = Help
SBLIST = Save Bib List

3. Author

This option allows you to search for a particular author.
Eg COLE, George Douglas
BRANAGAN, David Francis
CORMERFORD, Jim

4. Author Keyword

This option allows you to search for a particular author. Either a single or multiple word search, or words starting with given letters.
Eg BRAN?

5. Magazine Title

NSW Dept of Primary Industries
Library Network

6. Subject List

This option allows you to search for items using a subject.
Eg. Mine Dusts, Mine Explosions - New South Wales - Dudley.

7. Subject Keyword

This option allows you to search for items using a subject keyword in context search.
Eg. Coal, Mine...

8. Series List

9. Keyword Any Field

No examples yet

10. Review Patron Record

This allows a review of certain information about your personal library records.

11. Quit Searching

NEWCASTLE REGIONAL LIBRARY

MAPS OF COAL MINING

Listing From Card Index System
(Pre 1986)

LH MAP
6622.14 1

"Map of approximately 5000 acres showing coal bearing deposits in Branxton Rothbury Parishes."
Coloured Map 67x43cm

LH MAP
A622.33 9

"Map of collieries in Lambton district"
Sydney Government Printer 1887
Map 18x29cm

ARCHIVES
AM B22/19

"Map of Lambton Central & Borehill Colliery holdings (Blackbutt Reserve) together with surrounding districts."
Map 59x72cm

ARCHIVES
AM A18/4

"Map of pits and borings in the Maitland district, probably at Minmi area 1855".
Map 41x25

MAPS - BLIGH
LH MAP
B622.1 1

"NSW Department of Mines - NSW Exploration license map, Sydney district"
Map 100x71cm

LH MAP
C622.33 3

"Durham-NSW Department of Mines - Maitland/Cessnock/Greta Coal districts," Sheets 1-2, NSW (2nd Edition) Sydney, Department of Mines 1943.
Coloured Map 156x102cm on 2 sheets
Each 78x102cm
Scale 1:31,360

LH MAP
C622.33 4

"Durham NSW Department of Mines - Newcastle district showing Colliery holdings."
Prepared by the department of mines, J Thomas, Chief Mining Surveyor. 1921
Coloured Map 153X129cm on 2 sheets
Each 77x129cm
Scale: 31,680

LH MAP
C622.33 5

Coal Mines - East Maitland Coal District
Durham - NSW Department of Mines - Newcastle district showing Colliery holdings."
Prepared by the Department of Mines, J. Thomas Chief Mining Surveyor. 1921.
Coloured Map 155x122cms on 2 sheets
Each 78x122cm
Scale 1:31,680

"Durham NSW Department of Mines -
NSW Exploration License Map - Sydney district 1976"
Map 100x71cm
Scale: 1:500,000

AM C49/4
Coal Mines - Maitland - Cessnock - Greta Coal District

"Blueprint of combine map of Maitland-Newcastle Coalfields"
Map 70x94cm
(No scale given) Undated.

AM. C48/6(a-d)
Caledonian Collieries Ltd

"Plan of Collieries in Cessnock Area showing worked out areas, coal seams and faults."
Map 82x99cm
(No scale given)

AM. C49/3
"Map of the Maitland - Cessnock Coal Field, County of Northumberland."

Department of Mines, 3 June, 1908
Map 83x70cm
Scale 1:31,680

AM - C21/2
AM - C21/2 (a)

"NSW Department Of Mines Maitland - Cessnock - Greta Coal Field, NSW"
16 December 1921
Coloured Map 156x99cm on 2 sheets
Each 78x99cm
Scale 1:31,680

AM - B32/17
AM - B32/17(a)
"Plan of Aberdare Collieries 27/3/50"
Map 67x90cm on 2 sheets
Each 67x46cm or smaller
Scale 1:15,840

AM - B32/21
"Plan showing position of bores and shafts, South Maitland coal fields."
Map 52x65cm
Scale 1:31,680

AM - B33/1
AM - B33/1 (a)

"Position of working faces in relation to portions or 64 & 65, Aberdare Colliery," 13.4.50
Map 63x58cm
Scale 1:7,920

LH Map
C622.33

"Map of the coal properties in the Newcastle district, embracing the coal measures of Lake Macquarie, Newcastle, Port Stephens and Greta; showing all alienations and lands held under lease; also all roads ... with positions of pits, bores etc."
1890
Coloured Map on 2 sheets, 97x51 + 97x58cm Scale 1:59,400

LH Map
C622.33 3

Department of Mines
"Map of Maitland, Cessnock, Greta coal districts,"
Sheets 1,2. 1943
Coloured map 156x102cm on 2 sheets
Each 78x102cms
Scale 1:31,360

LH Map
C622.33 5

Sheets 1-2
"NSW Department of Mines - Map of Newcastle district showing Colliery Holdings, 1921."
Coloured map 155x122cms on 2 sheets
Each 78x122cms
Scale 1:31,680

ARCHIVES
AM A16/1-3
AM B17/1-5
AM C17/1-8

"Ayrfield Number 3 Colliery".
(Sixteen underground and surface plans of the Rothbury Colliery, Branxton. Vertical sections of coal strata, and related Colliery railway maps, 1914-1924)

ARCHIVES
AM B19/2-18
AM B20/19-27
AM C18/2-9

"Technical diagrams of underground workings and geological sections in Hebburn and Elrington collieries, near Weston, C 1960."
(34 pieces of various sizes and scales)

ARCHIVES
AM C12/3

"Sections of Strata in Newcastle Coal Mining Company's ventilating shaft in section 8, April 1892"
Map 82x28cm
No scale given

ARCHIVES
AM C57/1

"Plan of pillars of Elermore Vale Colliery."
Date Unknown
Map 128x52cm
Scale 1:1,584

ARCHIVES
AM C10/5

"Burwood Estate - Plan of abandoned (Colliery) workings, north side of Glenrock Lagoon, 1871."
Map 61x77cm
Scale 1:792

ARCHIVES
AM A15/10

"Burwood Estate - Plan of coal mines under part of the Burwood Estate, near Newcastle, C1880."
Map 29x49cm
Scale 1:1,584

ARCHIVES
AM A15/18

"Burwood Estate Plan of part of Australian Agricultural Company's pit workings situated aged in the 400 acres leased form the Burwood Estate ... 1893."
Map 40x60cm
Scale 1:1,584

ARCHIVES
AM A15/30

"Survey by V.A.G Desgrand on 11/2/39 showing encroachment into Glenrock workings contrary to instructions, 1939."
Map 23x30cms
Scale not given.

ARCHIVES
AM A15/33

"Glenrock Colliery - Plan showing barrier coal between Newcastle Coal Mining Company and Scottish Australian Mining Company Holdings, 1929"
Map 30x50cms
Scale not shown

ARCHIVES
AM C10/12

"Map of location of collieries, Newcastle district C 1928"
By Alfred Francis Hall
Map 101x89cm
Scale 1:31,680

ARCHIVES
AM A185/9

"Layout showing extent of yard seam workings in relation to Newcastle War Memorial Culture Centre." By J.P Hallett (Consulting Engineer).
Blue Print 42x48cm
Scale 1:3,168
(shows location of 'A', 'B' & 'C' pits and outline of workings taken from old plan submitted by Australian Agricultural Company to Royal Commission, Feb 1908.

LH Map
A622.33 9

"Map of collieries in the Lambton District"
Sydney Government Printer C 1887.
Map 18x29cm
Scale 1:21,120

ARCHIVES
AM A18/4

"Map of pits and borings in the Maitland District (probably at Minmi) C 1855."
Map 41x25cm
Scale not shown

ARCHIVES
AM A1/13

"Plan of part of the Merewether Estate, Newcastle, showing coal mining areas, C 1895."
Map 37x53cm
Scale not shown

ARCHIVES
AM C10/11
AM C10/11 (A-C)

"Plan of the district of Newcastle showing pits and railways of the different collieries,. C1875"
Map 154x198cms on 4 sheets each 77x99cms
Scale 1:15,840

ARCHIVES
AM C10/2 - 2A

"Plan of coal mines, thought to be near Merewether coastline, C 1920"
Map 44x194cms
Scale not shown

ARCHIVES
AM A15/14

"Plan of coal mines under the Merewether Estate near Newcastle C 1890"
Map 38x35cms
Scale not shown

ARCHIVES
AM C10/4

"Plan of collieries under the Merewether Estate, C 1890"
Map 77x92cms
Scale not shown

ARCHIVES
AM C10/8

"Plan showing barrier relative to Borehole seam workings, Waratah and Burwood Collieries 1928"
Map 116x38cms
Scale 1:1,584

ARCHIVES
AM C10/1

"Plan of a portion of Hamilton Pit workings (on the Merewether Estate) 1884"
Map 45x95cms
Scale 1:1,584

LH Map
C622.33
19 (sheets 1-3)

NSW Department of Mines
"Map of the Newcastle District showing Colliery Holdings 1934"
Map 166x102cm
Scale 1:15,840

LH Map
C622.33
5 (sheets 1-2)

NSW Department of Mines
"Newcastle district showing Colliery holdings, 1921"
Coloured Map 155x122cms on 2 sheets each 78x122cm
Scale 1:31,680

ARCHIVES
AM A15/11

"Plan showing west district workings of Newcastle Coal Mining Company, C1881."
Map 32x42cms
Scale 1:1584

ARCHIVES
AM B13/1

"Plan of Colliery workings, Newcastle Coal Mining Company, C18--"
Map 61x77cms
Scale not given

ARCHIVES
AM A15/25

"Plan of Redhead Colliery (ie Lambton Colliery, C1890)"
Map 39x52cms
Scale 1:1584

ARCHIVES
AM A28/2

"Plan of the Elermore Vale Colliery, Wallsend showing workings and surface features 21/12/1--- (Date not known)"
Plan 44x38cm
Scale not shown

LH Map
A622.33 10

"Plan showing the position of coal pits in the Newcastle City and Cooks Hill area. Sydney Government Printer, 190- (Date not known)"
Map 27x21cm
Scale 1:7,044

LH Map
A622.33 8

"Plan showing the position of the collieries at work and opening out in the Newcastle District. Sydney Government Printer 18-- (Date unknown)"
Map 30x21cm
Scale 1:126,720

ARCHIVES
AM - A28/1

"Plan showing workings and ventilation in the Borehole Seam, Dudley Colliery." Sydney Government Printer (19-- Date unknown.)"
Plan 48x36cm
Scale 1:3,168
(Shows list of victims of the Dudley Colliery explosion, 1898).

LH Maps
A622.33 17

"Reduced trace of old coal shafts, Newcastle 18-- (Date Unknown)"
Map 27x21cm
Scale 1:7,128

ARCHIVES
AM A16/1-3
AM B17/1-5
AM C17/1-8

"Ayrfield No 3 Colliery (sixteen underground and surface plans of the Rothbury Colliery, Branxton (ie Ayrfield No 3 Colliery). Vertical sections of coal strata and related Colliery railway maps 1914-1924)"
Plans of various sizes and scales

ARCHIVES
AM B11/1-6
AM C11/1-6

"12 Surface and underground plans of the Burwood Colliery on the Merewether Estate, with vertical sections of strata C1880-1931"
Plans of various sizes and scales

ARCHIVES
AM C10/10-10a

"Tracing of Colliery workings Burwood Estate, 1900,"
Map 124x109cms
Scale 1:3,960

LH Map
C622.33 12

"Plan and section of pits and boreholes of Australian Agricultural Company, Newcastle circa 18-- (Date unknown)"
Map 129x151cm on 2 sheets approximately 62x51cm and smaller
Scale 1:3168 (Horizontal)
Scale 1:240 (Vertical)
(includes "Plan of the bearings and distances of coal mines and boreholes.")

LH Map
C622.33 13

"Plan of Colliery workings of Newcastle Coal Mining Company C18-- (Date unknown)"
Map 87x87cm on 2 sheets 48x87cm and smaller
Scale 1:1584

ARCHIVES
AM C14/3

"Plan of Colliery workings, Newcastle Coal Mining Company C18-- (Date unknown)"
Map 75x100cm
Scale not given

LH Map
C622.33

"Plan of the Australian Agricultural Company's Colliery workings in Burwood Estate C18-- (Date unknown)."
Map 104x100cm on 2 sheets each 69x100cm
Scale 1:1584

LH Map
C622.33 15

"Plan showing Colliery properties near Newcastle, NSW, lines of sections, bores and shafts, etc. By London Institute of Mining Engineers, 1902"
Map on 12 sheets, 107x23cm and smaller
Scale 1:15,840
Scale of Sections 1:6336 (Horizontal)
1:960 (Vertical)

ARCHIVES

"Merewether Estate - personal papers, correspondence, minute books, account books, land, lease and sale documents, maps, plans, photographs, miscellaneous pieces relating to Merewether Estate, Burwood and Rothbury Estates, 1824-1974."

106 Volumes, 102 Boxes, 609 maps and photographs.

ARCHIVES
AM B16/7

"Newcastle Coal Mining Company"
-Sections taken in the Newcastle Coal Company's Mines C1899
Map 51x67cm
Scale 1:16

ARCHIVES
AM A15/32

"Plan showing 3 Longitudinal Sections of the middle seam on No.3 South Level, Glenrock Colliery
Map 29x58cm

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Fax 02 6643 1152

Lithgow Regional Library
Bridge Street
LITHGOW NSW 2790
Phone 02 6352 2770
Fax 02 6352 3849

Macquarie Regional Library
Cnr Macquarie and Talbragar Streets
DUBBO NSW 2830
Phone 02 6884 7369
Fax 02 6882 6804

Monaro Regional Library and Information Service
Vale Street
COOMA NSW 2630
Phone 02 6450 1730
Fax 02 6450 1739

Newcastle Regional Library Information and Research Centre
War Memorial Cultural Centre
Laman Street
NEWCASTLE NSW 2300
Phone 02 4925 8300
Fax 02 4926 4927

Northern Regional Library and Information Service
Balo Street
MOREE NSW 2400
Phone 02 6752 1889
Fax 02 6752 2914

Richmond - Tweed Regional Library
13 Rous Road
GOONELLABAH NSW 2480
Phone 02 6625 1415
Fax 02 6625 1479

Richmond-Upper Clarence Regional Library
Graham Place
CASINO NSW 2470
Phone 02 6662 2001
Fax 02 6662 2001

Riverina Regional Library
40 Gunwood Street
WAGGA WAGGA NSW 2650
Phone 02 6921 5344
Fax 02 6921 7288

South-west Regional Library
Lynch Street
YOUNG NSW 2594
Phone 02 6382 1886
Fax 02 6382 1447

Southern Tablelands Regional Library
Civic Centre
Bourke Street
GOULBURN NSW 2580
Phone 02 4823 0435
Fax 02 4823 0440

Upper Hunter Regional Library
126 Bridge Street
MUSWELLBROOK NSW 2333
Phone 02 6543 1913
FaX 02 6543 1325

Upper Murray Regional Library
Queen Elizabeth II Square
Dean Street
ALBURY NSW 2640
Phone 02 6041 6633
Fax 02 6041 2747

Wollongong City Library
41 Burrrelli Street
WOLLONGONG NSW 2500
Phone 02 4227 7111
Fax 02 4227 7551

REGIONAL, LOCAL AND MINING MUSEUM DIRECTORY

Edgeworth David Memorial Museum
C/- 36 Gillies Street
KURRI KURRI NSW 2327

Newcastle Regional Museum
787 Hunter Street
NEWCASTLE WEST NSW 2301
Phone 02 4962 2001

Shoalhaven Historical Society Museum
PO Box 301
NOWRA NSW 2541

Richmond Vale Railway Museum
PO Box 184
ADAMSTOWN NSW 2289

Broken Hill City Museum
PO Box 448
BROKEN HILL NSW 2880

Armidale Folk Museum
PO Box 75A
ARMIDALE NSW 2350

Camden Historical Society and Museum
PO Box 566
CAMDEN NSW 2570

City of Greater Lithgow Mining Museum
PO Box 617
LITHGOW NSW 2790

Eastlakes Historical Society and Museum
PO Box 284
SWANSEA NSW 2281

Gunnedah Rural Museum
PO Box 366
GUNNEDAH NSW 2380

Richmond Main Mining Museum
C/- 65 – 67 Vincent Street
CESSNOCK NSW 2325

Greta Tidy Towns Museum
C/- 12 Price Street
GRETA NSW 2334

RESEARCH MATERIAL AT THE STATE ARCHIVES

The Archives Authority of New South Wales is a statutory body of the New South Wales Government, established under the Archives Act of 1960. The Authority has been active since its inception in publishing finding aids to the State archives, as well as copies of the archives in its custody.

The major series of finding aids is the "Guide to the State Archives of New South Wales" which is being published in parts over a considerable number of years. The "Concise Guide to the State Archives of New South Wales" is number 13 in the series.

Many of the publications in the series are out of print but are available for use in the Search Rooms at O'Connell Street, Kingswood and at 120 Miller Road, Chester Hill. For information, the following publications are available:

- 12. List of Series Titles in the Archives Office of New South Wales (1965. Out of print)
- 13. Concise Guide to the State Archives of New South Wales (1970[with quarterly Supplements, 1971-80]; second edition 1992)
- 23. Surveyor General: Select List of Maps and Plans, 1792-1886 (1980)

Introduction to the Concise Guide of the State Archives Handbook

Background

The State Archives of New South Wales

Archives are records which are considered worthy of being retained permanently because of their administrative or legal value, or their value for historical or other research. They may take a wide variety of formats, from files and volumes to maps, plans, photographs, films, sound recordings and computer tapes. In case of the New South Wales archives, they comprise permanently valuable public records originally created or received by New South Wales government agencies (past and present), and include material relating to convicts, shipping, land settlement, Aborigines, public works, court cases, and a wide range of other matters handled by public offices. The Archives Office of New South Wales stores these records and makes them available to researchers subject to certain conditions. Search Rooms are located at O'Connell Street, Kingswood and at 120 Miller Road, Chester Hill (City Search Room).

Scope of the Guide

The Concise Guide lists archives which were fully processed for use at the end of July 1991. Information on records processed after that date may be obtained on application in either the Chester Hill or Kingswood Search Room.

The Archives Office holds substantial quantities of records which have been transferred or designated for transfer to regional repositories (records are currently stored in Newcastle, Wollongong, Armidale, Wagga Wagga and Broken Hill). This material chiefly consists of selected Mines, Local Court, Police and Lands records, along with smaller quantities of Public Works, Education and other records in some repositories. Regional records which have actually been transferred to regional repositories are not listed in the Concise Guide, and details concerning these records are available on request.

The Concise Guide is designed to provide an overview of the collection, with summary details of records held. The Archives Authority has also published a range of subject guides and leaflets and these finding aids should be used, where appropriate, before consulting the Concise Guide. A full list of publications in print is available from the Archives Office.

Arrangement and Use

The Concise Guide lists each series in the Archives Office of New South Wales in 285 separate government agencies. A government agency means a public office which functioned or functions by itself as a separate administrative unit. Usually the agency corresponds to a ministerial department, but sometimes the convenient unit is a branch or section of a department, or a statutory authority responsible to a Minister of the Crown through his or her department. The agencies are arranged in alphabetical order.

Interpreting Series Entries

1. Series number: can be useful in identifying a particular series, provided it is used in conjunction with the name of the agency, branch and page number in the Concise Guide.

2. Series title: usually gives some information on the nature, function or content of the records. It is an essential part of any citation, along with agency, date and location number.

3. Dates: when two dates are given, there are generally few or no gaps in the records between these dates.

4. Geographical location of records: "City" denotes the head office of the Archives Office (120 Miller Road, Chester Hill) and "Kingswood" indicates the Government Records Repository (O'Connell Street, Kingswood). "City" or "Kingswood" has not been specified in cases where a copy is available in both Search Rooms. Original records will only be issued at the place of storage.

5. Location numbers: this is the most important part of a series entry for practical (retrieval) purposes. Each item in a series has a discrete number, and if a series contains more than one item, a shelf list is usually available to assist users in locating particular records required. In cases where microform or COD numbers

are given, these should be noted, as copies will be issued in place of the original record.

6. Quantity/physical format: indicates the number of items in the series, and their physical format.

7. Series description: this aims to provide additional information on the nature, purpose and contents of the records, noting changes in information given in the records, related series (where relevant) and other details. Descriptions should be read carefully before ordering material from a particular series. Additional descriptive details are sometimes available in shelf lists, available in the Archives Office Search Rooms.

A number of different approaches have been adopted in listing the series within each government agency. Arrangements by branch or by head office/regional office structure has been used in some cases; in others the records are grouped in broad categories (eg. Correspondence, financial records), types of records (eg. Maps and plans, minutes, publications), by place (eg. Under Coutrs of Petty Sessions, District Courts), and, in some cases, under a subject/function (eg. Harbbours and Rivers). The method of arrangement used has been dictated by the records themselves and by the need to facilitate the finding of relevant sources by researchers.

The basic unit of archival arrangement is the series. A series consists of records which have been brought together in the course of their active life to form an identifiable sequence, eg. Minute books, correspondence registers, mine plans.

Interpreting series entries

The entries for individual series of records contain useful descriptive information and essential practical details for researchers.

Using the Concise Guide

As the arrangement of the Concise Guide is by public office, researchers will need to be aware of the functions performed by the various government agencies. Unfortunately it has not been possible to produce an index, either to the subject matter of the archives, or to the functions performed by the colonial/state government. The Archives Authority is aware of the problems faced by researchers wishing to gain access to archives relevant to a particular theme or subject, and a number of features of the Concise Guide which should provide assistance.

Overview of Major Functions

The Overview of Major Functions aims to identify the major themes or functions with which colonial and state governments have been involved, and to list under each heading the agencies which have wholly or substantially exercised those functions at particular times. It does not attempt to be a definitive subject or functions guide, but aims to provide useful "signposts" for research. All users should first scan the Overview of Major Functions before consulting the Concise Guide itself.

Administrative Histories

The titles of agencies usually give a reasonable indication of the functions they carry out, eg. Land Use, Education, Treasury. In some cases, however, an agency's functions are not clear from its title, and even when titles are useful, more specific details are often required. Administrative histories have therefore been prepared for almost all agencies listed in the Concise Guide. These provide details of the establishment and development of an agency, with information, where appropriate, on transfer of functions to another office, abolition, etc. Cross references have been supplied, where possible, to assist users in tracing links between agencies.

Considerable effort has gone into preparing the administrative histories and in ensuring that they are as accurate as possible. In some instances, however, unverifiable assumptions concerning administrative change have had to be made due to time constraints and inadequate source material. As a result, a number of histories are somewhat sketchy in nature.

Administrative Change

From the earliest days of settlement, government agencies were created or abolished, changed their name and/or functions or transferred to other agencies according to perceived administrative needs or for political reasons. This creates problems for archivists and users alike when preparing or using finding aids, as early records may be listed under a later (successor) agency or individual series may be split when major administrative change occurs, such as some of the agencies administering shipping and maritime matters.

In practical terms, users should be aware that the dates given for certain agencies are approximate, and in some instances earlier or later records may be listed. Researchers should scan the Overview of Major Functions, read administrative histories and check cross references carefully to ensure that all possible avenues have been explored.

Using State Archives

The information given below is as accurate as possible, but it is naturally subject to change. Researchers should contact the Archives Office prior to visiting to obtain up to date details on policy and procedures (leaflets are available on request).

Storage Locations

State archives are stored in either the Chester Hill Reading Room, the Kingswood Repository or in regional repositories. Records must be used at the place where they are stored, and series entries indicate where particular records are kept. Regional records stored in regional repositories are not listed in the Concise Guide and separate listings are available in the Search Rooms. The geographical location of records is subject to change without notice.

Collection Review

From time to time the Archives Authority may review decisions to keep certain categories of records, and some material may be called from the collection. Researchers should check as to the availability and location of particular records before visiting the Search Rooms.

Access

Access to State archives is by "reader's ticket", which may be obtained by anyone over the age of fifteen years. Original (uncopied) records will only be issued to ticket holders, but copied material may be made available to casual visitors who sign a daily undertaking.

Access Conditions

Archives are normally available for use after thirty years, but some agencies impose longer restrictions or other special conditions. Access conditions are given in the body of the Concise Guide, but users should check before visiting as they are subject to change at short notice.

Citation

Archival citations should include agency (and branch), series title, date(s), specific location number, and other identifying features (letter registration number, page number, etc).
Example: Colonial Secretary: Letters received re land, No.41/2933 (2/7914, Reel 1156)

Copying and Publication

The Archives Office offers a limited photographic service which enables researchers to obtain reference copies of State archives. Orders may be placed in person or by mail, and further details are available on request.

All persons wishing to publish or display extracts or copies of State archives must first obtain written permission from the Archives Authority.

Search Room Procedures, Publications and Other Services

A range of leaflets and brochures are available on request covering various policies, procedures, publications and services offered by the Archives Office.

SUMMARY
Using the Concise Guide, Step by Step

1. Scan the Overview of Major Functions to determine the most relevant agency or agencies

2. Check the Contents of Microfiche to determine the microfiche and page number(s) for each agency

3. Locate relevant series of records, noting whether they are stored at Chester Hill or at Kingswood (in cases where records have not been copied). Copies of State archives are usually available in both Search Rooms

4. Note range of location numbers (if more than one) for each series

5. Check shelf lists to determine exact item(s) required

Overview of Major Functions Performed by New South Wales Government Agencies, 1788-1991

The aim of the Overview is to provide researchers with some useful "signposts" when attempting to determine which government agencies are likely to have records relating to a particular topic. A number of points should be kept in mind when using the Overview.

1. The responsibilities and functions of New South Wales colonial and state governments have been divided into twenty broad categories and individual agencies have been listed under the heading or headings which best describe their major function(s).

2. The Overview is **NOT** a complete or definitive subject or function guide, as it only includes agencies for which records are held, and there will be a number of offices, past and present, for which no records are held and which will consequently not be listed.

3. Dates are provided for most agencies as an aid to research. They usually indicate the years during which an agency operated or was responsible for a particular function, but they should be treated with some caution, as incomplete documentation or complex administrative changes have meant that dates given in some instances are approximate only. In addition, records listed under a particular agency may include material covering earlier or later periods than the dates given for the agency. In all cases where dates are problematic, brackets have been used eg. Mines – Lands (1856-74).

4. Agencies which have been incorporated into successor or predecessor departments usually appear in the Overview with a "see" reference.

Major Functions – Summary

1. Administration

2. Administration of justice/law and order
   - A. General
   - B. Convicts/Police/Prisons
   - C. Court support/specialised legal functions

3. Courts, Commissions, Inquiries and Judiciary

4. Land survey and settlement

5. Land use/management, planning and environment
   - A. Mines
   - B. Agriculture/primary produce
   - C. Resource management
   - D. Planning/environment/development

6. Public works

Overview of Major Functions

5. Land use/management, planning and environment

A. **Mines**

Gold Commissioners	1851-74	
Lands	(1856-74)	
Mines, later Mineral Resources	1874-	
State Mines Control Board see		
State Mines Control Authority		1932-

B. **Agriculture/primary produce**

State Archives Microfiche Index

Fiche 14

Page

MINES, later MINERAL RESOURCES

See also: STATE MINES CONTROL AUTHORITY

Prior to 1856 the Colonial Secretary (q.v.) was responsible for all matters relating to mining. From 1880 onwards, Benches of Magistrates in the various districts submitted annual returns to the Colonial Secretary of the number, name, situation and description of Manufactories, Mills, Mines and Quarries, mineral substances mined, quantity and value produced to be used in the compilation of the Returns of the Colony or Blue Books for the information of the Secretary of State for the Colonies. From responsible government in 1856 until 1874 the administration of mining was carried out by the Under Secretary for Lands (q.v.), with local management of the gold fields being undertaken by Gold Commissioners (q.v.) assisted from 1886 by mining registrars.

The Mines Department was established on May 1, 1874 under the provisions of the Mining Act (37 Vic. No.13) as a result of increased mining activity and general dissatisfaction with the administration of mining by the Department of Lands. Over the next one hundred years, the Department's major responsibilities came to include geological and mining surveys and assays, the Mining Museum, examination of coalfields, inspection of collieries and mines, diamond drills, the

administration of the Prospecting Vote and Miners' accident relief, collection of royalties, and control and regulation of explosives and inflammable liquids.

Major legislation during this period includes the Mines Inspection Act, 1901; State Coal Mines Act, 1912; Mines Rescue Act, 1925; and the Coal Mining and Mining Acts of 1973.

On December 19, 1978 the Mines Department was amalgamated with the Development Section of the Department of Decentralisation and Development to form the Department of Mineral Resources and Development. The Development Division was removed from the Department in 1980, and in 1981 a number of functions were transferred to the Department of Industrial Relations (including those performed by the Mines Inspection And Coalfields Branches and the Technological Research Unit).

The Department was combined with the Department of Energy on October 19 1988 to form the Department of Minerals and Energy. In July 1991 the Department again became known as Mineral Resources with the removal of the various branches dealing with energy matters.

Note: Records of the Occupation of Lands Branch, Forest Conservancy Branch, Diamond Drill Branch and Geological Survey were destroyed in the Garden Palace Fire on September 22 1882. The extant records of the Occupatioon of Lands Branch are listed under LANDS, Occupation Branch.

Access Conditions: Records less than thirty years old are RESTRICTED. Access to plans of colliery workings is RESTRICTED under sections 35(6) and 39(2) of the Coal Mines Regulation Act of 1912 as amended.

1. Arrangement of Series

The records of the Department are listed as follows:

A. GENERAL RECORDS
- a. Correspondence and related records
- b. Personal records
- c. Publications
- d. Records relating to Commissions and Inquiries
- e. Miscellaneous

B. ACCOUNTS BRANCH

C. BOARD OF EXAMINERS OF ENGINE DRIVERS

D. CHARTING BRANCH

E. COALFIELDS BRANCH

F. EXPLOSIVES DEPARTMENT

G. GEOLOGICAL SURVEY BRANCH

a. Correspondence and related records
b. Other records

H. LEASE BRANCH

I. MAPS, PLANS AND RELATED RECORDS

J. MINERS' ACCIDENT RELIEF BOARD

K. MINES INSPECTION BRANCH

L. MINING BOARD

M. PROSPECTING BOARD

N. REGISTRAR AND INQUIRY BRANCH

O. ROTHBURY STATE OPERATED COLLIERY, BRANXTON

P. SLUDGE ABATEMENT BOARD

Q. RECORDS OF WARDENS' COURTS AND WARDENS' OFFICES

A. GENERAL RECORDS

a. Correspondence and related records

1. Indexes and registers of letters received, 1874-1906 (Chester Hill 9/2753-910; microfilm copy of Indexes, 1874-98, at AO Reels 1494-1510 and of Registers 9/2877 and 9/2881 at AO Reels 1511-1512). 157 volumes.

2. Letters received, 1874-1906 (Chester Hill 2/3510; Kingswood 19/2173-508, 19/3066-71, 19/1403-12, 19/3057-58). 1 volume, 354 boxes.

3. Special Files, 1851-1986.

   These files, which the department designated with a "SF" prefix (Special file), have been segregated from the main series of correspondence. They relate to a variety of subjects including: reports on geological surveys and mineral deposits; reports on coalfields; applications for leases; statistics of mineral production; reports of mining operations in various districts; subsidence and undermining on coal areas; mining acts and regulations; Aboriginal rock carvings around Sydney; and Royal Commissions and special inquiries.

See Information Leaflet No. 16 for a partial list of titles. Other Special files, 1912-86, are located at 10/29943-30049 and 14/4476-77.

4. Letters received from Gold Commissioners, 1853-75.
5. Letters received (Miscellaneous), 1902-52, 1960 (Kingswood 19/1432-2172, 10/42656.2, 7/2275-81, 1965 (Kingswood 10/24712-28, 1974-80 (Kingswood 12/10755-59). 771 boxes (part).

These files include reports on colliery fires and flooding of workings, shaft sinking, assays, and prosecutions under the Coal Mines Regulations Act; applications for prospecting aid and certificates of competency as engine drivers; minutes of proceedings of such departmental committees as the Coal Conservation Committee; and personal matters eg. trade awards, allowances, appointments and leave approvals.

6. Indexes and registers of letters received (Miscellaneous), 1907-23 (Chester Hill 9/2911-27). 17 volumes.

7. File movement registers (Miscellaneous), 1924-49 (Chester Hill 8/1960-83). 29 volumes.

These volumes record current number, former papers, reference to card, and notations (put away, forward registration etc.).

8. F.J. Massey's index to papers, C1926-38 (Chester Hill 9/1927). 1 volume.

This volume is an index to papers, reports and correspondence on various mining subjects. For each entry a correspondence number is given.

9. Copies of letters sent, 1887-1917 (Kingswood 3/16092-98). 7 volumes.

10. Copies of legal opinions received, 1893-99 (Chester Hill 4/6274). 1 volume.

These are copies of letters received from the Attorney General and Solicitor General concerning interpretations of the various mining acts and opinions on cases related to these acts.

The advisings have been written up from information extracted from the files of the department, the registered number of the letter being noted in each case. They have not been entered in chronological order and although there is no indication of the date when they were written up, it is likely that it was at the turn of the century.

11. Departmental circulars, October 1877-April 1921, October 1938 (Kingswood 7/6039-40) 2 boxes.

This series includes circulars for the period October 1877 to March 1921 and summaries of circulars in force on June 30 1910, April 30 1921 and an index to important circulars as at October 24 1938. The circulars are to officers of

the department and colliery managers and proprietors concerning procedures concerning procedures to be followed under the various mining acts as well as such routine matters as travelling allowances and leave of absence.

12. Press cuttings, 1930-30 (Kingswood 7/3045). 1 volume.

b. Personal records

1. Mines and Agriculture: Salary registers, 1884-June 1897 (Kingswood 7/3031-34), July 1897- June 1908 (Kingswood 11/1883-1887 part) 9 volumes.

2. Salary registers, July 1908-June 1920 (Kingswood 7/3035-36). 2 volumes.

3. Mines and Agriculture; Registers of miscellaneous wages and wardens' clerks' salaries, July 1897-June 1908 (Kingswood 11/1871-74). 4 volumes.

4. Register of appointments of wardens, wardens' clerks and mining registrars, 1875-1923 (Kingswood 7/3038). 1 volume.

5. Notation of appointments register, 1894-1914 (Kingswood 7/3038). 1 volume.

6. Notation of approvals from the Public Service Board, 1914-23 (Kingswood 7/3043). 1 volume.

c. **Publications**

1. Energy Technology Branch: Coal Liquefaction study reports, August 1981 (Kingswood 11/19571-77) 7 boxes.

2. New South Wales Coal Strategy, 1981 (Kingswood 18/1497.2) 1 volume.

3. New South Wales Coal Strategy, Strategic Plan, and Industry Review, 1973 (Kingswood 18/1497.3) 2 volumes.

4. Coal Reject Disposal in the Southern Coalfields, 1983 (Kingswood 18/1497.4) 1 volume.

5. Annual reports, 1983-84 and 1984-85 (Kingswood 18/1497.1) 2 volumes.
These are printed annual reports of the Department of Mineral Resources.

6. Sydney's Extractive Industry – Regional Environmental Study, 1984 (Kingswood 18/1497.6) 1 volume.

7. Coal in New South Wales – Industry Profile, 1984 (Kingswood 18/1497.5) 1 volume.

8. Guide for Movement of Interference caused by Cathodic Protection and Railway Drainage Systems, October 1990
(Kingswood 18/1498.1) 1 bundle.

d d. **Records Relating to Commissions and Inquiries**

Court of Investigation, Dudley Colliery Explosion

1. Papers, 1896-98 (Chester Hill 9/1931.2) 1 bundle.

Royal Commission of Inquiry Respecting the Mount Kembla Colliery Disaster

2. Minutes of evidence and report, 1902-03
(Kingswood 7/6865A-6868) 7 boxes.

This series comprises minutes of evidence, report and other records relating to the Royal Commission into the explosion which occurred in the Mt. Kembla Colliery, the property of the Mt. Kembla Coal and Oil Company Limited, on 31 July 1902, in which 95 persons were killed.

3. Papers, 1898-1904 (Chester Hill 9/1934-1935.1) 2 boxes (part)

4. Huntley Colliery Inquiry papers, 1989-90

5. Final report of the Huntley Colliery Inquiry, 1990
(Kingswood 18/1210.4) 1 box (part)

This report was printed by the Archives Office from the two 5.25" floppy disks received, and is therefore not the official copy of the report. The official version is considered confidential and is held by the Minister.

e. **Miscellaneous**

1. Tracings and sketches of parks, 1880-87

2. Fortnightly abstracts of pay – Wickham and Bullock Island Coal Company, 1887-96

3. Fortnightly abstracts of production – Wickham and Bullock Island Coal Company, 1889-99, 1901-04

4. Public Watering Places and Artesian Boring Branch: Diagrams of sections of bores, c.1891-99

5. Copies of Government Gazette notices concerning reserves, 9 May 1919 – 24 Dec 1941

B. ACCOUNTS BRANCH

1. Register of letters received, 1896
2. Revenue and receipts account book, 1910-13
3. Mineral lease (royalties), 1916-26
4. Register of royalties on renewed mineral leases, 1901-26
5. Register of royalties on gold leases, numbers 2340-3283
6. Register of royalties on coal and shale leases, 1909-25

C. BOARD OF EXAMINERS OF ENGINE DRIVERS

D. CHARTING BRANCH

1. Mining Surveyors' lease survey field books, 1896-1938 (Kingswood 7/3058, 7/3357-62). 7 volumes.

   Surveys of leases by mining surveyors including details of number and location of leases, names of lessees, survey application numbers and date of letter transmitting survey to Chief Mineral Surveyor.

2. Diagrams of coal measures (Northern Districts), 1875 (Chester Hill X1249-50) 2 sheets.

   These diagrams of sections show the thickness, character and portion mined out of coal seams in New South Wales. The first diagram (X1249) of the Upper Coal Measure, Newcastle, shows coal seams at Australian Agricultural, Waratah, New Lambton, Lambton, Co-operative, Newcastle, Wallsend and Duckenfield Collieries. The second diagram (X1250) shows Upper Coal Measures at Catherine Hill Bay, Lake Macquarie, Redhead and Burwood.

3. Papers of the Board of Inquiry into the Workings of the Charting Branch, 1891-95 (Kingswood 7/3058, 7/3357-62). 1 box.

   This is evidence taken of the methods and structure of the Charting Branch and reports on the subsequent administrative action taken by the Department. The Report of the Board of Inquiry is not included.

E . COALFIELDS BRANCH

1. Photographs of coal mines, 1885-94, 1940
(Kingswood 7/2287). 1 box.

These are photographs of pit-tops and loading and transport facilities covering the period 1885-94 for the following collieries: Australian Agricultural Company's pits at Glebe and the Sea Pit, Burwood No.1 and 3 and Burwood Extended, Cardiff, Co-Operative, Duckenfield, Dudley, Durham, East Greta, Ferndale, Gartlee, Hetton, Lambton, Minmi, New Lambton, Pacific Teralba, Seaham, Killingworth, South Waratah, Stockton, Wallarah, Wallsend, West Wallsend and Young Wallsend.

There are also seven photographs taken on 10 August 1940 of smashed timbers and coal falls in the Lithgow State Coal Mine.

2. Colliery holding files, 1896-1947
(Kingswood 19/1276-320). 45 boxes.

3. Correspondence files, 1903-06
(Kingswood 19/1273-75). 3 boxes.

These files include reports of inspections of collieries and investigations into safety standards and accidents.

4. Registers of accidents in coal mines, 1902-24
(Kingswood 19/147A-B). 2 volumes.

This series contains name and location of mine, name of owner and mineral mined, number of men employed on the surface and underground, manager's and inspector's names, dates of inspection and registered numbers of related correspondence, details of special observations and rules with reference to relevant papers, fatal and serious accidents including explosions, falls of ground, suffocation, falling, shaft and surface accidents, details of casualties including occupation, date of accident, complaints, general remarks, prosecutions and registered numbers of related correspondence.

5. Accident reports, 1954-55, 1957
(Kingswood 19/3059-60). 2 boxes.

These are reports by the Inspector of Collieries on accidents in coal mines including statements taken from witnesses.

6. Reports and papers relating to the South Maitland Coalfield Coal Conservation Committee, 1951-62
(Kingswood 3/1774-75). 2 cartons.

These records include correspondence, papers, reports etc relating mainly to the introduction of stowage procedures in coal mining in the northern coalfields. The records are generally those received from the Coal Conservation

Committee by the Mines Department but include correspondence from other organisations such as the Northern Colliery Proprietors Association, the Joint Coal Board and Government departments.

Included are copies of the Report of the South Maitland Coalfield Coal Conservation Committee (1951). Other records include progress reports, agendas and reports of approving conferences and principal committee meetings, financial statements, geological maps and plans and copies of stowage agreements made between the Joint Coal Board and the collieries.

The various forms required to be completed by the collieries to undertake stowage operations are included.

7. Papers relating to the Coal Conservation Committee, June-July 1952 (Kingswood 3/2998). 1 bundle.

8. Dust counts, 1953-59 (Kingswood 19/3054-56). 3 boxes.

Diamond Drill Branch see **Mines Inspection Branch**

F. EXPLOSIVES DEPARTMENT

The Explosives Department was responsible for the administration of the Explosives Act, 1905, and the Inflammable Liquids Act, 1915.

1. Correspondence files, 1919-23 (Kingswood 19/3061-62). 2 boxes.

These files relate to contracts for the purchase of explosives, licensing of premises for storage, inspection of facilities for transport and appointment of inspectors in mining districts, as well as general personnel and administrative matters. Included is a special file of papers of the Court of Investigation into Dudley Colliery Explosions, 1898.

G. GEOLOGICAL SURVEY BRANCH

a. Correspondence and related records

b. Other records

1. Geological surveyors' field books, 1900-19 (Kingswood 7/6056). 16 volumes, 1 box.

H. LEASE BRANCH

1. Indexes and registers of letters received, 1907-23

(Chester Hill 9/2945-61) 17 volumes.

2. File movement registers, 1924-49
(Chester Hill 8/1989-2016) 28 volumes.

27. Registers of mining purpose leases (1906 Act). Leases 598-999, 20 March 1926-27 February 1941
(Kingswood 7/1894A-B). 2 volumes.

28. Registers of leases of mineral lands (Coal and Shale) Royalty Leases under the Mining Act of 1906 as amended by the Mining (Amendment) Act of 1918, 18 March 1927-14 September 1953
(Kingswood 7/3349-50). 2 volumes.

29. Registers of coal and shale leases on private lands (C. & S. Act 1906), 1908-53
(Kingswood 7/7644-49). 6 volumes.

39. Registers of applications for leases on private lands, 1907-24
(Kingswood 7/3244-49). 6 volumes.

40. Register of private land leases (1894 Act), Leases 111-1166, 17 Feb 1897-16 Aug 1900
(Kingswood 7/1888). 1 volume.

41. Registers of private land leases under the Mining Act of 1906, Feb 1909-Sep 1916
(Kingswood 7/3646-68). 23 volumes.

42. Register of private land leases (1918 Act), Leases 203-240, 4 Feb 1924-27 May 1925
(Kingswood 7/1902). 1 volume.

43. Register of private land leases under the Mining Acts of 1906 to 1924, April 1925- March 1953
(Kingswood 7/3670-79). 10 volumes.

44. Register of applications for leases approved for mining on private lands, 1907-20
(Kingswood 7/3243). 1 volume.

45. Miscellaneous lease documents, c.1866-1924
(Kingswood 19/2689-3001). 313 boxes.

46. Register of lease applications, 1886-98
(Kingswood 7/3318). 1 volume.

47. Registers of applications for leases, 1897-1924
(Kingswood 7/3319-20). 2 volumes.

48. Indexes to applications for leases, c.1906-25

(Kingswood 7/3321-25). 5 volumes.

53. Register of permits, 27 February 1892-11 October 1904
(Kingswood 7/3328). 1 volume.

54. Registers of authorities to mine under Section 28, Act of 1874, 1904-07
(Kingswood 7/7642-43). 2 volumes.

55. Section 17 authority register, 1938-49
(Kingswood 7/7639). 1 volume.

56. Section 110-111 permit register, No. 3
(Kingswood 7/7638). 1 volume.

63. Card index to lease applications, 1925+
(Chester Hill 9/5029-50). 22 boxes.

74. Miscellaneous authorities to mine, 1874-89
(Kingswood 19/3046-49). 4 boxes.

76. Search documents, 1902-34
(Kingswood 19/3002-24). 23 boxes.

These are covering forms sent to the Search Bureau of the Registrar General's Department setting out land portion and present ownership, to which are attached the results, including that of a Real Property Act search which details registered proprietor, portion, area and eccumbrances.

77. Requisitions for searches, 1935-51
(Kingswood 19/3025-38). 14 boxes.

These are printed forms sent to the Search Bureau, Registrar General's Department; attached are the results of the search setting out particulars of ownership, any severance of or encumbrances on the title, date of grant and any mineral reservations.

78. Register of applications from various mining divisions
(Kingswood 7/1899). 1 volume.

79. Royalty returns, 1939-41, 1945
(Kingswood 19/3050-53). 4 boxes.

This series concerns the payment of mining royalties to the Department.

I. MAPS, PLANS AND RELATED RECORDS

1. Cancelled maps, c1880-1976
(Kingswood AO Map Nos. 10735-13430, 18922-43, 19113-53, 30000-31934, 32263-361, 32678-705, 32706-37, 33000-887). 5,741 maps.

These are mostly parish and county maps, but there are a few of towns and mining districts. They record mineral leases within twenty years of issue.

Indexed in a card index located in the Chester Hill Search Room (microfilm copy at Kingswood).

2. Map of the County of Waljeers, 1888
(Kingswood AO Map No. 32263). 1 map.

This map shows mining leases.

3. Plans of colliery workings, 1892-1966
(Chester Hill SZ43-46, SZ558-60). **RESTRICTED.** 8 plans.

4. Cancelled map showing colliery workings on the Southern Coalfield, 1940
(Chester Hill SZ125-28). **RESTRICTED.** 4 sheets.

The date quoted above refers to the compilation date of the map of the Southern Coalfield on which annotations representing workings have been made.

5. Cancelled parish maps showing coal mines workings, 1947-56
(Chester Hill SZ120-24). **RESTRICTED.** 5 sheets.

These maps cover the parishes of Newcastle, Teralba and Wallarah in the County of Northumberland. The date for each map represents the compilation date on which annotations representing workings, etc, have been made.

6. Map of Lucknow Underground Workings, n.d.
(Chester Hill SZ556). **RESTRICTED.** 1 map.

7. Map of the Southern Colliery Holdings, New South Wales, 2nd Edition, c1905-07 (Chester Hill X1050). 1 map

8. Map of the Western Coal Fields, New South Wales, 22 February 1923
(Chester Hill X1049). 1 map.

This map shows colliery holdings, county, parish and municipal boundaries.

9. Map of the Newcastle district showing the colliery holdings, 16 September 1947
(Kingswood AO Map Nos. 18946-48). 3 maps.

This is a cancelled office map in three sheets.

10. Colliery holding maps, 1947-52
(Chester Hill X1074-75). 4 maps.

These maps show colliery holdings in the various districts.

11. Map of the Maitland Cessnock Greta Coal Field, n.d.
(Kingswood AO Map Nos. 18944-45). 2 maps.

Cancelled office map in two sheets.

12. Maps of the County of Yancowinna, 1909, 1939
(Kingswood AO Map Nos. 32264-68). 5 maps.

13. Map of New South Wales used as an Index to Mining Division Maps, 1933
(Kingswood AO Map No. 18960). 1 map.

14. Greater Newcastle locality sheets, 1943-44
(Kingswood AO Map Nos. 18884-920). 37 maps.

These maps were compiled from V.G.'s sheets. Many are annotated to show ward boundaries.

15. Index map for the Greater Newcastle locality sheets, n.d.
(Kingswood AO Map No. 18948). 1 map.

This map is an annotated plan of the Lake Macquarie Mine Subsidence District, and indexes the Greater Newcastle locality sheets (AO Map Nos. 18884-920).

16. Plan showing the property of the Waratah Coal Mining Company (in the parishes of Newcastle and Kahibah, County Northumberland), n.d.
(Chester Hill X1246). 1 plan.

This plan shows other large property holders in the area (eg. Australian Agricultural Company, H. Dangar, Wallsend Coal Company).

17. Map of part of the village of Heddon, n.d.
(Kingswood AO Map No. 18921). 1 map.
This map shows mineral leases and leases on private lands on the Mayfield Estate (portion 106 and part of portion 17) Ph. Heddon, Co. Northumberland.

22. List of parish maps in office use, 15 October 1895
(Chester Hill 8/1936). 1 volume.

This is a printed volume issued by the Department of Lands, listing parishes in New South Wales for which maps have been issued, and their dates of publication. Beside the names of those parish maps which the Mines Department has used, the Mines Department map number has been noted.

23. Plan catalogue books, 1874-1946
(Kingswood 7/7622-28). 7 volumes.

Metallurgical and Assay Branch see **Geological Survey Branch**

J. MINERS' ACCIDENT RELIEF BOARD

K. MINES INSPECTION BRANCH

1. Register of mining accidents, 1903-12
   (Kingswood 7/3044). 1 volume.

   This series contains name and location of mine, name of owner and mineral mined, number of men employed on the surface and underground, manager's and inspector's names, dates of inspection and registered numbers of related correspondence, details of special observations and rules with reference to relevant papers, fatal and serious accidents including explosions, falls of ground, suffocation, falling, shaft and surface accidents, details of casualties including occupation, date of accident, complaints, general remarks, prosecutions and registered numbers of related correspondence.

2. Diamond Drill: Indexes and registers of letters received, 1890, 1893, 1901-06
   (Kingswood 7/3017-30). 14 volumes.

3. Letters received, 1906, 1917
   (Kingswood 19/1260 part). 1 box (part).

4. Diamond drill files, 1915-56
   (Kingswood 19/1270-71). 2 boxes.

L. MINING BOARD

1. Copies of letters sent, 1874-77
   (Chester Hill 9/2695). 1 volume.

   There is an index to addresses in the front of the volume.

M. PROSPECTING BOARD

N. REGISTRAR AND INQUIRY BRANCH

O. ROTHBURY STATE OPERATED COLLIERY, BRANXTON

The records concern the working of the mine by the Government with police, free labourers and militia units, 1929-30.

P. SLUDGE ABATEMENT BOARD

Q. RECORDS OF WARDENS' COURTS AND WARDENS' OFFICES

The following are descriptions of some of the series of records common to all Wardens' Courts and Wardens' Offices. The descriptions are general and there may be slight variations at different periods.

Records of Wardens' Courts

Registers of complaints and applications (before the Wardens' Court): These registers record: number and date of complaint or application; name and address of complainant; name and address of defendant; nature of complaint or application; amount paid to Court before hearing; decision or order and date; result of appeal or re-hearing; particulars of execution; satisfaction (amount paid and date).

Earlier volumes in this series comprise complaints only.

Case papers: These papers are concerned with cases heard before the Wardens' Court and include applications for authority to enter and search for various minerals and for the suspension of labour conditions of mining companies as well as inquiries into the failure of certain mining companies to meet the labour conditions of mining companies as well as inquiries into the failure of certain mining companies to meet the labour conditions required of them.

Records of Wardens' Offices

Registers of agreements to mine in terms of Section 33, Mining on Private Lands Act 1896: These registers give the following information: number; date of agreement of lease; date of registration; parties to the agreemnt – owner and other parties; locality – country, parish, portion number and area of portion; area under agreement; description; mineral; terms of agreement and under which Act and Section registered.

Registers of applications for authorities to enter (Mining Act, 1906): The following information is recorded in these volumes: number and date of application; date of receipt of application; applicant's name; portion number; county; parish; area required; description; reputed owner, action taken and remarks.

Mining circulars: These circulars, from the Department of Mines, are concerned with instructions of duties, presentation of reports and correspondence, requests for specific information, proclamations concerning mining, notifications of amendments to Mining Acts.

Registers of mineral lease applications: Each register gives the following information: local number of application; date of application and date and hour of receipt; names of applicants; description of lease and locality; area; date of notice to survey; name of surveyor; date of receipt of plan and when forwarded to Warden or Department, as the case may be.

Registers of applications for leases (Mining Act, 1906): These registers record such information as: number and date of application; date of taking possession; class of lease; name and address of applicant; locality; area applied for; rent and fees lodged; approved or refused; and remarks.

Registers of licences to prospect

Registers of mining tenements

Mining tenements share registers

East Maitland Warden's Court

1. Registers of complaints and applications, 10 February 1922 – 5 December 1929
   (Kingswood 3/1753-54). 2 volumes.

East Maitland Warden's Office

2. Registers of mineral lease applications, December 1886 – August 1907
   (Kingswood 3/1748-49, 3/1755 part). 3 volumes (part).

3. Registers of applications for leases, July 1907 – September 1917
   (Kingswood 3/1750, 3/1750 part), February 1923 – June 1933
   (Kingswood 3/1751-52). 4 volumes (part)

4. Registers of applications for authorities to enter (Mining on Private Lands Acts), August 1899, February 1905 – May 1907
   (Kingswood 3/1744 part). 1 volume (part)

5. Registers of applications for authorities to enter (Mining Act, 1906), May 1908 – June 1937
   (Kingswood 3/1744 part, 3/1745-46). 2 volumes (part).
6. Register of coal shipped, 1888-8?
   (Kingswood 3/1757). 1 volume.

Muswellbrook Warden's Court

1. Registers of complaints and applications, 27 July 1920 – 22 December 1970
   (Kingswood 34/2434-35). 2 volumes.

2. Case papers, 1939-68
   (Kingswood 34/303-05). 3 boxes.

Muswellbrook Warden's Office

3. Registers of applications for authorities to enter (Mining Act 1906),

14 June 1920 – 4 January 1967
(Kingswood 34/2335-37). 3 volumes.

4. Register of applications for leases (Mining Act, 1906),
1 March 1922 – 1June 1944
(Kingswood 34/2338). 1 volume.

This register contains copies of applications extracted from a Singleton lease register (14 July 1917 to 13 December 1920) when a portion of the Singleton Mining Division was transferred to the Muswellbrook Division in 1922.

Records Held Which Are Not in the Concise Guide

Coalfields Branch

1. Papers re Royal Commission on Earth Subsidence at Newcastle, 1906-09
18/2884.2

Mines

1. Fatality Files, 1949-77
10/47856-47857.1, 10/47858.1, 10/47859-47862.1

2. Fatality Files, 1953-76
A4279

Mines – Lease Branch

Lease documents, 1889-1974
A4277

Mines-

Indexes to Staff Registers, 1921-1951
6/18131-18132

Mines-

1. Rothbury Colliery Inquiry Papers, 1925-30
(18/2883.3)

2. Ferndale Colliery accident reports, 1885-86
(18/2883.2)

Mines-

Newcastle Warden's Office, various
A1720

Newcastle Warden's Office, maps
A1557

Singleton Warden's Office/ Court, miscellaneous records
Accession No. 4600

Criteria for Determining

The Accuracy

of

Old Plans

By D.N.Baker

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1. Abstract

After the "Gretley Inquiry" judge Staunton made 43 "recommendations". This paper concentrates on Recommendation 1 and in particular the assumptions apparently made by surveyors and managers in relation to Record Tracings.

These are:

"That any record tracing obtained from the Department could be relied upon as being accurate".

"That whatever appeared on a certified plan could be relied upon as accurate".

"That old plans were generally accurate except perhaps for a handful of metres".

I will attempt, in this paper to outline some of the areas which should be looked at when planning to mine within a known mining area or in close proximity to known workings. I will offer some criteria as a guide to determining the reliability of old mine plans.

2. Introduction

When contemplating mining in previously mined areas the following are some of the risks that must be considered.

There may not be any records or plans available which might show the presence of past mining operations (surface or underground),

- If there are plans they may not be complete, some workings may not be shown,
- The position of workings in relation to known features may be incorrect,
- The orientation of the plan may be wrong,
- Workings may be shown in the wrong seam,
- The level or co-ordinate datum used may be open to misinterpretation,
- The plan or scale may have been tampered with.(Digitizing errors)
- Workings may be connected through barriers or into disused opencuts.

3. Source Information

The Record Tracing

Workings

A good place to start is to approach the Department of Mineral Resources to obtain any original copies of plans and survey notes or specifically Record Tracings, Survey Field Books and any calculation books. Should they be unavailable at the Department then other sources will have to be investigated and these are mentioned later. Ensure that you have all the sheets that make up the RT.

Record tracings are recognised as a prime source of information for determining the extent of mining however various imperfections may exist. Mine plans depicting workings are a legacy to the methods used to produce them and in particular the lack of proper standards of drafting. In some cases surveying has not been done well by today's standards, so it is vital that investigatory work be performed to gain some level of confidence in the plan.

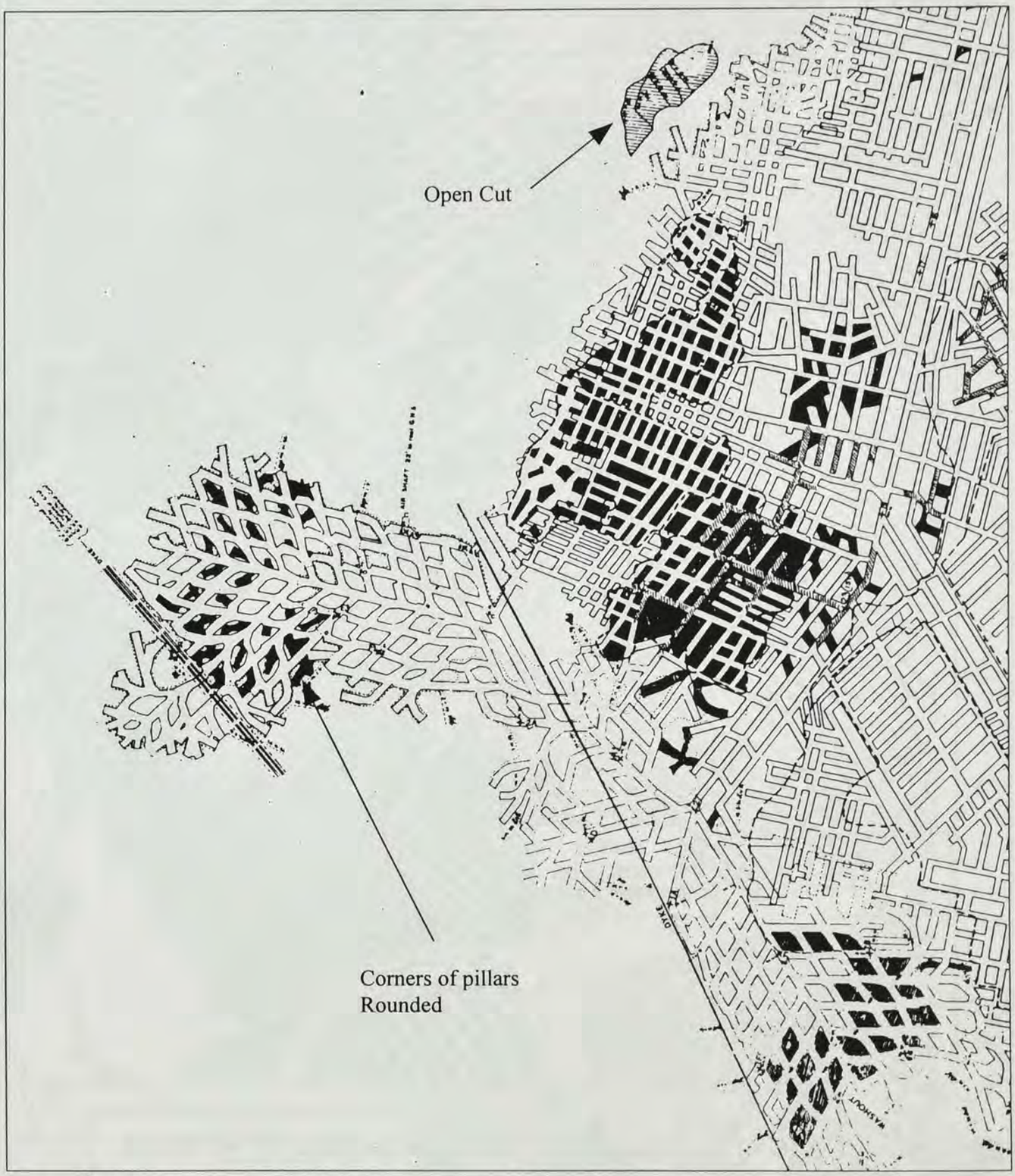
These plans are in many cases quite old, some surveyed by recognised methods, some not, but either way they do provide a basis for further investigation.

Study the system of working, Welsh Bords, Advancing Longwall (hand worked) and note any major deviations from the general layout (see example 2). These areas may exhibit adverse geology, dykes, faults, wants, and outcrops; compare these to known geological structures in the area. This may help in confirming the orientation of the plan.

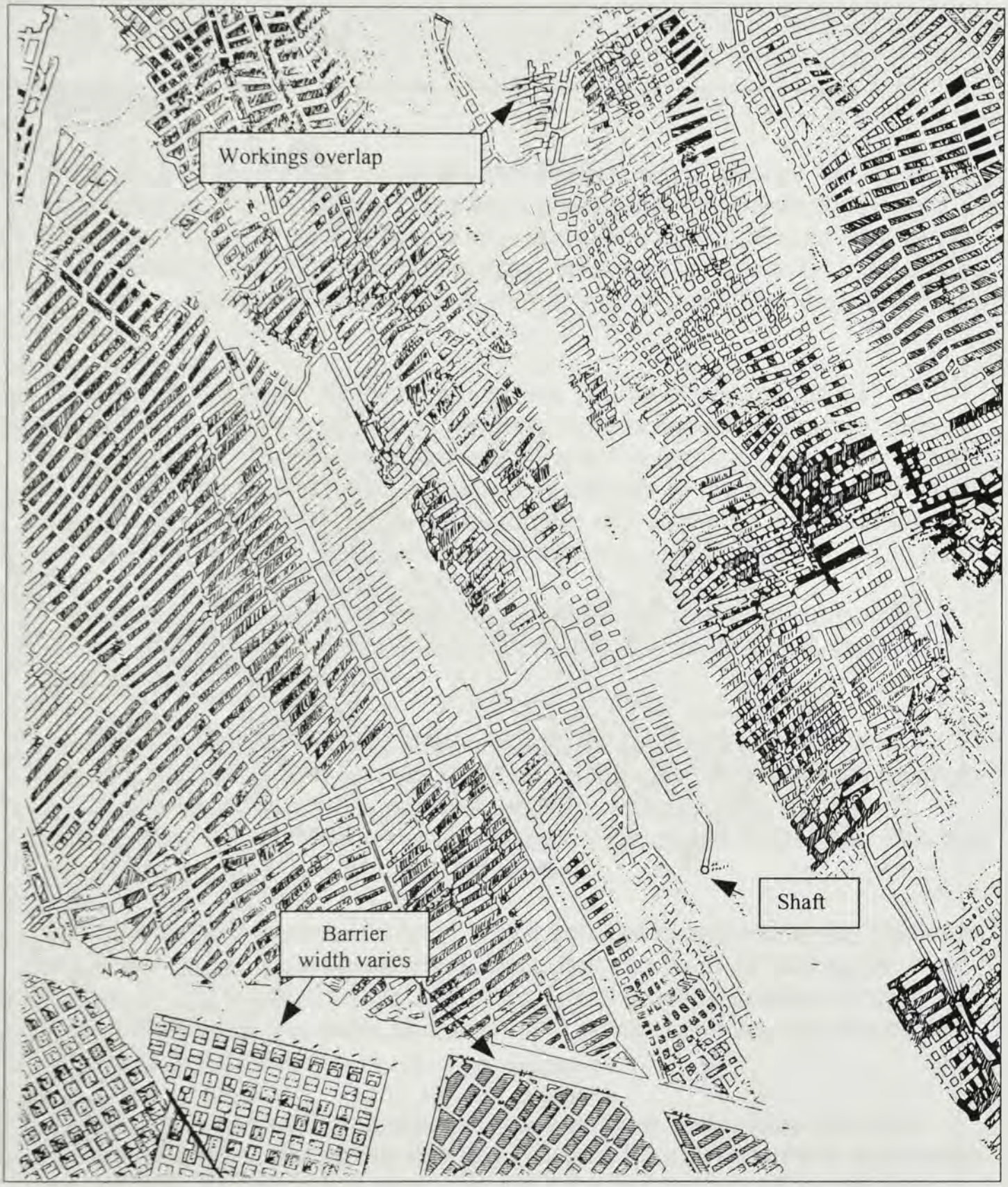
Look for a grid and check the size of grid squares to determine any distortion, which will nearly always be evident. Distortion can be quite substantial over the length and width of a plan and can result in errors in position of up to 10-20 metres. Check the scale, title, and north position and any signatures by surveyors and dates.

A borelog or shaft section is always an advantage. These may allow the checking of seam sequences and level datum. Try and determine what seam section was worked in first workings and if the remainder of the coal was stripped out later as is sometimes the case in thick seams. Seam correlation is important.

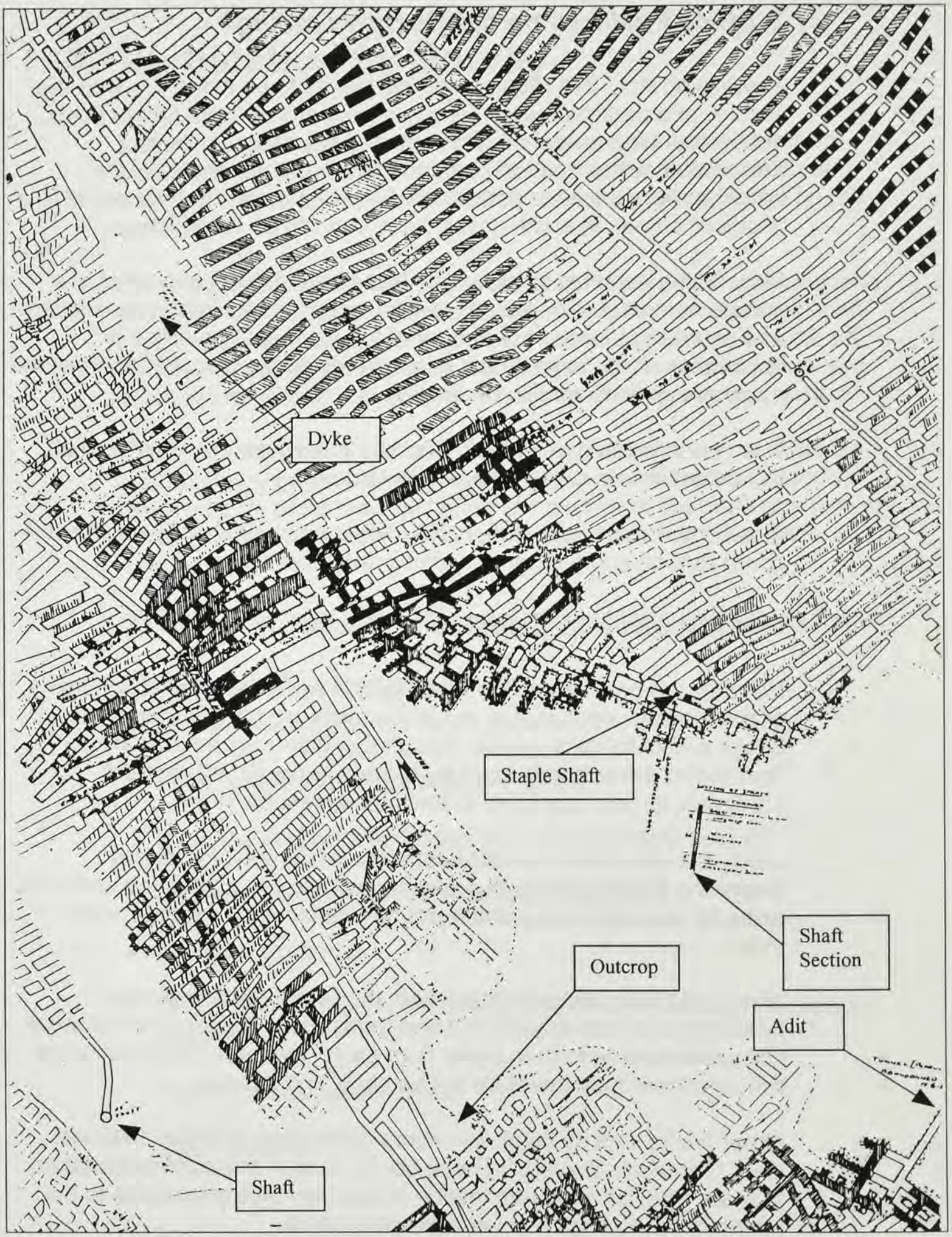
Now look for shafts, drifts, staple shafts (see example 3). By now an appreciation of the mining methods used and some idea of how the plan came into existence should be evident.



Example 1 Scraper Loader Used/ Surface Open Cut



Example 2 Different Layouts of Workings



Example 3 Points to note Shafts,Geology Sections

Surface Features on the Record Tracing

The Mining Act 1874 required mining leases to be marked out on the surface in a particular way. Trenches, mounds of rocks and or posts delineated the boundaries. One of these boundary posts was designated as the "*datum*" post from which the remainder of the boundary was based or positioned. The datum was then surveyed to a "Portion" corner, in some cases these can still be found today.

Most mines even today have their lease boundaries connected to a portion corner. In the case of older mines this connection was adopted as the baseline for the positioning of the workings. Usually this connection was shown on the mine plans and the Record Tracings and many are given magnetic bearings.

The surface datum point for levels may also be shown together with the datum or axis of the co-ordinate system.

Finally other notations on the plan should be studied; they might shed some light on some other question in the investigation.

Field Books and Calculation Books

Possibly the next step in the investigation would be to calculate some of the traverse work carried out at the mine using the surveyor's field books and calculation books, though the latter may be unavailable. Remember some mines even then, were surveyed by contract surveyors so you may have to track these records down.

Using the information re-calculate some of the traverse points beginning at the surface. In particular go over the method by which the azimuth was transferred underground particularly if it was a "*shaft mine*".

Many old traverses were not closed, they were run along main headings to a convenient point and terminated. The faces which were still accessible were then taped from there. Inaccessible places were not taped and may therefore not be shown on the plan.

Other books kept by some surveyors particularly after the 1912 Act were "*Quarterly Surveys*". These books contain measurements taken to faces from traverse termination points they also give a clue to the heading, cut through number and panel name.

4. Verification by Survey

Once sufficient calculations have been completed and a few check plots done on the record tracing to determine the plot accuracy and any plan inaccuracies, it is prudent to traverse to some points on the surface.

Some good references to use are old entry points to the mine such as shafts, drifts, and adits. With some luck there may be a remote shaft which can help orientate the mine and give a larger base to work off. Be careful though the concrete caps on the shafts may be offset and drift caps may have moved several metres from the original position.

Other reference points include original datum posts, concrete blocks and boundary pegs. Always where possible check the level datum these may be based on any thing from a notch at the base of a tree to a tide mark the value of the former possibly based on barometric leveling.

Borehole sites if still accessible are also a check to a lesser degree.

5. Other Information

Additional information may be sourced from :-

Plans and records from adjacent mines,

Historical records, (approach the local Historical Society)

Museums, ex-employees, residents, relatives,

Inspectors reports,

Books written about these mines and this may include newspaper articles.

The Mine subsidence Board,

State Archives.

6. Acceptance of an Old Plan.

As one can imagine it is very difficult to prove the accuracy of old plans without accurate re-survey of the workings and they are usually not accessible. The following therefore should be kept in mind when processing information on plans:-

- Mine plans in existence prior to 1930 could be seen as inaccurate as surveying may have been performed by anyone. (Generally speaking). Even though the 1912 Act required plans to be kept up to date every 3 months. Survey standards are suspect.
- From about 1930 onwards some mines employed registered surveyors either, full time or part time.
- From 1941 certificated surveyors could be employed to carry out underground surveys only. Standards varied however.
- By 1976 some practicing mine surveyors did embrace the requirements of the *Survey and Practice Regulations 1933.*
- In 1976 "*Survey and Drafting Instructions for Colliery Surveyors (Underground/Opencut)* were gazetted and became formalised in the 1982 Act.

Therefore the criteria which can be applied to old plans to determine a high degree of reliability is as follows:

- The plan would show all extremities of the workings complete with date lines and surveyors initials. Check the date of charting with the final date of abandonment and who signed it.
- All field books would be available for checking.
- A number of points which could be re-surveyed and could be plotted on the plan with accuracy.
- Would show the seam worked, and a cross section of strata sufficient to identify the seam worked. Check seam correlation.
- Title indicating the mine's name and seam worked.
- What datums were used for levels and coordinates and a scale.
- A grid and north point.
- A certificate of accuracy signed by the mine surveyor.
- Be produced in accordance with the Survey and Drafting Instructions 1984.

- Direction and rate of full dip.

7. Uncertainty

Any doubts or uncertainty after the above checks have been done may mean that some of the following options may have to be utilised:-

- Drilling vertical boreholes; these can be drilled into the workings on intersections and if need be cameras lowered .
- Boreholes can be drilled in a "curtain" formation across the path of headings to prove the extent of the workings.
- Strategically located boreholes and Radio Imagery (RIM) surveys conducted to prove the existence of voids.
- Inseam drilling or interseam drilling to pinpoint the position of workings.
- Providing a large barrier of sufficient size to account for inaccuracies in positioning workings.

8.Conclusion

When planning a development which maybe in danger of unexpectedly holing into old workings sufficient time must be factored in to allow for proper research. This will not only help maximise resource recovery but also more importantly eliminate the risk of holing.

As part of this research the "Surveyor" does provide a systematic approach and accurate data from which sound decisions can be made by management. It must be kept in mind however that surveying is one "tool" which can be used, there are other forms of research which can assist in consolidating information provided by the surveyor.

Finally it should be said that if there is any doubt that fact should be stated. The stakes are high if the data provided is not completely reliable.

COMPLIANCE OBLIGATIONS

OF

COAL MINE MANAGERS

AND SURVEYORS

Doug Davies

November 1998

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DEPARTMENT OF MINERAL RESOURCES
SEMINAR
GRETLEY MINE INQUIRY

TOPIC: COMPLIANCE OBLIGATIONS OF COAL MINE MANAGERS AND COAL MINE SURVEYORS

Introduction

There are two main Acts of Parliament (or Statutes) which relate to or regulate the operation of Coal Mines in NSW. They are both NSW Acts or 'pieces of legislation'.

The principal piece of legislation is the *Occupational Health and Safety Act of 1983* ("this Act"). This Act imposes absolute and wide ranging obligations on various persons. Section 15 of the Act imposes the obligation on employers having the effect of ensuring that they guarantee the absolute health, safety and welfare at work of all employees.

Section 19 imposes obligations on employees, but not in the same absolute terms as for employers. An employee, while at work is to take reasonable care for the health and safety of persons who are at the workplace and who are affected by employees' acts or omissions. The employee is also obliged to co-operate with the employer as is necessary for the compliance of statutory obligations imposed on the employer.

The other significant piece of legislation affecting coal mines specifically, is the *Coal Mines Regulation Act 1982* ("CMRA"). This Act, although enacted before the O H & S Act and existing in previous versions since 1896, it now is termed "associated occupational health and safety legislation" under the O H & S Act, together with a number of other safety Acts relating to specific industries. As such associated legislation, Section 33 of the O H & S Act provides that where a provision of the CMRA is inconsistent with a provision of the O H & S Act or its regulations, the O H & S Act or the regulations prevails.

The CMRA is a more prescriptive Act from the O H & S Act, and over thirty sets of regulations provide detailed requirements to be observed in the appointment of various officials and in the operation of coal mines. This Act, like the O H & S Act, also has 'absolute' obligations, but placed upon the Manager and other officials appointed under the Act, whereas the O H & S Act places a general absolute obligation on the employer, usually a Company.

Section 37 of the CMRA lays down various obligations which the Mine Manager has to "ensure", and the regulations contain another 91 obligations on the Mine Manager to ensure. In addition, there are over 21 obligations to "ensure" placed on other officials, by the regulations.

"Clause 8 of the Survey and Plan Regulation, under the CMRA, sets out the duties of a Mine Surveyor. Except for one instance, the obligations are not to "ensure", but rather are largely steps which the Mine Surveyor has to take as part of his or her function.

Where the obligations are to "ensure", it is virtually impossible for a person to escape being in breach if an incident occurs resulting in an injury or risk to health or safety, or where the evidence is that, for whatever reason, the situation is contrary to that which was to be "ensured'. Therefore, the company or person so found to be in breach, would need to invoke the defences which both the O H & S Act and the CMRA set out, to prove their innocence. These defences involve two main concepts - the test of whether something was "reasonably practicable", or whether a person concerned in management used "all due diligence" to prevent the offence.

The first of these defences is provided in the CMRA, but both are included in the O H & S Act. There are other defences, but the two concepts mentioned are those generally applicable to persons who may be prosecuted under those Acts.

This paper will therefore deal with the meaning and some illustrations of these concepts. The relevance of these will be applied to the Judge's conclusions in the Gretley Mine Inquiry Report, in relation to the obligations of Mine Managers and Mine Surveyors as canvassed in that Inquiry. Finally, comment will be made on some future steps which may be seen to be necessary in the future, for Mine Managers and Surveyors, and for that matter, other officials also.

Contents

1. The Obligation to "Ensure"

As indicated, the CMRA places many obligations on Managers and Officials to ensure various things. Section 37 sets out a number of them, but so do the regulations,. The Gretley Mine Inquiry looked closely at clause 8 of the *Methods and Systems of Working Regulation* where:

> **"the manager is to ensure that steps are taken as may be necessary to prevent any inrush into the workings of... water, whether from disused workings or any other source".**

Further comment will be made later on the Inquiry Report's findings in relation to this regulation.

The Courts have determined the meaning of these words "shall ensure". "Shall" is something that must be done. "Ensure" is not a legal or technical word - the Courts have applied its ordinary meaning, which is to guarantee, or to make secure, or to make sure; so there is an absoluteness about the term, and that is taken to be the intention of Parliament in using the words. It has been said that offences of absolute liability are such that "it is not open to an accused person to exculpate himself by showing that he was free of fault".[1] So whether a person intended the consequence or was free of personal fault, is not relevant.

Therefore, if an incident occurs such that there is in fact a breach or contravention of the obligation to ensure that it does not, then, contrary to the normal presumption of the criminal law of innocence until proven guilty, the effect of the absolute liability is that a person is guilty unless the person proves his or her innocence.

As indicated previously, the principal obligation of the O H & S Act is placed by Section 15 on the employer to:

> **"<u>ensure</u> the health, safety and welfare at work of all his employees".**

The same principles apply to this absolute requirement. Because the CMRA is associated legislation of the O H & S Act, the objects of the O H & S Act would be taken into account, as set out in Section 5, generally being to secure the health, safety and welfare of persons at work or at a place of work.

It has also been commented that legislation which sets standards in effect reversing the normal presumption and onus of proof, is accepted by the community, because the stringency of its controls is regarded as more important, on balance, than adherence to the normal presumptions. This type of legislation is found in the realms of public health, industrial and road safety and the handling of dangerous substances and drugs.[2]

2. What is "reasonably practicable?"

It will be evident that where legislation sets out obligations in absolute terms as indicated in the provisions of the O H & S Act and the CMRA, it becomes important to understand what the standard or test is which will offset the liability.

These are set out in the defence provisions of the Act - usually at the end. In the O H & S Act it is Section 53, and in the CMRA it is Section 164 (3) - these being the general defence provisions.

Section 164 (3) (a) of the CMRA says:

> **"(3) It shall be a defence to any proceedings against a person for an offence against this Act for the person to prove that:**
>
> **(a) It was not reasonably practicable for him to comply with:**
>
> **(i) the provision of this Act, the regulations, the rules or the scheme;**
> **(ii) the direction; or**
> **(iii) the condition of an exemption or approval, the breach of which constituted the offence;"**

Section 53 (a) of the O H & S Act is in the same terms, except that it only relates to the Act and regulations which are breached. The CMRA is structured such that not only are its regulations to be observed, but also the rules and schemes, certain directions of an inspector (or Chief Inspector) and conditions of exemptions or approvals have the same force and effect as the regulations.

There is another arm of the defence provisions of the two Acts. It is paragraph (b) in each case, which says:

> **"(b) the commission of the offence was due to causes over which he had no control and against the happening of which it was impracticable for him to make provision."**

This second leg would seem to be a narrower one, where there were extraordinary circumstances, for example, an earthquake or a bomb detonation, or a deliberate act designed to bring the roof down, as referred to by the Courts[3].

Section 164, subsection (1) and (2), of the CMRA also refer to a specific defence to proceedings under Section 16(1) of the Act. This latter provision may be called the vicarious liability section. Where a person commits an offence against the Act, the mining officials from the Superintendent down to the undermanagers are also thereby guilty - not of the same offence, but of an offence because another person committed an offence. This is a

draconian provision which has not been used in prosecutions under the 1982 CMRA, it is understood. Again, then the defence applicable to Section 161 will not be commented on this paper.

This brings us back to Section 164 (3) (a) - the defence that it was not reasonably practicable to comply with the Act or regulation breached.

There is a leading decision of the House of Lords in England which laid down a principle for determining what is reasonably practicable in the circumstances of industrial safety legislation. It is quoted in leading Australian cases. The test is, according to that decision, not simply what is practical as a matter of engineering, but it involves a consideration of the whole of the circumstances at the time of the accident, and whether the time, trouble and expense of the precautions that are necessary to avoid the risk, are disproportionate to the risk involved. But if a precaution is practicable, it must be taken, unless in the whole of the circumstances that would be unreasonable. If men's lives may be at stake, it should not lightly be held that to take a practicable precaution is unreasonable[4].

Case 1

This was a case dealing with a gypsom mine where there was a roof fall and a person was injured. There was a practice in this mine to go along and tap the roof where work was to take place or persons were to pass and at any point if it was thought to be suspect, the roof was brought down and in that sense made secure. But it wasn't the practice to support the roof by props because there had never been the need to do that. However, on this particular occasion, the fall was caused by an apparently quite unusual geological situation called slickenside and a person was killed by the fall. Slickenside had not been evident in that mine for 20 years. However, the legislation in force required that the roof and sides of every travelling road should be made secure, and the owner of the mine was charged for the offence of breaching that regulation. After the accident of course, hydraulic props were used where slickenside was suspected. The Company in this case was held not liable for the breach of statutory duty because the death was not caused by the failure by it to take reasonably practicable steps to secure the roof. The only way to properly secure the roof was to shore it up whenever men were going to work there. The danger was very rare, but the trouble and expense involved in the use of precautions would have been considerable. It would have meant that the Company would have had to prop up the whole of the roadways in that mine against the risk that there would be a fall from an unsuspected cause.

The Court held that what should be done was for a computation to be made by the owner, in which the quantum of risk is placed on one scale and the sacrifice necessary for averting the risk, whether in money, time or trouble, is placed on the other, and if it be shown that there is a gross disproportion between them, the risk being insignificant in relation to the sacrifice, then the defendant discharges the onus, and that fact was held in this case.

Risk assessment approaches are being emphasised in recent times in our industry. The courts have for many decades already laid down the genesis of a risk assessment process as part of the criterion for determining what is reasonably practicable.

Case 2

There was another case closer to home in recent years and it was where a mechanical engineer in charge was charged with failing to ensure that all exposed and dangerous parts of machinery used in or about the mine were kept securely fenced so as to prevent any person from coming into contact with those parts of the machinery under regulation 41 of the Mechanical Regulations.

The case was where an electrical fitter was fatally injured when he was caught by and pulled into the tail unit of a stage loader at the point where the longwall armoured face conveyor interlocked with the stage loader at the transfer point. The interlaced nature of the two conveyor systems was unique in Australia at the time. Because of problems with blockages that had been experienced because the coal wouldn't go through, the cover plate from the tail unit had been removed and that helped apparently in solving these blockages. A separate cover, which was in the shape of a chinaman's hat, was made but that had to be removed because of the low roof conditions. A second replacement had later been taken into the mine but it hadn't been installed at the time of the accident. The evidence was that the tail unit was substantially obscured by a steel baffle that separated it from the normal walkways into the long wall supports. There was also machinery stored there, oil drums and other equipment, that acted as a baffle as well and, of course, coal that spilled over from the armoured face conveyor had built up a mound that also acted in a sense as a barrier. And so it was argued that the particular place wasn't dangerous and it was actually fenced off. Many inspections by Mining Officials and even Mines Inspectors had not revealed any problem. The fitters' mechanical reports had not flagged up any danger to that machinery and the reports were many.

The Chief Industrial Magistrate, before whom the case was heard, held that the area in question was exposed and on the evidence was dangerous and not securely fenced and guarded. He held that there was an absolute duty, under the regulations, imposed on the mine mechanical engineer personally. In considering the defence which that Official had under the Act and which we have looked at ie. whether he had done everything that was reasonably practicable, he quoted the meaning of "reasonably practicable" as I have outlined in that previous English case. He determined that the question in this case was whether the defendant should reasonably have been aware of the danger and if so whether he did anything to prevent the person from coming into contact with those dangerous parts.

It was evident as part of the evidence that the defendant, being the mechanical engineer in question, had only been appointed to the job of mine mechanical engineer some nine months before the incident. He was not

personally familiar with the history of all the trouble that had been experienced with this end of the stage loader - he had read the various check reports at the end of each shift, but none of them drew attention to this interlaced sprocket area where this accident occurred - he had never seen the "chinaman's hat" cover in place.

The Industrial Magistrate acknowledged that there had been a failure by others to bring the matter to the mine mechanical engineers' attention, but he held at the same time that that person must take positive steps as may be reasonable to ensure that machinery in the mine is adequately guarded and must not simply rely on the advice of others.

On finding the offence proved, it is the function of the Court to then determine the penalty, and for this purpose the statute will always set the maximum penalty up to which the Court always has the discretion to fix the appropriate penalty. In this particular case, because of the situation with the mine mechanical engineer, although the offence was proved and he was found not to have available to him the defence because of the actions he had not taken, the Court decided not to proceed to a conviction and to allow him the benefit of Section 556A of the Crimes Act, but required him to enter into a recognisance or a bond to be of good behaviour for two years.

Under Section 166 of the CMRA, the penalty for an offence is fixed as a maximum of $4,000 for an individual person and $10,000 for a corporation. But there is a rider, and that is that if the Court is of an opinion that the offence is one which was likely to or did endanger the safety of persons, that it caused serious personal injury or caused a dangerous accident, and that the offence was committed wilfully by the wilful omission or personal negligence of the person convicted, the Court may, instead of a monetary penalty, imprison the person for a term not exceeding 12 months. So that is another course that the Court has open to it in a particular case if all those things are found to exist.

As a final comment in this area, in the case I last dealt with, the Industrial Magistrate noted that the Department had in fact elected to proceed even in those circumstances, against the mine mechanical engineer. The onus was then on him to exculpate himself. This raises the question of the discretion which the Department, as prosecutor, has to actually proceed with a prosecution. The Courts have commented in more than one case, that where the liability is strict or absolute, as in these cases under the CMRA, the argument against possible injustices occurring was that the prosecuting authority would not prosecute in cases where it was not just to do so. The courts believe that there is a serious onus on the prosecuting authority to determine the cases in which they will prosecute and who in fact they will prosecute. So there is a discretion there and I believe that discretion must be exercised with consideration, care and in a proper manner. It is relevant to note that the Department of Mineral Resources has circulated a Draft Enforcement Policy which incorporates prosecution guidelines. This is a welcome step, having been also taken in recent times by other regulatory authorities.

Case 3

There is yet another case where an employer was prosecuted under the O H & S Act for a breach of Section 15 - failing to ensure the health, safety and welfare of its employees.

This was a NSW case involving work that was taking place on a tug boat. The facts were that apparently some pipes were being fitted and tested in an area where the flooring had not yet been laid. A worker, who subsequently became injured, had been requested to obtain a welding lead located at a place away from the pipe fitting and testing area. Of course, the inevitable happened - rather than take a less direct route to the workshop at the aft end of the engine room, he chose to make his way across the uncovered pipes and he fell and was injured. The employer was prosecuted for failing to ensure the health, safety and welfare of his employee.

The defence argued that it was not reasonably practicable for the flooring to be put down during the period that the pipes were being fitted and tested, since access could not be gained to the pipes if that were done. The prosecution argued that there were two safety measures open - (1) that the workers could have been directed not to walk on the pipes in the case where the workers weren't actually working on the pipes themselves (and that latter situation was classed as a different category), and (2) that a temporary floor cover could have been put down. The Court held that if there was a possibility of a route being taken across the pipes, in lieu of a safer way, that route should have been prohibited or prevented by some measure, or at least some effective instruction given if a temporary flooring or walkway was not to be provided over the route taken.

Case 4

Another case was where a worker had actually been instructed not to practise a procedure which was unsafe and which had been common in that industry, and he was injured. It was held not sufficient for the instruction simply to be given, but it had to be enforced in a way which would ensure obedience. So it is not sufficient just to give an instruction - that instruction has to be enforced. The obligation is not merely to provide a safe system of work, the obligation is to establish, maintain and enforce such a system.

Remember that the responsibilities of a Mine Manager and Other officials - Undermanager-in-Charge, Undermanagers - **are to enforce** the observance of the Act and the regulations and the rules and the schemes.

While these cases illustrate the obligations on an employer under Section 15, which in our industry is normally a Company, they will serve to highlight the obligations on supervisors - which in general terms, managers and mining officials are, to fulfil the requirements of the employer's obligation under Section 15.

3. What constitutes "all due diligence"?

Section 50 of the O H & S Act extends the liability of a corporation (or company), which has breached the Act or regulations, to its directors and **each person concerned in the management of the corporation.**

The section says:

> **"Offences by corporations**
>
> **50 (1) Where a corporation contravenes, whether by act or omission, any provision of this Act or the regulations, each director of the corporation, and each person concerned in the management of the corporation, shall be deemed to have contravened the same provision unless he satisfies the court that:**
>
> **(a) the corporation contravened the provision without his knowledge;**
> **(b) he was not in a position to influence the conduct of the corporation in relation to its contravention of the provision; or**
> **(c) he, being in such a position, used all due diligence to prevent the contravention by the corporation.**
>
> **(2) A person may be proceeded against and convicted under a provision pursuant to subsection (1) whether or not the corporation has been proceeded against or been convicted under that provision.**
>
> **(3) Nothing in subsection (1) prejudices or affects any liability imposed by a provision of this Act or the regulations on any corporation by which an offence against the provision is actually committed."**

It will be evident from this section that there are defences built in for the Corporation's directors and management persons. The paragraphs (a), (b) and (c) of sub-section (1) are each exclusive because they are separated by the word "or" at the end of (b).

A "person concerned in the management of the corporation" has been held by the Courts to be a person in charge of or supervising operation of the company and therefore can apply to person performing management functions within an organisation.

The defence in paragraph (c) is the more general and perhaps applicable to most situations - that a person used all due diligence to prevent the breach which the company has become guilty of.

The term due diligence was first developed under Trade Practices Law relating to anti-competitive practices, consumer protection particularly conduct which is misleading and deceptive, and product liability resulting from defective goods. The term now appears in the Corporations Law, environmental legislation and safety legislation.

The circumstances will be different in each of these areas but the principles to be applied will be similar. The trade practices cases have formed the basis for understanding the type of conduct which will demonstrate the exercise of due diligence. These cases are being applied by the Courts in other areas where the defence now exists. A commentator[5] on this subject has identified relevant themes emerging from the Court cases as:

- Industry practice is irrelevant unless it amounts to a precaution or indicates the requisite due diligence. In other words, the "everybody else does it that way" defence is not, on its own, available.

- The precautions and due diligence must be brought to bear for the relevant purpose. The fact that, as a matter of general day to day business practice, checks and balances are observed, is not sufficient.

- It is not sufficient to shift responsibility to another person - the corporation (e.g. where it is held responsible) must take precautions to satisfy itself that it is reasonable to rely on the other person.

- If no reasonable precautions are taken, it will be necessary to prove that none could reasonably have been taken.

"Reasonable precautions' and "due diligence" probably amount to the same thing - taking reasonable steps to prevent the contravention. Two elements are involved in taking reasonable precautions and exercising due diligence:

- setting up a proper system; and

- providing adequate supervision to ensure the system is properly implemented.

The system need not be fail-safe. The mere fact that an error occurs does not, of itself, establish that the system is defective. The fact that the error can be traced to the failure of a junior employee to exercise reasonable precautions does not render the defence unavailable. Indeed the fact that supervised delegation took place (albeit that an error slipped through the net) is evidence of performance of the duty contemplated by the defence.

In the environmental area, a case was decided in the Land and Environment Court in 1991, where the same principles of due diligence were applied:

> **"By virtue of s.10 of the Environmental Offences and Penalties Act (NSW) (the "EO&P Act") Kelly, a director, was taken to have committed the same offence as that committed by his corporation.**

The corporation had polluted a creek due to inadequate controls over its waste disposal procedures. Kelly relied on the statutory defence that he had used "all due diligence" to prevent the contravention by the corporation.

Justice Hemmings held that Kelly had the onus to prove not only due diligence but all due diligence. This requires that everything properly regarded as due diligence should be done. A standard of perfection is not required. His Honour said: "Whilst 'all' must have its proper connotation, similar stress must be given to 'due'."

He further held that:

(Due) diligence...depends on the circumstances of the case, but contemplates a mind concentrated on the likely risks. The requirements are not satisfied by precautions merely as a general matter in the business of the corporation, unless also designed to prevent the contravention. Whether a defendant took the precautions that ought to have been taken must always be a question of fact and, in my opinion, must be decided objectively according to the standard of a reasonable man in the circumstances. It would be no answer for such person to say that he did his best given his particular abilities, resources and circumstances."

Obviously a proper risk assessment approach to a particular operation will be part of the exercise of due diligence. However, it will be noted from the principles set out above, that implementation of a system resulting from that process, and adequate supervision, will also be critical in establishing the exercise of due diligence.

Other important factors are:

- Training and education of persons at all levels within an organisation;
- regular monitoring of compliance with regulatory requirements;
- reporting through all levels on compliance;
- audits (either internal or external, or both) with follow up work on recommendations;
- incident response plans and incident reporting systems; and
- a check of the system from time to time to ensure it is appropriate, and, if necessary, amendments.

4.Obligations of a Mine Manager and Mine Surveyor - Some Conclusions of the Gretley Mine Inquiry Report

i) The Mine Manager

The principal obligations of the Mine Manager considered in some detail by the Gretley Mine Inquiry Report were those in Clauses 8 & 9 of Part 3 of the Coal Mines Regulation (Methods and Systems of Working - Underground Mine) Regulation, headed "Prevention of Inrushes."

A copy of these clauses is attached to this paper for reference.

Clause 8, in brief, requires the Manager to ensure such steps are taken as may be necessary to prevent any inrush.

The Manager also is to ensure that the Manager is in possession of such information as to indicate any disused excavations or workings, and stratum likely to contain a dangerous accumulation of water or other material likely to flow when wet. The Manager is to have referred to information available from the Department of Mineral Resources in addition to other available information.

The Judge indicated a progression of phases contemplated by this regulation: first a research phase, and secondly a phase requiring an analysis of that information.

In fulfilling these requirements, a Manager must review the completeness and reliability of the material collected, and confidence in the surveyor does not relieve him of that obligation, nor does the surveyor's guarantee. The Manager can also 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.

In the Gretley Mine circumstances prior to the inrush, the Judge held that the Mine managers were not justified in relying on three assumptions: that the sheets 2 & 3 (which purported to show the old Young Wallsend Colliery workings and were found subsequently to be completely erroneous) were plans circulated by the Department as record tracings, and therefore could be relied upon as being accurate; that it was appropriate to rely on certified plans as being correct (and thus accept as reliable the Record Tracings of the Wallsend Borehole Colliery and the Gretley Colliery, both of which purported to show the old Young Wallsend Colliery workings); and that old plans were generally found to be accurate or only marginally inaccurate.

The Report canvasses the issue of whether Gretley should have undertaken a Risk Assessment process in relation to the old Young Wallsend Colliery workings. When the material applications for mining approval under Section 138 of the CMRA were made by the Gretley Colliery before 1996, the technique of risk assessment was a relatively new phenomenon. It was not required by legislation, nor by the Department as part of a Section 138 application. There was no published industry standard defining when it should be employed.

The nature of the risk and the particular circumstances ought to determine whether risk assessment should be used in a particular case, says the Report. 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 Methods and Systems of Working Regulation. The successive Managers of the mine were both familiar with the technique of risk assessment and had used it to advantage in the past.

The Report suggests that if risk assessment had been used, the need for a more solid foundation of the Mine Surveyor's views would more than likely have emerged, and leading also more likely to the matter being determined on its merits, rather than on flawed assumptions.

It seems that whatever view is taken of the evidence which the Gretley Inquiry was presented with, the matters canvassed by the Report's conclusions are relevant considerations in the light of the onus being on Mine Managers under the absolute imperatives of the applicable legislation.

The Report has in fact recommended that risk assessment be mandatory in relation to the provisions of Clause 8, as well as the Clause being amended to spell out the research for plans and information which should be undertaken.

In relation to *Clause 9 of the Methods and Systems of Working Regulation,* considerable discussion took place at the Inquiry and in the Report in relation to the 50 metre requirement for drilling ahead where the mine's workings approach a place likely to contain an accumulation of water. The industry practice was said to be that this distance was taken from the perimeter of the old workings shown in the plans.

The Report recommends that the Clause be reformulated to make it clear that the perimeter of the plan should only be used for the purposes of measuring the 50 metres referred to where the position of the old workings is known with some certainty.

(ii) The Mine Surveyor

The Mine Surveyor's duties are set out in some detail in *Clause 8 of the Coal Mines Regulation (Survey and Plan) Regulation 1984* (a copy of this clause is attached to this paper).

The Inquiry Report comments on the role of a Mine Surveyor in the Gretley Mine circumstances, where mining is taking place in the vicinity of other old mine workings.

The Mine Surveyor who assumed the role after the Gretley Section 138 approval had been granted, nevertheless had the obligation:

- to acquire an understanding as to the basis upon which the old workings had been depicted on the plans being used by the Company, and to validate that basis from primary material;

- to have sounded a strong warning and recommendation of suspension of development, given the notorious hazard of inrush and the potential catastrophic consequences if it occurred.

The Survey and Plan Regulation sets out in Part 3 (Clauses 12 to 22) the Plans and other information to be prepared, kept at the mine, and forwarded to the Department. Survey and Drafting Instructions issued by the Chief Inspector are to be followed, in accordance with which the Plans are to be prepared. These Instructions thereby become part of the Regulation and must be complied with. They can be varied or replaced from time to time by the Chief Inspector.

(iii) The Three Myths Relating to Mine Plans

The Report's first Recommendation was for the correction of three views on aspects of mine surveying which had emerged during the Inquiry and "which were disturbing and wrong". These assumptions, made in respect of certain plans, were:

- First, that any record tracing obtained from the Department could be relied on as being accurate.

- Secondly, that whatever appeared on a certified plan could be relied upon as being accurate.

- Thirdly, that old plans were generally accurate, except perhaps for a "handful of metres."

The Report commented: "None of these assumptions is warranted. Each plan must be taken at face value, and its reliability determined, rather than assumed."

Clause 8 (f) of the Survey and Plan Regulation requires the Mine Surveyor to certify in writing the accuracy of all plans, drawings and sections which are required to be prepared or kept by the Regulation. The Report raised the question as to the significance which should be attached to this certification of accuracy. It seems useful to let the Report answer this question. What follows is the part of the Report's introduction, summarising the issue and the Report's views (at page 21):

> **"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."**

The second Recommendation of the Report is for the Department to encourage mine surveyors more freely to identify by endorsement aspects of plans or drawings produced by them which are open to doubt. Clause 2.5 of the Surveying and Drafting Instructions (1984) makes provision for a surveyor to endorse the plan where he or she is in doubt as to the position of the workings, the Report also comments.

5. Due Diligence - Consideration for the Future

(i) The "Duty of Care" for Safety

As has been indicated, the O H & S Act of 1983 is, in NSW, the principal piece of legislation relating to occupational health and safety. It is a completely different style of legislation to the associated legislation, which is detailed prescriptive safety legislation.

This type of legislation arose from the Robens Committee of Inquiry in Britain in 1972 and all the Australian States, as well as the Commonwealth, have introduced O H & S Acts based largely on the Robens recommendations.

The O H & S Act is designed as a performance standard Act, and the standard of performance can be broadly stated as the taking of reasonable case for health and safety. The feature of a true performance standard is that there is free choice as to the method of achieving the standard.

But the NSW system also requires adherence to the CMRA, as associated legislation, so that the procedures laid down in that Act must be adopted. There is no choice as to the methods to adopt to achieve the standard where the method is prescribed.

However, in relation to those risks to health and safety which are not addressed by detailed specifications, there is a choice as to the measures to be adopted to eliminate risks. It could also be said that some elements of the CMRA are performance based like those which contain the imperatives to 'ensure' certain outcomes, as discussed earlier in this paper.

So there is a duty or obligation on all persons in the workplace to take reasonable care and safety. This is the positive effect of the obligation and the defence under the O H & S Act . As indicated previously, if an employer is charged with having failed to ensure health and safety, the employer can show the Act was not broken if the employer proves that it was not reasonably practicable to ensure health and safety, or that what was done was as much towards ensuring health and safety as was reasonably practicable; that the employer took reasonable care for health and safety.

As previously indicated, reasonable care is not defined but the principles laid down by the Courts have been previously outlined and may be summarised as follows:

- If there is a risk of injury which can or ought reasonably to have been foreseen, then possible and practicable precautions to eliminate the risk must be taken;

•the practicability of a precaution can depend on its cost relative to the operation, to its interference with the operation and whether it in turn may create equal or greater risk;

•the taking of a possible and practicable precaution depends on balancing the degree of likelihood of the foreseeable risk occurring, the degree of severity of the injury risked and the cost and inconvenience of the precautions. It will be unreasonable not to take a costly and inconvenient precaution against the risk of serious injury;

•if there are precautions available, it would be reasonable in the circumstances to take those precautions;

•determining what management arrangements and work practices are sufficient for the taking of reasonable care involves a constant safety audit and examination of possible risks;

•the implementation of these arrangements and practices involves the provision of adequate supervision.

(iii) Risk Assessment

The Report found that there was a failure to prevent the inrush by devising an appropriate strategy and in failing to use the technique of risk assessment to assist in determining the strategy.

Risk assessment processes are not referred to in the current CMRA or regulations, but have been utilised by the Industry in particular circumstances, with the encouragement of the Inspectorate.

During the Inquiry, reference was made to a proposed clause 7 in a **draft** *Coal Mines (General) Regulation* published in March 1997 and framed by the Joint Safety Review Committee. It states:

"7. Assessment of, and Dealing with, Risks to Health or Safety.

A Manager who becomes aware of a risk to health or safety must (within his or her capability) assess the risk and deal with it in the following order of priority:

(a) eliminate the risk;

(b) control the risk at source;

(c) minimise the risk by means that include the design of safe work systems;

(d) in so far as the risk remains, provide for the use of personal protective equipment.

The Report commented that if this proposed Regulation is proclaimed to be effective, then although not requiring risk assessment as such, it will no doubt promote its use.

As indicated, the Report recommends that Clause 8 of the *Methods and Systems of Working Regulation* be amended to require the Manager to arrange for a risk assessment to be undertaken whenever mining operations give rise to the possibility of inrush.

It is obvious from all this, and from the growing use in industry of formal risk assessment procedures as a management tool, that not to undertake such a process in the design of procedures to overcome a significant risk to safety, could be held to be a failure to take proper care in accordance with the stated requirements of the O H & S Act and the CMRA.

iii) Continued Professional Development

The Gretley Mine Inquiry Report is just that - a report to the Minister of Mineral Resources by the presiding Inquiry Judge. The Report makes various recommendations, and the Minister in conjunction with his Department considers those and determines whether and how they might be implemented.

The Department's Counsel at the Inquiry has made reference in a recent forum to discussion amongst the legal profession as to whether this Report accurately states the obligations of Managers and Surveyors. He refers to the fact that there was widespread evidence during the Inquiry as to industry practice, particularly relating to reliance on certified plans and plans issued by the Department. He also refers to the fact that in a Court action where a civil claim is made alleging negligence, the Court usually looks to industry practice "to establish what is negligence and what is appropriate behaviour." But he adds that "post the Gretley report...the very existence of the report has now had the effect of raising the bar that managers and surveyors have to jump over." Counsel who assisted the Inquiry responded with the comment that although there was a divergence of views at the Inquiry, there was a considerable body of evidence as to what ought to have been done in the circumstances.

Everyone is aware of the changes in technology in the coal industry, requiring people to be trained in operating new equipment and systems. In fact mention was made at the Inquiry of problems experienced within the Gretley Mine Survey Department of the changes in the computer system. Nothing is standing still, it seems, and we are needing to learn all the time.

In the legal profession, one has to have a credit of at least 10 points each year to retain the right to practice - one point being equivalent to attendance at one hour of lectures or seminars. It is understood similar requirements apply to the accounting and other professions. There is talk about re-testing periodically to be able to retain one's motor vehicle driver's licence.

Some of these requirements are arbitrary, but they do highlight the need to keep abreast of developments within particular vocations. This is the reason we are here today.

"Ignoranta juris non excusat", is a Latin maxim which used to be quoted by the Courts but which still is a principle of legal liability - "ignorance of the law does not excuse".

In relation to compliance obligations, it is necessary to keep abreast of developments and practices within an industry since it will be the developing standards which may become the reasonable practicability of what should be implemented, and the test of the exercise of all due diligence.

FOOTNOTES

1. Dickson, J. in Sault Ste Marie (Supreme Court of Canada) describing the category of "absolute liability, quoted by Gibbs, C.J. in He Kaw Teh (1985) 15A crim R 203. (High Court of Australia).

2. Wells, J. in Boucher & G. J. Coles & C. (1974) 9 SA SR 495.

3. Lord Radcliffe in Brown v The National Coal Board 1962 AC 574 at 590.

4. Edwards v National Coal Board 19491 All ER 743 (Asquith, L.J.)

5. Due Diligence - A Guide for Company Directors - By Allen Allen & Hemsley for the Australian Institute of Company Directors - pages 11 and 12.

6. State Pollution Control Commission v Kelly - Land and Environment Court - 1991.