

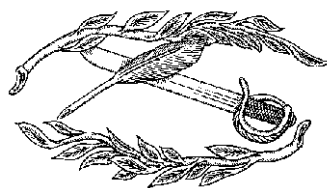


New South Wales Government

# Surveyor General's Directions

No. 8

## Mining Surveys



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## 1. General

1.1 These directions are issued by the Department of Mineral Resources, with the approval of the Surveyor General for the assistance of surveyors conducting surveys for the purposes of the Mining Act, 1992.

1.2 These Directions are in addition to the requirements of:-

1.2.1 Surveying Act, 2002 and Regulation

1.2.2 Real Property Act Regulation

1.2.3 Conveyancing Act Regulation

Where these Directions contradict these Acts and Regulations, then the Acts and Regulations are to take precedence.

1.3 Unless otherwise directed, all surveys and compiled portions shall be completed to the standards specified in the current Surveying Regulation excluding Clause 29 (Surveys not requiring strict accuracy).

1.4 All surveys required for lodgement at the Department of Primary Industries (former Mineral Resources) shall be effected under instructions issued by, or with the authority of, the Director General of the Department of Primary Industries (former Mineral Resources) or his nominee and shall be in accordance with the design and directions of that instruction.

1.5 A plan of survey, prepared by or under supervision of the surveyor, in accordance with these directions, shall be lodged within the period specified in the instruction.

1.6 All surveys and plan preparation will be carried out at the expense of the lease applicant. The applicant and surveyor shall indemnify the Minister and the Department from any claims for wages, allowances or claims under the Work Cover Act.

1.7 Surveys which involve the redefinition of portion or lot boundaries on the surface must only be carried out by a registered surveyor.

1.8 Surveys, compilations or calculated portions which do not involve the physical redefinition of portion or lot boundaries may be carried out by a registered surveyor, a certified or technical surveyor, or a Departmental officer.

1.9 Surveys and/or plans suspected to be in error or in contravention of the survey instruction shall be subject to requisition.

Requisitions regarding suspected errors or omissions must be met with prompt attention and reply by the surveyor.

1.10 Should any dispute remain unresolved following negotiation between the surveyor, the applicant, or the Department, the matter will be referred to the Surveyor General whose decision will be final.

## **2. Definitions**

### **2.1 Surveyor General**

Shall mean the person appointed to the position of Surveyor-General within the Lands Department, or the person acting in that position.

### **2.2 Surveyor**

Shall mean a registered surveyor, a certified surveyor or a technical surveyor.

### **2.3 Registered Surveyor**

Shall mean any person whose name appears in a Register kept by the Board of Surveying and Spatial Information in accordance with Part 3 of the Surveying Act, 2002.

### **2.4 Certified Surveyor**

Shall mean a surveyor who has gained a Certificate of Competency issued under the Coal Mines Regulation Act, 1982, as amended.

### **2.5 Technical Surveyor**

Shall mean a surveyor who has qualified in a surveying or equivalent course of at least two years full time duration or equivalent part time.

### **2.6 Departmental Officer**

Shall mean a Land Information Officer who has been deemed qualified in accordance with Appendix 1 to the Department of Primary Industries (former Mineral Resources Land Information Officers Award).

### **2.7 Survey**

Shall mean the measurement, marking, calculation, drawing of the plan of survey, and report.

### **2.8 Applicant**

Shall have the same meaning as in the Mining Act, 1992.

### **2.9 Minister**

Shall have the same meaning as in the Mining Act, 1992.

### **2.10 Department**

Shall have the same meaning as in the Mining Act, 1992.

## 2.11 Lease

Shall have the same meaning as in the Mining Act, 1992.

## 2.12 Agricultural Land (Schedule 2 Mining Act, 1992)

“Agricultural land means:

- (a) land that has been sown with not less than 2 crops of an annual species during the period of 10 years immediately preceding the relevant date; or
- (b) land that has been sown with 1 crop of an annual species during the period of 10 years immediately preceding the relevant date if the relevant authority is satisfied that:
  - (i) having regard to the date on which the land was brought under cultivation, it would not be reasonable to expect more than one such crop to have been sown; and
  - (ii) there was sufficient reason for not having brought the land under cultivation at an earlier date; or
- (c) land on which:
  - (i) at the relevant date, shade, shelter or windbreak trees are growing; or
  - (ii) at any time during the period of 10 years immediately preceding the relevant date, edible fruit or nut bearing trees, vines or any other perennial crop approved by the relevant authority have or has been growing; or
- (d) pastures:
  - (i) that are sown with seed of a species and a rate of application, or treated with fertiliser of a composition and a rate of application, satisfactory to the relevant authority; and
  - (ii) that have, as a result of that sowing or treatment, maintained a level of pasture production that is substantially above that which might be expected of natural pastures; or
- (e) land that is used, to an extent acceptable to the relevant authority, for the production of grass seed, pasture legume seed, hay or silage; or
- (f) land that has a preponderance of improved species of pasture grasses.”

## 2.13 Relevant Authority

Relevant Authority means the Director General of the Department of Primary Industries (former Agriculture) or any officer of that Department authorised by the Director General of that Department to exercise such functions.

## 2.14 Relevant Date

Relevant date means the date as defined in Schedule 2 of the Mining Act, 1992.

## 2.15 Standard Map

A map is a standard map for the purposes of Clause 8 of the Mining (General) Regulation 1992, if it is:-

- (a) a standard topographical - cadastral map at the scale of:  
1:25000; or if a map at the scale of 1:25000 is not available;  
1:50000; or if maps at the scales of 1:25000 or 1:50000 are not available;  
1:100000 published by the Lands Department, the Department of Primary Industries (former Mineral Resources) or Geosciences Australia (formerly the Australian Surveying and Land Information Group (AUSLIG)); or
- (b) if a map referred to in paragraph (a) is not available, a cadastral map published by a Government Department or public authority, whether of New South Wales or of the Commonwealth, or
- (c) if maps referred to in paragraph (a) and (b) are not available, an aerial photograph or a topographic map of a standard acceptable to the Director General.

## 3. Land over which a lease may be granted

### 3.1 General

Section 43 (Assessment Leases) and Section 69 (Mining Leases), Mining Act, 1992 provide that the area over which an assessment or mining lease is granted may differ in size or shape, **but may not include land other than the land over which the lease was sought.**

Clause 13 (Assessment Lease) and Clause 14 (Mining Lease) of the Mining Regulation 2003 prescribe the manner to be followed in describing the land which is to be subject of an application for an Assessment Lease or a Mining Lease.

The prescribed methods are:-

#### 3.1.1 In the case of minerals other than coal

A plan drawn in accordance with the current Surveying Regulation; or a **standard map** showing the land to which the application relates by distinctive marking or colouring and indicating the distance and bearing of each side of the area and a connection, scaled by bearing and distance to a survey mark; or a plan (certified by a registered surveyor as being accurate) showing coordinate values in relation to the Map Grid of Australia (MGA) at each point at which the boundaries of the land change direction and indicating the land to which the application relates by means of distinctive marking or colour.

#### 3.1.2 In the case of coal

A **standard map** showing the coordinates (either by reference to MGA or by reference to latitude and longitude) of all points where there is a change in direction of the boundaries.

### 3.2 The Land to be Surveyed

- 3.2.1** The applicant's description is to be the guiding factor in determining the area to be surveyed and as a general rule the area surveyed must be confined to those limits.
- 3.2.2** Variations from this general rule will be accepted to avoid creating a hiatus between the area surveyed and adjacent surveys (mining and others); to permit regularity of form; where the bearing, angle or distance supplied by the applicant is in conflict with the sketched area or dimensions of previously surveyed lines; and where the distances supplied are clearly slope distances.
- 3.2.3** Variations not acceptable include situations where the change would affect additional lands not included in the notifications given to land owners and occupiers by the applicant at the time the application was lodged.

### 3.3 Improvements

The Mining Act makes specific reference to certain improvements situated on lands.

Without the written consent of the owner and occupier of any land, Section 49 (Assessment Lease) provides that the lessee of an assessment lease may not exercise any of the rights conferred by the lease and Section 62 (Mining leases) provides that a mining lease may not be granted:

within 200 metres of a dwelling house which is the principal residence of its occupier;

within 50 metres of a garden; or

on which is located any improvement being a substantial building, dam, reservoir, contour bank, graded bank, levee, water disposal area, soil conservation work or other valuable work or structure (except those constructed for mining purposes).

All relevant improvements should be shown on the survey plan. Identification of improvements away from lease boundaries by use of recent aerial photographs is acceptable.

The written consent of the owner and/or occupier is irrevocable.

### 3.4 Agricultural Land

Instructions will include directions to exclude lands where the lease is to be granted exclusive of agricultural land.

The owner and/or occupier of private land and the occupier of Crown land may object to the grant of a mining lease on the grounds that the land or any part of the land over which the mining lease is sought is agricultural land.

These objections, if lodged, will generally be resolved before a survey instruction is issued.

#### **4. Mining portion surveys**

Mining portion surveys may include the surface; may exclude the surface totally or may be a combination of both surface and underground.

Surveys which include the surface may be effected in accordance with the current Surveying Regulation, or the “Standards and Practices for Control Surveys - ICSM Publication No.1 (SP1)”

Surveys and compilations which do not include the surface are to be effected in accordance with the “Standards and Practices for Control Surveys - ICSM Publication No.1 (SP1)”

##### **4.1 Surveys involving the surface**

Where all the surface is to be included in the lease proposed to be granted, the surface area is required to be surveyed. If only part of the surface is to be included in a lease, then only that part is required to be surveyed.

At least four major corners of the survey shall be marked. Marking of corners and placement of and connection to reference and permanent marks is to be in accordance with the current Surveying Regulation and any additional requirements set out in the survey instructions. If the MGA coordinates of the corners have been established during the course of the survey, those values should be shown on the plan.

##### **4.2 Surveys not including the surface**

Mining leases may be granted for stratum which does not include the surface.

In these cases the area granted may be defined on the surface by survey; the area may be defined by both survey and calculation; or, the area may be defined by calculation alone.

The area may be calculated from adjoining information or by design. Where the area is calculated from adjoining information the figure shall close within twice the allowable limit as established in the current Surveying Regulation.

When the boundaries of a mine or lease are not established on the surface, the Department will normally require a base line to be established in accordance with the principles of Survey Integration as part of the State Survey Control Network. The survey framework of the mine is to be developed from this base line.

#### **5. Nature and position of marks**

Where the surface is included and MGA coordinates are used to indicate the corners of the measured portion, the coordinate value shall serve to indicate the approximate location of the corner marking or monument. The undisturbed mark shall remain the accepted location of the corner.

Where the surface is not included in the lease, MGA coordinates will be used to describe the corners of the portion. These coordinates are to be established to an accuracy of Class D as defined in “Standards and Practices for Control Surveys - ICSM Publication No. 1” (SP1). Where these coordinates are used to describe a surveyed corner or mark on the surface, the marking of the corner on the surface will remain the absolute definition of the corner or mark.

### **5.1 Surface Portions**

Where any line or corner is required to be marked in accordance with these directions, marking of corners and use of reference and permanent marks are to be as set out in the current Surveying Regulation and any additional requirements set out in the survey instructions.

### **5.2 Non surface Portions**

Where the area to be granted under the proposed lease does not involve the surface and the survey is compiled from existing survey information, no marking of the survey is required, but MGA coordinates for each corner must be shown on the plan.

## **6. Plans of survey**

Drafting and presentation standards to be adopted for submission of plans to the Department are those standards set down by the Land and Property Information NSW for the preparation of plans to be lodged with that organisation.

## **7. Detail to be shown on plans of survey**

Plans shall contain the standard information that would be required to be accepted by the Land and Property Information NSW under that organisation’s plan lodgement process and any additional requirements which may be set out in the survey instructions issued by the Department for a particular lease survey.



**SURVEY AND DRAFTING DIRECTIONS  
FOR  
MINE SURVEYORS**

**ISSUED PURSUANT TO PART 7, CLAUSE 64,  
OF THE COAL MINES (GENERAL) REGULATION 1999**

**Survey and Drafting Directions**

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COAL MINES REGULATION ACT, 1982

Pursuant to the Coal Mines (General) Regulation 1999, clause 64, the following “Survey and Drafting Directions for Mine Surveyors, 2000” are issued. These Directions replace the Surveying and Drafting Instructions for Coal Mine Surveyors (Open Cut) 1984 and Surveying and Drafting Instructions for Coal Mine Surveyors (Underground) 1984.

These Directions commence on 31<sup>st</sup> March 2000.

ROBERT REGAN, Chief Inspector of Coal Mines

COAL MINES (GENERAL) REGULATION, 1999

Clause 64

Survey and Drafting Directions for Mine Surveyors, 2000

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ANNEXURES

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| ANNEXURE ‘A’ | INFORMATION TO BE REPRESENTED ON HARD COPY OF MINE WORKINGS PLAN and MINE RECORD TRACING                                     |
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## 1. GENERAL

### 1.1 Preparation

These Directions provide for the 2D digital recording, storage and preparation of the Mine Workings Plan and Mine Record Tracing. Collieries operating at the date of gazettal of these Directions which cannot conform with this requirement will prepare the Mine Workings Plan and Mine Record Tracing as detailed in Section 8. Annexure 'A' lists the details required for both the digital and non digital plans.

### 1.2 Compilation

- 1.2.1 Unless otherwise specified by the Chief Inspector the Mine Workings Plan and Mine Record Tracing shall be compiled on the Map Grid of Australia 1994 (MGA94) based on the Geocentric Datum of Australia 1994 (GDA94) values. The plan shall be sectionalised into sheets as a best fit for individual Collieries.
- 1.2.2 The Surveyor General may request of the Department of Mineral Resources copies of all or any digital data themes to be lodged with the Central Plan Register in accordance with the Survey Co-ordination Act, 1949.
- 1.2.3 All old plans should be regarded with suspicion until their accuracy has been verified, and every effort should be made to obtain all existing information about old workings.
- 1.2.4 Where old workings exist which may constitute a danger, it shall be assumed, for the purpose of marking the Mine Workings Plan, that they contain water until the contrary is proven.

### 1.3 Transfer to MGA94

- 1.3.1 A period of two years from the date of Gazettal of these Directions is provided for the transfer of the Mine Workings Plan to MGA94. The Manager of a Mine, where the life expectancy of the mine is less than five years from the date of gazettal of these Directions, may apply to the Chief Inspector for an exemption from this requirement.
- 1.3.2 When new sheets of the Mine Workings Plan are being prepared to comply with Clause 1.2.1 and the workings of any part of the Colliery are deemed to be completed it shall be acceptable to draw an outline of such workings and to endorse the new plan to refer to the previously prepared plans for detail.
- 1.3.3 Should the workings become active in an area previously shown in outline they shall be transferred in full.
- 1.3.4 Nothing shall prevent the Mine Surveyor from transferring mine workings in full to the new Mine Workings Plan.

## 1.4 Symbols

The technical symbols, sign conventions and definitions for strata to be shown on the Mine Workings Plan and the Mine Record Tracing shall be in accordance with these Directions, and shall conform to those illustrated in the Australian Standard for Mine Symbols (AS-4368) and the Australian Standard for Geological Symbols (AS-2916). If a symbol is not provided for in (AS-4368) or (AS-2916) the Mine Surveyor may create a suitable symbol.

## 1.5 Liability of a Mine Surveyor

The liability of the Mine Surveyor for a mine shall be limited to the period of time of appointment as the Mine Surveyor for that mine.

## 2. DEFINITIONS

In these Directions the following words and terms have the meanings indicated:

### 2.1 Abandoned

A mine or a seam shall be deemed to be abandoned where the workings of the mine or seam, as the case may be, have been discontinued and there is no care and maintenance in place.

### 2.2 Mine Baseline

A permanently marked survey line established as part of the State Survey Control Network. The mine baseline may be computed from conventional or GPS observations.

### 2.3 Underground Baseline

A permanently marked survey line established in underground workings from which underground surveys are developed.

### 2.4 Bench Marks

Marks established at or in a mine from which the levels of the mine workings are determined.

### 2.5 Borehole

A borehole includes any hole, which may affect the safety of the mine, drilled for-

- (a) exploration (either vertically, horizontally or inclined),
- (b) gas drainage,
- (c) auger holes,
- (d) outburst relief,

(e) Services (*eg* power, water and other services)

## 2.6 Borehole Plan

A plan prepared in accordance with Annexure 'A' Section 6.3.2 (d) in addition to the Mine Workings Plan where density of boreholes affect the clarity of the Mine Workings Plan.

## 2.7 Certification

A written statement or a schedule signed by a Mine Surveyor attesting that the surveying procedures and plan preparation for the period certified have been carried out pursuant to the standard required by the Survey and Drafting Directions for Mine Surveyors, the Coal Mines Regulation Act 1982 and the Regulations issued pursuant to that Act. In the case of information submitted digitally a signed write once read many compact disc or other medium approved by the Chief Inspector shall be deemed to be a certification.

## 2.8 Chief Inspector

Means the Chief Inspector of Coal Mines, Department of Mineral Resources.

## 2.9 Control Surveys

Substantially marked surveys developed from a mine baseline to define the direction and position of the workings of a mine.

## 2.10 Cross Section Sheet

A sheet prepared as part of the Mine Workings Plan for open cut operations, which shows the cross sections referred to on the plan.

## 2.11 Director-General

Means the Director-General of the Department of Mineral Resources.

## 2.12 Discontinued

### (a) Underground

Where a mine or a seam has ceased being mined for coal for a period of two months, that mine or seam shall be deemed to be discontinued.

### (b) Open Cut

Where a mine has not been mined for a period of two months that mine shall be deemed to be discontinued.

### 2.13 Egress Plan

Plan prepared in accordance with Clause 107 of the Coal Mines (Underground) Regulation 1999 showing exit routes from the mine.

### 2.14 Endorsement

A notation, normally made by a Mine Surveyor, on a plan prepared in accordance with these Directions drawing attention to any aspect of the compilation of the plan that is considered necessary or informative but may not be contained in any directions of the Coal Mines Regulation Act 1982 or any Regulations issue pursuant to that Act.

### 2.15 Firefighting Plan

Plan prepared in accordance with Clause 117 of the Coal Mines (Underground) Regulation 1999 showing firefighting pipe mains and appliances.

### 2.16 The Geocentric Datum of Australia 1994 (GDA94) and Map Grid of Australia 1994 (MGA94) Co-ordinate System

The datum for surveys in NSW is known as the Geocentric Datum of Australia 1994(GDA94). GDA94 is based on the Geodetic Reference System 1980 (GRS80) ellipsoid, the International Terrestrial Reference Frame 94 (ITRF94) and the geographical co-ordinates of the Australian Fiducial Network (AFN). Grid co-ordinates are obtained using a transverse mercator projection known as the Map Grid of Australia 1994 (MGA94) having the following specifications:-

Designation of MGA94 Zones

- (a) the central meridians and the designation of the several zones are as follows:-

| Central Meridian<br>Longitude East of Greenwich | Designation<br>of MGA94 Zone |
|---|------------------------------|
| 141 <sup>o</sup>                                | 54                           |
| 147 <sup>o</sup>                                | 55                           |
| 153 <sup>o</sup>                                | 56                           |

- (b) the central meridian scale factor is 0.9996,  
(c) the zone width, 6<sup>o</sup> longitude plus ½<sup>o</sup> overlaps on each side,  
(d) the co-ordinates of a point on the earth's surface, to be used in expressing the position or location of each point in the appropriate zone, consists of two distances expressed in metres and decimals of a metre; the first expressed of these distances, the East, or E. co-ordinate gives the position

in an east direction, the second expressed, the North, or N co-ordinate gives the position in a north direction,

- (e) the origin of co-ordinates of each zone is at the intersection of the central meridian of that zone with the equator, which origin is given the value of: E 500,000m; N 10,000,000m,
- (f) the units used will be the international metre,
- (g) co-ordinates stated for any point in the system shall be co-ordinate values determined in accordance with the principles of the projection of the Map Grid of Australia 1994 and shall depend upon and conform to the co-ordinates of the State Survey Control marks.

### 2.17 Height Datum

All levels shall be related to an initial point which is 10,000 metres below Australian Height Datum (AHD).

### 2.18 ICSM SP1

The Inter-Governmental Committee on Survey and Mapping Special Publication 1 “Standards and Practices for Control Surveys”.

### 2.19 The Integrated Survey Grid and Co-ordinate System

A system of co-ordinate surveys for the State of New South Wales. This grid is a Transverse Mercator projection of the Australian National Spheroid of 1966 having the following specifications:-

- (a) The central meridians and the designation of the several zones is as follows:-

| Central Meridian<br>Longitude East<br>of Greenwich | Designation of ISG<br>Zone |
|--|----------------------------|
| 141 <sup>0</sup>                                   | 54/2                       |
| 143 <sup>0</sup>                                   | 54/3                       |
| 145 <sup>0</sup>                                   | 55/1                       |
| 147 <sup>0</sup>                                   | 55/2                       |
| 149 <sup>0</sup>                                   | 55/3                       |
| 151 <sup>0</sup>                                   | 56/1                       |
| 153 <sup>0</sup>                                   | 56/2                       |

- (b) The central meridian scale factor is 0.99994.
- (c) The zone which is 2<sup>0</sup> of longitude plus ¼<sup>0</sup> overlaps on each side.
- (d) The co-ordinates of a point on the earth’s surface, to be used in expressing the position or location of each point in the appropriate zone, consists of two distances expressed in metres and decimals of a metre; the first expressed of these distances, the East, or E, co-ordinate gives the position in an east

direction, the second expressed, the North, or N, co-ordinate gives the position in a north direction.

- (e) The origin of co-ordinates of each zone is at the intersection of the central meridian of that zone with the equator which origin is given the co-ordinate value of: E 300 000 m; N 5 000 000 m.
- (f) The conversion factors to be followed in these Directions in the conversion of any dimensions from Imperial to Metric Units are those specified in the Weights and Measures (National Standards) Regulations, 1961, namely: 1 foot = 0.304 8 metre exactly.
- (g) Co-ordinates stated for any point in the system shall be co-ordinate values determined in accordance with the principles of the projection of the Integrated Survey grid and shall depend upon and conform to the co-ordinates of the State survey control marks.

### **2.20 Mines Rescue Plan**

Plan prepared showing all items which might be relevant in the rescue of personnel or isolation or removal of areas of danger in an underground mine.

### **2.21 Mine Record Tracing**

Plan required to be prepared under Part 7 of the Coal Mines (General) Regulation 1999 as a copy of the Mine Workings Plan.

#### **(a) Digital**

A digital image file of the Mine Workings Plan in accordance with Annexure "C" of these Directions.

#### **(b) Hard Copy**

A copy of the Mine Workings Plan plotted on the appropriate medium in accordance with Annexure 'A' and 'B' of these Directions.

### **2.22 Mine Surveyor**

The person appointed under Section 44(3) of the Coal Mines Regulation Act 1982 as the Surveyor for the mine.

### **2.23 Mine Workings Plan**

The plan required to be kept under Part 7 of the Coal Mines (General) Regulation 1999 to accurately show the position of the mine workings and compiled in accordance with these Directions. For those plans prepared in accordance with Section 4 the Mine Workings Plan is the digital version of the plan. For those plans prepared in accordance with Section 8 the Mine Workings Plan is the hard copy.

### **2.24 Seam**

Any coal bearing stratum or combination thereof mined as a discrete identity.

### **2.25 Site Services Plan**

Plan prepared showing services around the surface of the mine and any information which may assist in the case of an emergency.

### **2.26 Subsidiary Survey**

A survey based on control surveys to develop the workings of a mine or to locate the position of the workings of a mine.

### **2.27 Supervision**

When a survey is carried out in accordance with these Directions the Mine Surveyor must exercise such immediate oversight and personal direction of the work as is necessary to ensure that the Mine Surveyor has the knowledge to certify all aspects of the survey and that the survey has been carried out in accordance with sound professional practice and these Directions.

### **2.28 Surface Plan**

Plan prepared in accordance with Clause 66(1)(c) of the Coal Mines (General) Regulation 1999 showing surface features likely to be affected by subsidence or, if disturbed by mining, cause danger to the mine.

### **2.29 Survey Records**

For the purpose of these Directions, survey records shall be taken to mean field books, level books, co-ordinate books, calculations and any other note books, sheets or plans used for recording relevant survey data, all survey observations, compilations and other relevant survey data whether recorded or stored in manual form or by electronic or other device.

### **2.30 Ventilation Plan**

Plan prepared in accordance with Clause 66(1)(b) of the Coal Mines (General) Regulation 1999 showing all ventilation appliances and airflow.

### **2.31 Void Plan**

Plan prepared showing the position of all excavation, ramps, disturbed areas and highwall mining within an open cut mine.

### **2.32 Working Section**

The seam or part of a seam which is normally mined in an underground or open cut mine and which may include out of seam strata.

### **3. SURVEY PROCEDURES**

#### **3.1 Origin of Co-ordinates**

- 3.1.1 All surface and underground surveys made and carried out in accordance with these Directions shall be calculated and plotted by using either the Map Grid of Australia (MGA94) or the NSW Integrated Survey Grid, whichever is relevant.
- 3.1.2 All mine surveys and plans shall originate from the Mine Baseline.
- 3.1.3 The horizontal survey of the Mine Baseline should be planned to Class B standards of accuracy as defined in ICSM SP1. The geometry of the network should be consistent with this standard of accuracy.
- 3.1.4 Each end of the Mine Baseline should be assigned an AHD Reduced Level using Class LC spirit levelling (ICSM, SP1) or GPS Heighting from Class B GPS Survey.
- 3.1.5 At each end there shall also be established a reference mark of durable nature connected by bearing and distance to the baseline.
- 3.1.6 Should the position or co-ordinate values change, this information shall be forwarded to the Director General for retention.
- 3.1.7 For surface baselines of underground mines, baseline terminals should be approved Permanent Marks as described in Surveyor Generals Direction No1. The nature of marking for Open Cut mines is at the discretion of the Mine Surveyor.
- 3.1.8 Where Permanent Marks are placed for a Baseline, a plan and an electronic record with digital survey data should be forwarded to the Director General who in turn shall forward the information onto the Surveyor General for approval to be included in the State Control Network.

#### **3.2 Surface Baseline**

The Mine Baseline shall not be less than 250 metres in length and each end substantially marked.

#### **3.3 Underground Baseline**

- 3.3.1 Each underground mine shall establish a baseline in the underground workings of each seam . The underground baseline shall be in a suitable

position and of at least 250 metres in length or as long as practicable. The terminal marks shall be stable and durable. Baseline details shall be recorded on the Mine Workings Plan.

- 3.3.2 Sufficient subsidiary baselines shall be established to confirm orientation. The baseline details shall be recorded on the Mine Workings Plan

### **3.4 Traverses**

- 3.4.1 Accuracy: Each control and subsidiary survey shall be closed to the standard of accuracy as prescribed in ICSM, SP1 Class D.
- 3.4.2 Marking: Each underground control station shall be adequately referenced and substantially marked. As far as practicable the marks shall be placed in a position least likely to be disturbed.

### **3.5 Correlation of Surface and Underground Surveys**

- 3.5.1 Correlation between surface and underground surveys shall be consistent with a Class D survey as prescribed in ICSM SP1.
- 3.5.2 In correlation of surface and underground surveys where methods other than direct traverse are employed for azimuth or co-ordinate transfer, the surveys shall be shown on a plan separate from the Mine Workings Plan and Mine Record Tracing and shall disclose the special survey methods employed. The plan shall be submitted to the Chief Inspector and the Mine Surveyor shall certify that the survey shown on the plan is accurate and meets the requirements of these Directions. Where vertical measurement is necessary for transference of the value of the surface bench mark to a nominated underground bench mark, the maximum permissible error should not exceed 0.05 metre.

### **3.6 Accuracy of Levelling**

#### **3.6.1 Order of accuracy of bench marks:**

Such levelling shall be to ICSM, SP1 Class LD standard of accuracy. For open cut mines only one benchmark to this accuracy is required.

#### **3.6.2 Order of Accuracy of workings:**

Such levelling shall be to ICSM SP1 Class LE standard of accuracy or to within 0.1 metre.

### **3.7 Survey Records and Supply of Survey Information**

- 3.7.1 Systematic care should be taken for the safe and fireproof preservation of mine plans, note books, traverse records and associated calculations,

correlation records and associated calculations, co-ordinate books or sheets and other records from which the workings have been plotted.

- 3.7.2 Survey records for each of the following purposes should be kept at the survey office for the mine:-
- (a) surface surveys
  - (b) surface levelling
  - (c) underground control surveys
  - (d) underground subsidiary surveys
  - (e) underground levelling
  - (f) calculations
  - (g) any other relevant information
- 3.7.3 Such survey records shall be maintained manually on either a stable material or microform, electronic or other means not visually perceptible without the aid of a machine or device.
- 3.7.4 Where survey records are maintained in manual form the following requirements are to be observed:-
- (a) All survey books shall be maintained in good order and shall have the following description attached:
    - (i) titled with the colliery name,
    - (ii) seam name to which the book refers,
    - (iii) consecutive index number
  - (b) the following procedures shall be adopted for entries into survey books:-
    - (i) all survey observations and measurements shall be recorded at the time of survey;
    - (ii) in the event of alteration of a mistake there shall be no erasure. The erroneous entry should be struck through and the correction written above;
    - (iii) the datum line of the survey and the azimuth adopted shall be clearly indicated;
    - (iv) lengths shall be entered at the time they are measured. Where appropriate, corrections shall be noted and the lengths deduced therefrom shall be clearly indicated;
    - (v) bearing and distance from reference marks must be clearly shown;
    - (vi) reference marks and bench marks placed by the surveyor shall be so noted and the positions and descriptions thereof shall be shown by a sketch in the appropriate book;
    - (vii) lines remeasured shall be so specified and original distances and bearings shown;
    - (viii) The Mine Surveyor shall sign the field book that the work shown therein was performed by him or under his supervision and indicate the date on which the work was performed

- 3.7.5 Where survey records are maintained in an electronic or other storage and retrieval device or system in a form not visually perceptible without the aid of a machine or device, a complete and separate duplicate of such records shall be preserved on paper or microfilm or on magnetic tape or disc or other permanent electronic medium.
- 3.7.6 The Manager or the Mine Surveyor of any mine, upon the request of the Chief Inspector, shall make available on a stable material all or any survey records or certified copies thereof .
- 3.7.7 Upon abandonment of a mine all survey records relevant to the preparation of the Mine Workings Plan shall be submitted to the Chief Inspector for retention unless otherwise directed in writing.

### **3.8 Requirements where workings are to become inaccessible**

- 3.8.1 Before any part of the workings of a mine become inaccessible where practical and safe to do so the position of all points of the workings shall be established from a subsidiary survey.
- 3.8.2 Sufficient levels shall be taken to enable contours of the floor of the working section to be shown on the Mine Workings Plan.

### **3.9 Surface Movement**

Where the Chief Inspector directs a survey to be undertaken to record surface movement, such surveys shall be carried out and certified as directed.

## **4. MINE WORKINGS PLAN**

### **4.1 General**

#### **4.1.1 Authorisation**

The Mine Workings Plan is required to be kept by Part 7, Clause 66(1)(a), of the Coal Mines (General) Regulation, 1999.

#### **4.1.2 Preparation**

The Mine Workings Plan shall be prepared by or under the supervision of the Mine Surveyor within three months of the opening of the mine or such other time as the Chief Inspector may direct by notice in writing served on the Manager of the mine.

#### **4.1.3 Composition**

(a) The Mine Workings Plan for the purpose of this section, is prepared from the digital form of the plan held in the computer. It is produced in hard copy form for presentation and archiving.

(b) In the digital form the Mine Workings Plan shall be compiled as a number of themes for the whole of the mine as described in Section

4.2.1, in a software program of the Mine Surveyor's choice and compatible with the Department of Mineral Resources' software.

- (c) In the case of an underground mine, the hard copy of the digital Mine Workings Plan shall consist of seam workings sheets for each seam being worked, prepared in the form of Annexure 'A' and 'B' of these Directions.
- (d) In the case of an open cut mine, the hard copy of the digital Mine Workings Plan shall consist of seam workings sheets for each seam being worked, void sheets and cross section sheets prepared in the form of Annexures 'A' and 'B' of these Directions.

## 4.2 Preparation by Digital Methods

### 4.2.1 Themes

For the preparation of the Mine Workings Plan for the seam being worked within the mapping area of the mine plan sheets, the following information shall be captured as a minimum of theme layers.

- (a) Colliery Holding boundary
- (b) Mining lease boundaries.
- (c) First workings
- (d) Second workings in the case of an underground mine
- (e) Highwall/Auger mining
- (f) Survey stations and their identification annotated.
- (g) The position of all known outcrops, faults, dykes, cinder belts, and other significant dislocations to the seam as surveyed.
- (h) Cadastre parcels and how derived (Digital Cadastre Data Base [DCDB], survey, original plans), with appropriate endorsements.
- (i) Mining Approvals (extent to be shown in red)
- (j) Contours of the floor of the working section (shown in blue)
- (k) Potential sources of inrush (unconsolidated deposits, water bodies) (outlined in green)
- (l) Boreholes
- (m) Mine shafts, staple shafts and drifts
- (n) Grid lines and values
- (o) All workings in the seam within 100 metres of the current workings including workings of adjacent mines.
- (p) For underground mines - an outline of all workings in any seam in any direction within 100 metres of the current seam being worked
- (q) Date lines (by dashed lines) indicating the extent of workings for each survey reporting period
- (r) Barriers and restricted zones
- (s) Endorsements - in the drawing area
- (t) Certificates - in the drawing area

### 4.2.2 Hard Copy of Mine Workings Plan

- (a) A copy of the Mine Workings Plan shall be prepared from the digitally held data and presented in the form described in Annexures 'A' and 'B' of these Directions at the end of each 3 monthly period.
- (b) The seam sheets, void plan sheets and cross section sheets (as the case may be) on which workings occurred during the 3 monthly survey reporting period will be produced on paper. The previous copies may be archived or destroyed on preparation of the updated copy.
- (c) In the case of-
  - (i) the cessation of duties of the Mine Surveyor, or,
  - (ii) the discontinuance/abandonment of a mine or a seam, the seam sheets, void plan sheets and cross section sheets will be produced on durable polyester film for certification and retention at the office for the mine except where the Chief Inspector otherwise determines.

#### **4.3 Additional Information**

- 4.3.1 Nothing in these Directions shall prevent the Mine Surveyor from including any additional information on the Mine Workings Plan providing it is shown in a manner consistent with these Directions.
- 4.3.2 The Mine Surveyor shall show on the Mine Workings Plan any additional information as directed in writing by the Chief Inspector.
- 4.3.3 The Mine Surveyor shall ensure that any information which may create a danger either to the mine or to adjacent mines or to adjacent seams if worked, is recorded accurately on the plan.

#### **4.4 Endorsement**

Where any information shown on the Mine Workings Plan is in doubt or any other information that the Mine Surveyor considers requires endorsement, the Mine Workings Plan shall be suitably endorsed.

#### **4.5 Old Workings/Surveys**

Where possible, old workings/surveys should be changed to GDA 94 and suitably endorsed

#### **4.6 Certification**

- 4.6.1 The Mine Workings Plan sheets shall be certified by the Mine Surveyor
  - (a) in the case of the hard copy, in the Certification of Accuracy schedule after each 3 monthly period has been charted and

- (b) in the digital form, by creating a Compact Disc in the manner recorded by Compact Disc or as approved by the Chief Inspector.

4.6.2 The Mine Surveyor shall, by signing and dating the Certification of Accuracy schedule and by signing and dating the Compact Disc with a permanent marking pen, declare for that 3 monthly period that:-

- (a) the Mine Workings Plan has been prepared in accordance with these Directions, and,
- (b) the surveys shown on the Mine Workings Plan have been completed to an accuracy as prescribed in these Directions.

## 5. MINE RECORD TRACING

### (a) Digital

A digital image file of the Mine Workings Plan in accordance with Annexure "C" of these Directions.

### (b) Hard Copy

A copy of the Mine Workings Plan plotted on the appropriate medium in accordance with Annexures 'A' and 'B' of these Directions.

### 5.1 Authorisation

Required by Part 7, Clause 67 of the Coal Mines (General) Regulation 1999.

### 5.2 Supply of Mine Record Tracing as a Digital File

- 5.2.1 The Digital File shall be submitted to the Director General at the end of each 3 monthly reporting period in the form of Annexure 'C' of these Directions.
- 5.2.2 The Mine Manager or the Mine Surveyor shall advise the Director General that the digital file has been sent from the mine.
- 5.2.3 On receipt of a digital file from the mine, the Director General shall advise the Mine Manager or the Mine Surveyor within 7 days of receipt that the digital file has been received and is able to be read.
- 5.2.4 The Chief Inspector may from time to time vary, amend or replace, in the form of Annexure 'C', requirements for the lodgement of digital Mine Record Tracings.

### 5.3 Supply of Mine Record Tracing in Hard Copy

- 5.3.1 The Mine Record Tracing may be supplied in hard copy form on the appropriate medium at the end of each second 3 monthly reporting period in the form of Annexures 'A' and 'B' of these Directions.

5.3.2 The Mine Manager or Mine Surveyor shall advise the Director General that the hard copy Mine Record Tracing has been sent from the mine.

5.3.3 On receipt of the hard copy from the mine the Director General shall advise the Mine Manager or the Mine Surveyor within 7 days of receipt that the Mine Record Tracing has been received and is accepted.

5.3.4 The Director General, on receipt of the Mine Record Tracing shall archive the current copy. Redundant copies may be removed from the archive at the discretion of the Director General.

#### **5.4 Exemption**

The Chief Inspector may, should the circumstances so warrant, grant an exemption or allow an extension of time for the preparation of the hard copy of the Mine Record Tracing or the supply of the Digital Information.

#### **5.5 Catalogue Number**

The Mine Record Tracing cataloguing system shall continue for each mine according to a unique number identification system prefixed by the letters RT.

## **6. CLOSING PLANS**

### **6.1 Authorisation**

Coal Mines Regulation Act No. 67,1982.  
Part V Operation of Mines, Division 1 - Notice of Operations  
134 (1), (2), (3)

6.2 Where a mine or seam therein has not been worked for a period of 2 months the owner of the mine at the time of cessation of working shall send to the Chief Inspector:-

- a) The Mine Workings Plan or an accurate copy thereof, being a copy prepared by or under the supervision of the Mine Surveyor; and
- b) The Mine Record Tracing and in the case of an open cut, the Void Plan

### **6.3 Charting for Discontinuance or Abandonment**

6.3.1 These procedures are to be followed in the case of:-

- (a) the discontinuance of a mine or seam
- (b) the abandonment of a mine or seam

6.3.2 Upon the discontinuance or abandonment of a mine or seam the Mine Workings Plan and Mine Record Tracing shall be charted, dated and signed by the Mine Surveyor to the date of discontinuance or abandonment . The Mine Surveyor shall place a broken line around the extent of the workings at

the time of discontinuance or abandonment which shall be dated and initialled.

- 6.3.3 The note “Charted to date of Discontinuance or Abandonment ” as the case may be is to be shown in the “Schedule of Certification of Accuracy” above the date and the Mine Surveyor’s signature.
- 6.3.4 Upon the completion of the required charting or preparation the Chief Inspector is to be notified by the Mine Manager that the plans are available for inspection.
- 6.3.5 Where the workings of a mine are deemed discontinued or abandoned a digital record in a form suitable for archiving and future reference and a plan in the form of annexures ‘A’ and ‘B’ of these Directions on durable stable polyester matt material shall be supplied to the Chief Inspector.
- 6.3.6 Upon abandonment of a mine, unless otherwise directed in writing by the Chief Inspector, all survey records are to be submitted to the Chief Inspector for retention.
- 6.3.7 After the Chief Inspector is satisfied that the charting requirements have been met the Mine Record Tracing is to be forwarded, by a date specified by the Chief Inspector, to the Chief Inspector for preservation.

#### **6.4 Cessation of Duties of the Mine Surveyor**

- 6.4.1 Upon permanent cessation of duties of the Mine Surveyor the Mine Workings Plan and the Mine Record Tracing shall be charted, dated and signed by the Mine Surveyor. The Mine Surveyor shall show the date of the workings at the time of cessation on these plans in a similar manner to that of the 3 monthly survey period.
- 6.4.2 The note ‘Charted to date of Cessation’ is to be shown in the ‘Schedule of Accuracy’ above the date and the Mine Surveyors signature.
- 6.4.3 The Mine Surveyor shall by signing and dating the Certification of Accuracy schedule and by signing and dating the compact disc with a permanent pen declare for that period from the last 3 monthly period that:
- (a) The Mine Workings Plan has been prepared in accordance with these Directions, and
  - (b) The surveys shown on the Mine Workings Plan have been completed to an accuracy as prescribed in these Directions.
- 6.4.4 At the time of cessation of duties, and after certification under Section 6.4.3 has taken place, the Mine Surveyor shall produce on durable polyester film a hard copy of the Seam sheets, Void Plan sheets and Cross Section sheets

for retention at the office for the mine except where the Chief Inspector otherwise determines.

The outgoing mine surveyor should where possible (with the consent of the mine owner) take a copy of the sheets for his own record.

The incoming mine surveyor should make a copy of the sheets for a record of commencement of work.

## **7. OTHER PLANS REQUIRED**

Nothing shall prevent the Mine Surveyor from combining one or more of the following plans provided legibility of the combined plans is retained

### **7.1 Plans Required under Section 138 Coal Mines Regulation Act 1982**

Section 138 of the Coal Mines Regulation Act 1982 requires plans to be lodged as part of the written report for Minister's approval for all mining methods other than the bord and pillar system in underground coal mines. These plans should be prepared in accordance with the current Guidance Notes for the preparation of Applications to the Minister for approval to extract coal pursuant to the provisions of Section 138 of the Coal Mines Regulation Act 1982.

### **7.2 Plans Required for Approval for Highwall/Auger Mining**

These plans should be prepared in accordance with the current Highwall Mining Guidelines issued by the Department of Mineral Resources.

### **7.3 Ventilation Plan (Underground Mines)**

In accordance with the Coal Mines (General) Regulation 1999 Clause 66(1)(b), a Ventilation Plan is to be kept at the mine. The Ventilation Plan shall be at a scale of not less than 1:5000. Ventilation appliances will be symbolised in accordance with AS 4368.

The plan shall show stoppings, trapdoors, regulators, seals, prepared seal sites, overcasts, air crossings, ventilation doors, the direction and nature of ventilation, auxiliary fans, booster fans and air reading stations with quantity and gas monitoring points.

A legend will be shown on the plan depicting symbols used together with a graphical representation of the scale.

This plan is to be updated monthly.

### **7.4 Firefighting Plan (Underground Mines)**

In accordance with the Coal Mines (Underground) Regulation 1999 Clause 117 a Firefighting Plan is to be kept at the mine. The Firefighting Plan shall be at a scale not less than 1:10000. Firefighting appliances will be symbolised in accordance with AS 4368.

The plan shall show positions in which pipe mains , hydrants, isolation valves, fire substations and fire depots are situated.

This plan will also show the position of stoppings, trapdoors, regulators, seals, prepared seal sites, overcasts, air crossings, ventilation doors, belt conveyors, main electric supply cables, fixed electrical apparatus, telephones and the direction of ventilation in the roadways.

This plan is to be updated monthly.

### **7.5 Egress Plans (Underground Plans)**

In accordance with the Coal Mines (Underground) Regulation 1999 Clause 107 an Egress Plan is to be displayed at the mine. The Egress plan shall be of a scale not less than 1:10000. Symbols used will be in accordance with AS 4368.

This plan shall show main roads, the means of egress from each part of the mine to the surface and underground telephone stations.

This plan is to be updated 3 monthly or so often as it becomes outdated, defaced or destroyed.

### **7.6 Mines Rescue Plan (Underground Mines)**

A plan shall be kept at the mine for the purpose of mines rescue. The Mines Rescue Plan shall be of a scale of not less than 1:10000. An up to date copy is to be retained at the nearest responding Rescue Station for the mine. Symbols used will be in accordance with AS 4368 and AS 2916.

This plan shall show main access roads, the means of egress from each part of the mine to the surface, the positions of First Aid Stations, underground telephone stations, stoppings, trapdoors, regulators, seals, prepared seal sites, overcasts, air crossings, ventilation doors, booster fans, belt conveyors, main electric supply cables, fixed electrical apparatus, the direction of ventilation in the roadways, pipe mains, hydrants, isolation valves, fire substations and where fire depots are situated, air reading stations with quantity, gas monitoring points together with the route of such monitoring and any gas drainage mains and branches, known falls, accumulations of water, stowage identified as passible and non passible and any information identified as necessary for the dealing with an emergency at the mine.

This plan is to be updated monthly.

### **7.7 Surface Plan**

In accordance with the Coal Mines (General) Regulation 1999 Part 7, Clause 66(1)(c ) a surface plan is to be kept at the mine. The Surface plan shall be of a scale of not less than 1:4000 and shall cover the areas where mining operations have been or are being carried out. Symbols used will be in accordance with AS 4368.

In the case of an Underground Mine, the Surface Plan shall show all streets, roads, reservoirs, swamps, water bodies, unconsolidated surface deposits, railways, main pipelines and any other feature whether of the same or of a different kind.

In the case of an Open Cut Mine, the Surface Plan shall show all streets, roads, reservoirs, swamps, water bodies and any other permanent feature whether of the same or of a different kind which, if disturbed by mining operations, is likely to cause damage to or danger in the open cut workings.

## **7.8 Site Services Plan**

### **(Underground Mines)**

The site services plan shall be at a suitable scale Symbols used will be in accordance with AS 4368.

This plan shall show surface improvements and infrastructure, mine access points (portals, shafts), mine access roads, power reticulation including sub stations, water reticulation, compressed air reticulation, gas reticulation, sewer mains, telephone lines, magazines, fire fighting equipment (hydrants, extinguishers, depots), hazardous materials, dams, surface drainage and boreholes which can be used for gas testing.

This plan shall be updated as often as it becomes necessary.

### **(Open Cut Mines)**

The site services plan shall be at a suitable scale. Symbols used will be in accordance with AS 4368.

For areas of substantial surface improvements the plan shall show surface improvements and infrastructure, mine access roads, power reticulation (including isolation points), compressed air reticulation, gas reticulation, sewer mains, telephone lines, hazardous materials, firefighting equipment, dams and any information which may assist in the case of an emergency.

## **7.9 Plan Standards - General**

Any plan (including, where appropriate, plans subject to these Directions required to be drafted by the Mine Surveyor for purposes of the mine should be prepared in accordance with the relevant Australian Standard - in particular, but not limited to, AS 4368 as 2916 and the Australian Standard(s) for technical drawing.

## **7.10 Declaration**

A plan referred to in Section 7 of these Directions shall have an appropriate area on the plan allocated for certification by the relevant colliery official authorised by the Coal Mines Regulation Act 1982 and or the Regulations made pursuant to that Act, for information on that plan. Such certification shall indicate the origin of the information and that the information shown on the plan is truly represented.

## 8. NON DIGITAL PLANS

### 8.1 Mine Workings Plans

Where the Chief Inspector so approves, the Mine Workings Plan can continue to be produced by non digital means. In those cases:-

- 8.1.1 The plan shall be drawn on durable, stable polyester matt drafting material and shall be in the form of Annexures 'A' & "B" of these Directions.
- 8.1.2 All drafting and printing is to be in dense black ink with the exception of information required by clauses 8.1.3 and 8.1.4
- 8.1.3 Pillar Extraction, longwall mining, open cut and barrier penetration approvals are to be shown in red ink.
- 8.1.4 Contours are to be shown in blue ink.
- 8.1.5 Care should be taken to ensure that the inks used bond satisfactorily with the material.
- 8.1.6 The overall sheet size of the plan shall be 1189mm x 841mm (A0 size International Standards Organisation). (A plan sheet to the required specification is available from the Director-General).

### 8.2 Compilation

In compiling a Mine Workings Plan by non digital means, the following shall be adhered to:-

- 8.2.1 Values on a plan compiled on the Integrated Survey Grid System shall be drawn pursuant to Clause 2.19 and sectionalised into sheets. Each sheet shall correspond to the identification of the Integrated Survey Grid Sheet System unless the Chief Inspector otherwise directs.
- 8.2.2 The Integrated Survey Grid is to be shown on the plan in full lines at 500 metre grid intervals together with the values in metres.
- 8.2.3 A plan compiled on MGA94 shall be drawn pursuant to Clause 2.16.

- 8.2.4 Plotting of all surveys on a plan made in accordance with these Directions shall be done so that all points in the survey are correctly plotted within 1mm plan scale of their calculated co-ordinate position.

### 8.3 Mine Record Tracing

Where the Mine Record Tracing for a non digital Mine Workings Plan is produced manually:-

- 8.3.1 The Mine Record Tracing sheets shall be prepared on a suitable stable polyester matt drafting film in the form of Annexures 'A' & 'B' of these Directions.
- 8.3.2 All drafting and printing is to be in dense black ink with the exception of information required by clauses 8.3.3 and 8.3.4
- 8.3.3 Pillar extraction, longwall mining, open cut and barrier penetration approvals are to be shown in red ink.
- 8.3.4 Contours are to be shown in blue ink.
- 8.3.5 Care should be taken to ensure the inks used bond satisfactorily with the material and will reproduce satisfactorily.  
If the Mine Record Tracing is produced photographically:-
- 8.3.6 The reproduction must be an accurate same scale copy of the Mine Workings Plan with no error or distortions.
- 8.3.7 The reproduction shall be on a durable, stable polyester matt drafting material.

### 8.4 Charting to Date

Where the Mine Record Tracing is manually or photographically updated, the hard copy Mine Record Tracing is to be charted to date every six months. The Chief Inspector shall make the Mine Record Tracing available for the charting to be carried out. A date shall be specified by which time the charting is to be completed and the tracing forwarded to the Department of Mineral Resources. The Mine Record Tracing shall be considered as being charted to date when the workings surveyed during the last 3 month period are charted on the tracing.

### 8.5 Supply of Mine Record Tracing

- 8.5.1 The Mine Record Tracing shall be forwarded to the Chief Inspector within three months after the commencement of mining operations.
- 8.5.2 The Mine Manager or the Mine Surveyor shall forward a notice to the Director General advising the Mine Record Tracing has been sent from the mine.

- 8.5.3 On receipt of a Mine Record Tracing from the Mine, the Director General shall notify the Mine Manager or the Mine Surveyor, in writing within 7 days of receipt that the Mine Record Tracing has been received.
- 8.5.4 On receipt of a Mine Record Tracing from the Department of Mineral Resources, the Mine Manager or the Mine Surveyor shall notify the Director General, in writing within 7 days of receipt that the Mine Record Tracing has been received.
- 8.5.5 The Mine Manager or the Mine Surveyor shall notify the Director General in writing within at least 7 days prior to the scheduled return/lodgement date of the Mine Record Tracing if an extension of time is required to update the Mine Record Tracing.

## **8.6 Plan of Abandonment or Discontinuance**

Where a mine or seam of a mine is abandoned or discontinued the Chief Inspector shall make the manually produced Mine Record Tracing available to the Mine Manager or the Mine Surveyor for charting to date of discontinuance or abandonment to be carried out.

## ANNEXURE A

### INFORMATION TO BE REPRESENTED ON HARD COPY OF MINE WORKINGS PLAN AND MINE RECORD TRACING

A1. The colliery holding shall be mapped on Seam Workings Sheets at a reduction ratio of 1:4000 sufficient to cover the extent of the colliery. In the case where such a scale limits the clarity, sheets at a reduction ratio of 1:2000 may be used provided that these sheets conform to the 1:4000 format adopted for the mine.

A2. The Seam Working Sheets, the Void Sheets and the Cross Section Sheets shall be in the format of Annexure 'B' Appendix i, ii and iii, having external dimensions of 841 mm x 1189 mm. (A0 size International Standards Organisation)

A3. The Seam Working Sheets and the Void Sheets shall have a mapping area 750 mm x 625 mm with grid 125 mm x 125 mm. This equates to a 2500 metres x 3000 metres drawing area, with a 500 metre grid if prepared at a reduction ratio of 1:4000 or a 1250 metre x 1500 metre drawing area with a 250 metre grid if prepared at a reduction ratio of 1:2000.

A4. Full lines are to be shown for the Map Grid of Australia at 500 metre intervals if prepared at a reduction ratio of 1:4000 or 250 metre intervals if prepared at a reduction ratio of 1:2000 commencing at the lower left corner of the mapping area. The extremities of each grid line shall be annotated with the grid value. The grid of the plan shall be numbered in whole 500 or 250 metre intervals.

A5. Integrated Survey Grid ticks are to be shown at 500 or 250 metre intervals. The eastings and the northings of the grid ticks are to be shown in *italics* outside the mapping area.

A6. Each Seam Working Sheet shall show the following detail:-

A6.1 In the heading :-

A6.1.1 The name of the Colliery eg **The Mine Workings of Acme Colliery.**

A6.1.2 The Mine Record Tracing number eg **RT 999**

A6.1.3 The Parish and County names and the 1:25000 sheet map name(s) and number(s).

A6.1.4 The name of the seam being worked and the name of other seams known to have been worked in that sheet area, together with the RT number of the Colliery that worked or works in that seam.

A6.1.5 The number of the sheet and the number of sheets that make up the Colliery Holding eg **Sheet 1 of 6 sheets.**

A6.2 In the map surround :-

- A6.2.1 The reduction ratio and a graphical (bar) scale together with a statement that all measurements are in metres ,
- A6.2.2 A north point indicating grid north,
- A6.2.3 A schedule of symbols used on the particular sheet,
- A6.2.4 A sheet index showing :-
  - (a) All the sheets necessary to cover the colliery holding
  - (b) The number of each sheet
  - (c) An outline of the Colliery Holding
  - (d) An outline of the Colliery workings
  - (e) The particular sheet shown by a heavy outline,
- A6.2.5 A section of the seam and its coordinates. Two sections shall be shown if the seam increases or decreases in thickness by 25%, or the seam is affected by intrusions, sills or stone bands. The section of the seam being worked or the section worked should be shown,
- A6.2.6 A section of the stratum from the surface to the basal seam,
- A6.2.7 A schedule of endorsements made by the Mine Surveyor,
- A6.2.8 A schedule of second working, barrier penetration and open cut approvals granted by the Minister,
- A6.2.9 A schedule of certificates of accuracy of the sheet,
- A6.2.10 The origin of levels and the grid bearing and terminal survey stations of the Mine Baseline,
- A6.2.11 A schedule or schedules of survey marks and bench marks containing their identification, coordinates and height,
- A6.2.12 A schedule of shafts, drifts, boreholes, staple shafts or bins

A6.3 In the mapping area

- A6.3.1 All detail shall be plotted at a reduction ratio of 1:4000 or 1:2000
- A6.3.2 The following detail will be shown :-
  - (a) The workings of the mine in that seam
  - (b) Panel names and sufficient cut through numbers to identify the numbering system.
  - (c) The position of all shafts, drifts, staple shafts and bins within that sheet.
  - (d) The position of all boreholes within that sheet. Where it is not practical to show all boreholes on the seam workings sheet, a separate borehole plan shall be produced as an overlay. A reference on the seam workings sheet is required to indicate the existence of the borehole overlay sheet. All boreholes should be identified as to type and name.
  - (e) The date and the initial of the Mine Surveyor shall be shown in the location corresponding to the position of the workings at the end of the survey reporting period in the format provided by AS4368.
  - (f) Cadastral boundaries and property identifier annotated in 'background'.
  - (g) The position of survey stations or bench marks and their identification.

- (h) Contour lines of the floor of the seam at each one metre, two metre or five metre interval whichever predominantly provides contour representation on the seam workings sheet of horizontal distance not exceeding 2.5cm.
- (j) Potential sources of inrush, being tidal waters, impounded waters, river, stream, dam, reservoir, aquifer, unconsolidated surface deposits or other natural features whether the same or of a different kind of nature which, if disturbed by mining operations, is likely to cause damage or danger in a mine.
- (k) Outline of limit of highwall mining and augering. The maximum extent of this mining in the seam is to be shown and identified. Approximate levels into the extremity of highwall mining and augering are to be shown every 50m.
- (l) The position of :-
  - (i) the top water level of any dam prescribed under The Dams Safety Act, 1978
  - (ii) the restricted zone of the prescribed dam as notified under The Dams Safety Act, 1978
- (m) Emplacement areas.
- (n) The position of any barriers, protective pillars or restrictive zones to be left in the seam pursuant to:-
  - (i) The provisions of the Coal Mines Regulation Act, 1982,
  - (ii) any leases in force granted or deemed to have been granted under the Mining Act, 1992
  - (iii) as a condition of any approval, consent direction or concurrence given in accordance with the provision of the aforesaid Acts or Leases.
- (o) The position and details of all known outcrops, faults, dykes, cinder belts and significant dislocations of the seam.
- (p) The areas in which mining approvals have been granted by the Minister.
- (q) Cross section lines indicative of the position of the cross sections shown on the Cross Section Sheets.
- (r) Parish and County boundaries with annotated identification.
- (s) Colliery Holding boundaries with corner co-ordinate values annotated.
- (t) Mining Lease boundaries
- (u) All workings in the seam within 100 metres of the current workings including workings of adjacent mines.
- (v) for underground mines - an outline of all workings in any seam in any direction within 100 metres of the current seam being worked.

A7. Each Void Plan Sheet shall show the following detail:-

A7.1 In the heading:-

- A7.1.1 The name of the Colliery eg **The Mine Workings of Acme Colliery.**
- A7.1.2 The Mine Record Tracing number eg **RT 999**
- A7.1.3 The Parish and County names and the 1:25000 sheet map name(s) and number(s).
- A7.1.4 The name of the seam being worked and the name of other seams known to have been worked in that sheet area, together with the RT number of the Colliery that worked or works in that seam.
- A7.1.5 The number of the sheet and the number of sheets that make up the Colliery Holding eg **Sheet 1 of 6 sheets.**

A7.2 In the map surround:-

- A7.2.1 The reduction ratio and a graphical (bar) scale together with a statement that all measurements are in metres ,
- A7.2.2 A north point indicating grid north,
- A7.2.3 A schedule of symbols (refer to AS-4368 and AS-2916) used on the particular sheet,
- A7.2.4 A sheet index showing :-
  - (a) All the sheets necessary to cover the colliery holding
  - (b) The number of each sheet
  - (c) An outline of the Colliery Holding
  - (d) An outline of the Colliery workings
  - (e) The particular sheet shown by a heavy outline,
- A7.2.5 A section of the stratum from the surface to the basal seam,
- A7.2.6 A schedule of endorsements made by the Mine Surveyor,
- A7.2.7 A schedule of open cut highwall auger mining approvals and emplacement area approvals granted by the Minister,
- A7.2.8 A schedule of certificates of accuracy of the sheet,
- A7.2.9 The origin of levels and the grid bearing and terminal survey stations of the base line,

A7.3 In the mapping area:-

- A7.3.1 All detail shall be plotted at a reduction ratio of 1:4000 or 1:2000
- A7.3.2 The following detail will be shown :-
  - (a) A broken line corresponding with the position of the coal face at the last survey together with the Mine Surveyors initials and date.
  - (b) Cadastral information in background line type.
  - (c) Contour lines along the floor of the final working section highwalls, ramps, benches etc.
  - (d) Outline of limit of highwall mining and auguring. The maximum extent of this mining in other seams is to be shown and identified.

- (e) Two sections of the strata sunk through in that sheet appropriately symbolised and their co-ordinate positions, identification, borehole collar levels and seam floor level of each seam intersected.

#### A8 Cross Section Sheet

A8.1 A separate cross section sheet shall be provided corresponding to each sheet of the plan prepared in accordance with Clause 4.9. Where separate plans are used to record workings in two or more seams one cross section sheet will suffice to illustrate composite sections of the seams worked, within the sheet area. Each seam is to be identified by name on the cross section sheet.

A8.2 At least three cross sections shall be shown.

A8.3 Each cross section shall be compiled from information gained from the actual workings and not from borehole information.

A8.4 Each cross section is to be updated at the end of the quarterly survey.

A8.5 Each Cross Section Sheet shall show the following detail:-

A8.5.1 In the heading

- (a) The name of the Colliery eg **The Mine Workings of Acme Colliery.**
- (b) The Mine Record Tracing number eg **RT 999**
- (c) The Parish and County names and the 1:25000 sheet map name(s) and number(s).
- (d) The number of the sheet and the number of sheets that make up the Colliery Holding eg **Sheet 1 of 6 sheets.**

A8.5.2 In the map surround:-

The reduction ratio (1:4000 horizontal and 1: 2000 vertical [or such scale be clear and legible]) and a graphical (bar) scale together with a statement that all measurements are in metres ,

A8.5 3 In the mapping area:-

- (a) The area from which coal has been extracted during the survey quarter is to be shown. The strata need not be detailed.
- (b) Each cross section also shall show:-
  - (i) Identification of the section.
  - (ii) The date of the survey quarter.
  - (iii) Levels at the top of the batter and the working floor.
  - (iv) The line of the original surface.
  - (v) Vertical graduations at 10 metre intervals.

**ANNEXURE 'B'****SHEET FORMATS FOR PLANS**

- Appendix (i) Seam Working Sheet
- Appendix (ii) Void Sheet
- Appendix (iii) Cross Section Sheet

Copies and examples of Seam Working, Void and Cross Section Sheets are available and may be inspected at the Department of Mineral Resources, 29-57 Christie Street, St Leonards, 2065.

**ANNEXURE 'C'****DIGITAL MINE RECORD TRACINGS**

The overall concept is to get the workings of a Colliery into the Department of Mineral Resources GIS with the minimum involvement of operators. This means the Department of Mineral Resources not having to tag various attributes to points, arcs or polygons. The digital information shall be recorded on a write once read many Compact Disc

The file format to be used for the transfer of digital Mine Record Tracings will be as directed in writing by the Chief Inspector and is to be compatible with the Department of Mineral Resources GIS software.

Theme layers from the digital Mine Workings Plan should be named and allocated attributes in the following manner:-

| <u>LAYER</u>                | <u>NAME</u> | <u>ATTRIBUTES</u>   |
|-----------------------------|-------------|---|
| Colliery Holding            | holding     | Colliery Name   |
| First Workings              | work1       | Seam Name<br>Colliery Name<br>RT Number<br>Period worked (date)                       |
| Second Workings             | work2       | Seam Name<br>Colliery Name<br>RT Number<br>Period worked (date)                       |
| Date lines/Polygons         | dateline    | Date  |
| Seam/Working floor contours | contour     | Height  |
| Mining Approvals            | approval    | Approval date<br>File number<br>Seam  |
| Survey Stations             | survey      | Name<br>Symbol Type (number)<br>XYZ co-ordinates                                      |
| Grid Lines                  | grid        | Value ie easting/northing   |
| Cadastre                    | cadastre    | Lot number/DP number<br>Source (DCDB, own survey,<br>compilation from original plans) |

| <u>LAYER</u>   | <u>NAME</u> | <u>ATTRIBUTES</u>  |
|--|-------------|--|
| Barriers/Protective Pillars<br>(protective, special etc)<br>Restricted Zones<br>Foreshore Protection Zone<br>Angle of Draw Zones | barrier     | Type (external, adjacent<br>workings, water)<br>Seam<br>Approval (Order) date<br>File number<br>Approval (Order) date<br>File number |
| Geology<br>Displacement  | geology     | Symbol type  |
| Shafts<br>Drifts<br>Boreholes (from surface)   | minfra      | Name_ID<br>Borehole log file?  |
| Surface Structures<br>Transmission lines<br>Pipelines<br>Major structures  |             |  |