

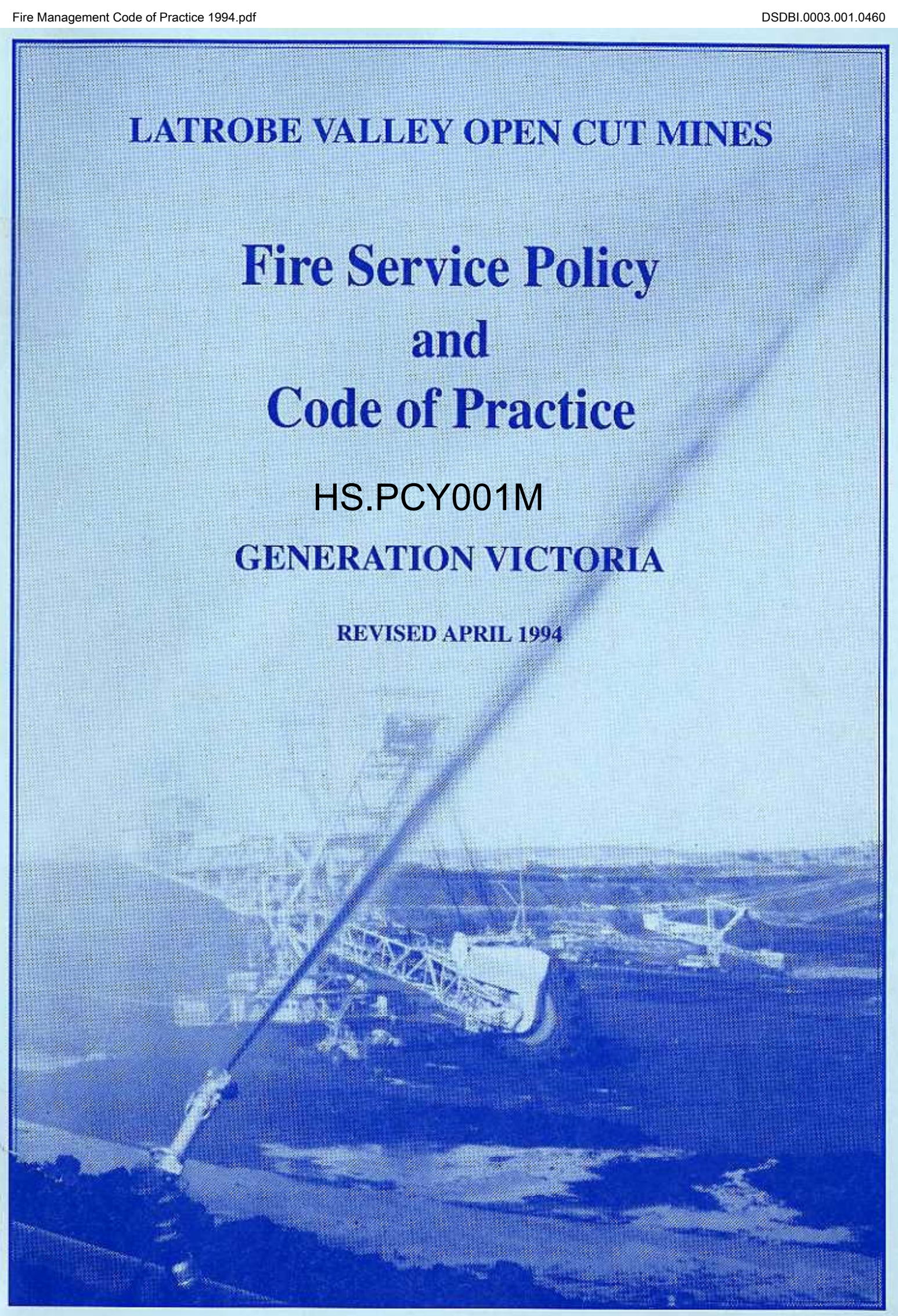
# **LATROBE VALLEY OPEN CUT MINES**

## **Fire Service Policy and Code of Practice**

**HS.PCY001M**

**GENERATION VICTORIA**

**REVISED APRIL 1994**



LATROBE VALLEY OPEN CUT MINES

FIRE SERVICE POLICY & CODE OF PRACTICE

GENERATION VICTORIA

Revised April 1994

"The Fire Service Policy for Open Cut Mines, Bunkers and their surroundings is to ensure adequate:

- Management Accountability
- Preparedness and Planning
- Training of Personnel
- Installed Fire Protection Systems
- Fire Extinguishing Capability
- Emergency Procedures

to reduce the potential of fire initiation, to rapidly extinguish any fires and to minimise the risk to personnel and plant."

## PURPOSE

The purpose of this Policy is to:

- . Establish a clear strategy and standard for open cut fire protection,
- . Ensure an understanding and awareness of the effects of fire and the requirements of fire protection in open cut mines,
- . Provide a framework which ensures that fire protection objectives are co-ordinated, coherent and translatable into action.

## INTRODUCTION

This Fire Service Policy and associated Code of Practice contains the essential requirements and operating procedures for fire protection services to be provided for the Latrobe Valley Open Cut Coal Mines and their surrounding area.

Of prime importance is the protection of personnel and minimisation of risk to high capital assets so necessary for the provision of electricity supply to the State of Victoria.

Recognition is given to the high risk during adverse weather conditions of fires emanating from external sources (bushfires) entering the open cut. Also, throughout the year there are many internal sources of fires from installed plant, trains, vehicles and mobile equipment, personnel and work activities within the open cut, external conveyors and bunker systems. Large quantities of combustible materials such as coal, oil, conveyor belt etc. exist in the open cuts. Experience has shown that extinguishing open cut fires is difficult and time consuming and can only be successfully achieved by adequate preparation of personnel and the provision of appropriate equipment and emergency procedures.

The Mine Manager is responsible to ensure the policy requirements are met.

This policy fulfils the requirements of the Country Fire Authority Act 1958 for protection against fire, and the Emergency Management Act 1986 for control by the Co-ordinator in Chief, should a significant event occur.

The Policy recognises the CFA Chief Officers Standing Order relating to "CFA and SECV joint emergency operations in the Latrobe Valley".

The Code of Practice outlines acceptable standards for meeting the policy throughout the open cut and its environs. These standards include the protection of personnel, plant and equipment, exposed coal and external environs, and the provision of resources for protection, water reticulation, mobile water supply, mobile plant and equipment, organisation, communications and Fire Instructions. The Code Of Practice also lists acceptable materials and practices and the appropriate approval procedure for extending these lists.

## BACKGROUND

This policy has evolved over many years of open cut operation and draws on the experience gained from general fire service operation and from several major open cut fires. These major events include:

- . Following a major fire in 1944 the Stretton Royal Commission made a number of significant recommendations relating to external forests and to internal water supply and sprays which are still a major part of this Policy.
- . Following the major 1977 fire at Morwell Open Cut a comprehensive review of fire protection was carried out and the basis of the current policy was laid down.
- . The Policy was last revised in November 1984.

## STATUTORY REQUIREMENTS

This Policy fulfils the requirements of the relevant emergency services acts with particular reference to the following:

- . Country Fire Authority Act 1958
  - . Section 43(1) "It shall be the duty of every municipal council and every public authority to take all practicable steps (including burning) to prevent the occurrence of fires on and to minimise the danger of the spread of fires on or from - any land vested in it or under its control or management".
  - . Notwithstanding, Section 20 of this Act gives the Country Fire Authority "The duty of taking superintending and enforcing all necessary steps for the prevention and suppression of fires and for the protection of life and property in case of fire".
  - . Section 30 gives the Chief Officer of the Authority powers to take control and direction which may be exercised "Where the Chief Officer believes on reasonable grounds that there is danger of fire occurring or where a fire is burning or has recently been extinguished".
- . Emergency Management Act 1986
  - . Sections 6 and 16, gives the Co-ordinator in Chief of Disaster Control, or other delegated person, authority to ensure that adequate measures are taken by Government Authorities to prevent and respond to emergencies and to assume a co-ordinating role in the implementation of Displan. (Which includes an actual or imminent occurrence of fire)
- . Dangerous Goods Act 1985 and regulations (1990)
  - . Section 4 states objectives of the Act which among other things

"promote the safety of persons and property" in relation to dangerous goods, and "ensure that adequate precautions are taken against certain fires, explosions," etc.

- . Occupational Health and Safety Act 1958
  - . Section 21. "An employer shall provide and maintain so far as is practicable for employers a working environment that is safe and without risks to health."

#### **POLICY PRINCIPLES AND OBJECTIVES**

This Fire Service Policy and Code of Practice is based on the establishment of a system of fire protection in open cut mines, to achieve the following principles:

- . Protection of all personnel within the open cut,
- . Protection of all plant and equipment required for the maintenance of coal winning operations, and
- . Protection of coal reserves.

The policy is to prevent or extinguish any fire which may threaten the coal winning activities, and to restore normal operating conditions as early as possible after a fire.

Different levels of protection are defined for various areas of the mine based on the risk to personnel, plant, equipment and coal reserves, and the consequences should a fire occur.

The necessarily large area of exposed coal requires an extensive water reticulation, spray network as well as an adequate water supply. The measures laid down in the Code of Practice are those considered to provide the necessary level of protection with due regard to cost and operational requirements. Fire protection in the open cuts is based on the following objectives:

- . Define and continually evaluate open Cut fire safety programs, goals and objectives. Formulate and revise emergency response and recovery plans and fire instructions.
- . Ensure fire prevention and suppression works are pre-planned and coordinated with neighbors and relevant agencies likely to be affected by open cut activities.
- . Integrate fire safety procedures into all work activities and planning in the open cuts.

- . Provide and maintain an adequate communications system to mobilise and co-ordinate fire fighting facilities.
- . Provide adequate water supplies, reticulation systems and spray systems, together with the trained personnel necessary for the operation of these systems, to prevent or suppress fires.
- . Provide adequate training skills, facilities and exercises (Including participation with other relevant agencies) to ensure that each employee understands the appropriate techniques and mine procedures for fighting brown coal fires and undergoes refresher training sessions at regular intervals.
- . Reduce excesses of loose dry coal in the open cut, conveyors and coal bunker areas, through the application of appropriate design measures and good housekeeping practices.
- . Effective limitations on ignition sources such as cutting and welding, mobile equipment and motor vehicles and safe storage of potentially inflammable materials.
- . Effective land use planning controls and management of forested, wooded or grassed areas external to the open cut to inhibit the progress and effect of an external fire.
- . Provide and maintain adequate back-up facilities to fight and control any fire.
- . Continually monitor changing fire protection codes and standards, especially nationally recognised documents that set benchmarks for open cut mining.
- . Monitor and evaluate all open cut fire incidents and losses, and monitor experience in other mining operations to identify and address loss potential.

In order to properly protect all parts of the open cut, pipework, sprays and other facilities for fire service are to be installed as laid down in the Code of Practice.

#### CODE OF PRACTICE

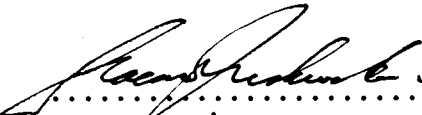
The Fire Service Code of Practice is part of this Policy. It contains standards of fire protection to be maintained for various locations and acceptable items of equipment to be used in the open cut mines and surrounds. The Code of Practice is presented in the format of a Quality Assurance Procedures Document. It details the required procedures and practices, the responsibilities, and documentation required to ensure the procedures and practices are maintained.

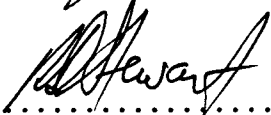
Improvements in Fire Protection equipment and methods are on-going and the Code of Practice will be the vehicle through which new procedures and practices are approved for general implementation.


**ENDORSEMENT**

This Fire Service Policy and the associated Fire Service Code of Practice is formally promulgated for use in all Generation Victoria Open Cut Coal Mines in the Latrobe Valley from the following date of endorsement.

**SIGNED BY:**

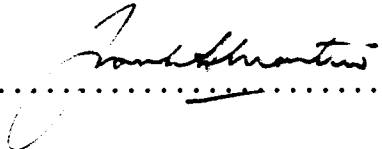
Mine Manager, Loy Yang .....  ..... Graeme Freshwater

Mine Manager, Morwell .....  ..... Rob Stewart

Mine Manager, Yallourn .....  ..... Chris Fraser

**ENDORSED BY:**

Chief Executive Officer, Generation Victoria

.....  ..... Frank Martin

DATED: ..... 6/9/94 .....

**LATROBE VALLEY OPEN CUT MINES**

**FIRE SERVICE CODE OF PRACTICE**

**GENERATION VICTORIA**

Revised April 1994



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3. Examples of limiting unwetted areas.
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1. Rotary sprays
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**APPENDIX C TESTING AND ACCEPTANCE PROCEDURES**

- . Example.

**APPENDIX D FIRE SERVICE AUDIT - CHECKLISTS**

- . Example.

## **FIRE PROTECTION CODE OF PRACTICE**

### **A. PURPOSE**

The purpose of this Code of Practice is to achieve the Fire Protection Policy requirements by providing acceptable operating procedures for fire protection services for Open Cut Coal Mines. This will be provided by:

- . Establishing a clear strategy and standard of open cut fire protection, (a) to protect all personnel within the open cut, (b) to protect all plant and equipment required for the maintenance of coal winning operations, and (c) to protect coal reserves to enable continuation of coal winning activities.
- . Ensuring all personnel associated with the open cut mines or the fire service systems have an understanding and awareness of the effects of fire, the requirements of fire protection, and are aware of their responsibilities.
- . Providing a framework which ensures that fire protection objectives are co-ordinated, coherent and translatable into action and to ensure that these objectives are carried out.
- . Ensuring that relevant statutory regulations are met and that a co-operative and co-ordinated approach is undertaken with relevant statutory authorities. ie. CFA.
- . Ensuring that the equipment used for fire service activities meets relevant operational standards.
- . Setting procedures for the testing of new equipment and practices before approved for general use in the open cuts.

### **B. SCOPE**

This Code of Practice is applicable to all Generation Victoria Open Cut Coal Mines in the Latrobe Valley.

### **C. DEFINITIONS**

#### **RESPONSIBLE PERSONNEL**

- . Emergency Services Liaison Officer - The person responsible to ensure proper liaison occurs between Victoria Generation and the external emergency agencies.
- . Fire Service Officer - The person responsible for the day to day fire service activities within the mine.
- . Generation Victoria Emergency Commander - The senior mine Supervisor/Officer who may take control of Generation Victoria

resources if an emergency exists.

- . Incident Controller (Or DISPLAN Co-ordinator) - The senior officer of an external agency which may take control of an emergency involving the mine.
- . Mine Manager - The person responsible for all activity within the mine and who has the principal management function.
- . Senior Availability Officer - The person responsible for mine management outside normal day work hours or in the absence of the Mine Manager.
- . Shift Production Supervisor - The person responsible for fire service activities within the mine outside normal day work hours until such time as the Fire Service Officer or Senior Availability Officer takes control.

#### MINE AREA

- . Batters - The individual steeply sloping surfaces between working levels OR the overall batter from the bottom of the mine to grasslevel consisting of individual batters, benches and berms.
- . Benches - The relatively flat surfaces created by the individual working levels.
- . Berms - Relatively flat surfaces created in batters between working levels to stabilise the batter or intercept fretted material.
- . Bunker - A structure used for the short term storage of mined coal prior to its use in a power station or other means.
- . Exposed Coal Areas - All areas of exposed coal within the mine.
- . Operating Areas - Those areas where excavation or transport plant operate, including working and transport levels, reserve coal areas, regular travel routes for dredgers and slew conveyors, and service corridors for essential operational services.
- . Reserve Coal Areas - Those areas of exposed coal between adjacent face conveyors but not including the conveyor corridor and the excavation plant operational Corridors.
- . Transport Level - An individual level within the mine on which a face conveyor is located.
- . Worked Out Batters - Those batters within the mine not regarded as being within operational areas.
- . Worked Out Floor - Those floor areas within the mine not regarded as being within operational areas.

- . Working Level - An individual level within the mine from which excavation plant operates. (NOTE: If a dredger operates on more than one level, all of these levels are defined as working levels.)

Refer to Appendix A.1 for a diagrammatic layout of the various mine features.

#### PLANT

- . Excavation Plant - Bucket wheel excavators/dredgers.
- . Pipelines - For purpose of definitions, pipelines should be referred to in descending size from the reservoir as:
  - . Main supply lines
  - . Ring mains
  - . Feeders
  - . Droppers
  - . Header feeders
  - . Headers

Refer to Appendix A.2 for a diagrammatic layout of these pipes.

- . Transport Plant - Conveyors of various categories. ie. Face conveyors, Mobile slew conveyors, Trunk conveyors, Rising conveyors, Stackers. (For both coal and overburden).

#### D. PROCEDURES AND PRACTICES

The detailed procedures and practices which fulfill the Fire Service requirements are contained in Sections 1 to 9 of this Code of Practice.

#### E. RESPONSIBILITIES

All personnel are responsible:

- . To be alert and on watch for any outbreak of fire,
- . To take action to extinguish any fire immediately it is observed,
- . To report the fire to the Fire Service Officer as soon as possible,
- . To assist other personnel already fire-fighting,
- . To advise the Fire Service Officer of any fire hoses, fire extinguishers or any other fire-fighting equipment that has been used so that replacement can be maintained,
- . Not to use fire-fighting equipment for purposes other than

fire-fighting unless authorised by the Fire Service Officer,

- . To report to the Fire Service Office any missing or incomplete fire-fighting equipment.

Fire Instructions at individual mines will detail specific responsibilities for the Mine Manager, Senior Availability Officer, Fire Service Officer, Shift Production Supervisors and other personnel who work at the mine. Some specific responsibilities as outlined in this Policy and Code of Practice are highlighted below and referenced to the pertinent section.

- . **The Mine Manager** is responsible for all fire protection within the Mine and the surrounding associated area as outlined in this Policy and Code of Practice. Specific responsibilities include:
  - . Authorisation of fire instructions and emergency procedures, (See Sections F and 8.7),
  - . Ensuring fire service audits are carried out and recommended corrective actions taken, (See Section F),
  - . Declaration of fire alert days, (See Section 8.8)
  - . Notification to the CFA (Via. Essential Services) where a fire has the potential to spread beyond the initial point of ignition or for other emergency situations. (See Section F)
- . **The Senior Availability Officer** will assume the Mine Managers responsibilities outside normal day work hours.
- . **The Fire Service Officer** is responsible to comply with this Policy and Code of Practice for the day to day fire service activities within the mine. Specific responsibilities include:
  - . Monitoring and reporting on the status of the mine in relation to this Fire Service Policy and Code of Practice. (See Sections F and 1 to 8)
  - . The operation and maintenance of the fire protection installations and related services in the mine. (See Sections 1 to 8)
  - . Fire fighting operations.
  - . Reporting all fires. (See Section F)
  - . Providing support to the CFA Incident Controller or the DISPLAN Co-ordinator, where required, in the event of an emergency situation.
  - . Inspecting all fire fighting equipment.
  - . Training all personnel in fire fighting methods.

- . Issuing of welding and burning permits and defining precautions. (See Section F).
- . Arranging approval of vehicles for access onto coal areas within the mine. (See Sections F, 5.3 and 5.4).
- . **The Shift Production Supervisor** is responsible for the activities of the Fire Service Officer outside of normal daywork hours or until relieved, and for the following:
  - . Reporting all fires to the Fire Service Officer or Senior availability Officer.
  - . Ensuring all personnel follow Fire Instructions.
- . **The Design Engineer** has the responsibility to ensure all work under their control meets the requirements of this Policy and Code of Practice.
- . **The Installation Engineer** has the responsibility to ensure that all fire service installation work under their control meets the requirements of this Policy and Code of Practice.

#### F. DOCUMENTATION

Documentation and reporting required to be carried out by each mine as part of the fire service procedures includes the following:

- . Emergency Control Procedures for various situations where there is a threat to mine assets or personnel. Fire Instructions and the Fire Fighting Organisation shall form part of these procedures which will be updated by the beginning of October each year.
- . An annual internal audit of all fire service facilities, systems, and procedures, to ensure compliance with both Statutory Requirements and the requirements of this Policy and Code of Practice. The Mine Manager shall arrange for a formal inspection to be carried out and a report presented to himself in September/October of each year regarding compliance with the Policy and Code of Practice, action to be taken where non-compliant and the status of fire protection facilities, systems and procedures. Checklists contained in Appendix D. are a basis for this inspection and report.
- . An annual external audit involving senior managers from other Business Units conducted each November/December.
- . Reporting immediately to the Fire Service Officer or Shift Production Supervisor all individual occurrences of fires that occur within and in the near vicinity of the open cut mines.
- . Reporting immediately to the Mine Manager or Senior Availability Officer and to Emergency Services (For notification of the relevant



CFA District Officer), all occurrences of fires that occur within and in the near vicinity of the open cut mines where a fire has the potential to spread beyond the initial point of ignition. (Refer to mines Emergency Procedures) A written report is to be submitted to the Mine Manager subsequent to each of these fires detailing the cause, nature, damage involved, method of control, etc.

- . A written report is to be submitted to the Mine Manager each month outlining the cause, nature, damage involved, method of control, etc. of all individual occurrences of fire.
- . A permit must be obtained from the Fire Service Officer during normal day work hours, or Shift Production Supervisor at other times, before any of the following work is carried out:
  - . Welding, cutting or grinding,
  - . Use of open flame appliances,
  - . Use of portable internal combustion engines.

Restrictions to the issue of permits on Fire Alert Days and Total Fire Ban Days should be understood.

- . Approval must be obtained from the Fire Service Officer before any Motor vehicle can be driven on exposed coal areas. An inspection for compliance of the vehicles braking and exhaust systems will be required before approval is given.
- . A testing and acceptance procedure for new materials and methods to ensure that they meet broad compliance within the open cuts and from any other relevant bodies before inclusion in the Code of Practice. Examples of testing and acceptance procedures are contained in Appendix C. (Approval by all mine managers is required before inclusion in the Code of Practice.)

#### **G. REVIEW**

A committee of review will be formed as needed to assess and approve new equipment and techniques which meet the required test and acceptance procedures, before inclusion in the Fire Service Code of Practice. The committee will consist of the Mine Manager, or a nominated Fire Service representative from each mine and the Manager, Technology & Services, or a nominated representative. New equipment and techniques will be ratified by the Mine Managers and the Manager, Technology & Services, before inclusion in the Code of Practice. The committee shall first consult with the Manager Risk Management and Claims if there is a likelihood of materially increasing Generation Victorias' Risk.

## DETAILED PROCEDURES AND PRACTICES

### 1. INTRODUCTION

Generation Victorias' Brown Coal Open Cuts have suffered a number of fires over the years. Many of these have emanated from external "Bush Fires". Following a major fire in 1944 the Stretton Royal Commission made a number of significant recommendations relating to external forests and to internal water supply and sprays which are still a major part of the Fire Prevention Policy. However, fires have also been started from within the mine due to plant malfunctions. Notable amongst these have been the electrical fire on Dredger 6 and belt fires damaging belt, head-ends and rising conveyors. Fires have also been caused by vehicles and mobile plant due to hot exhausts. Although many fires have started from outside of the mine, no fire has left the mine and gone into the external environment.

Due to the methods employed for the extraction and use of Brown Coal in the Latrobe Valley operations, large areas of brown coal are generally exposed in the operating faces, permanent batters and floor of the open cuts. Whilst the coal in its raw state is a high moisture fuel and difficult to burn, it weathers, dries and readily degrades to a fine dust which ignites easily under the right conditions.

Potential sources of ignition are frequently present in the Latrobe Valley open cuts in the form of electrical faults, faulty mechanical equipment, vehicle exhausts, train operations, metal cutting and welding activities, etc.

A fire within an open cut can put all nearby machinery and equipment at risk particularly if coal spill or dust accumulates. In an open cut, fire danger to personnel is not great provided that they are not trapped by machinery, buildings, or coal batters and provided that refuge is available from both heat and smoke.

Brown coal fires are best suppressed by the application of water. Wetting of the coal lays the coal dust, and helps to extinguish the fire and prevent it spreading. Large quantities of water are required to extinguish deep seated burning, and often when burning coal is wetted, sufficient heat remains to dry out the surface again and to allow the fire to re-establish. There are special techniques required to deal successfully with brown coal fires.

This Code of Practice is based on the adoption of sensible precautions as well as the establishment of a system of fire protection in open cuts, (a) to protect all personnel within the open cut, (b) to protect all plant and equipment required for the maintenance of coal winning operations, and (c) to protect coal reserves to enable continuation of coal winning activities. The aim is to prevent or extinguish any fire which may threaten the coal winning activities, and to restore normal operating conditions as early as possible after a fire. Training of all personnel in the fire fighting methods and procedures is an integral part of preparedness for combating fires.

Different levels of protection are defined for various elements of the mine based on the risk to personnel, plant and equipment and coal reserves, and the consequences should a fire occur.

In the following procedures and practices the levels of protection to be provided are defined and acceptable materials and procedures which can be used are outlined.

### 3 PLAN OF PROTECTION

The necessarily large area of exposed coal requires an extensive reticulation and spray network and water supply system. The water supply and fire protection measures laid down in the body of this document are those considered to provide the necessary level of protection with due regard to cost and operational requirements. Fire protection in the open cuts is based on the following principles:

- . An organised approach to prevention and suppression of fire and the formulation of emergency response plans and fire instructions.
- . The use of an adequate communications system to mobilise and co-ordinate fire fighting facilities.
- . The provision of water supplies, reticulated water and spray systems together with the trained personnel necessary for the operation of these systems to prevent or suppress fires.
- . The provision of adequate training sessions and exercises to ensure that each employee understands the appropriate techniques and mine procedures for fighting brown coal fires and undergoes refresher training sessions at regular intervals.
- . The reduction of loose dry coal in the open cut, conveyors and coal bunker areas, by the application of appropriate design measures and good housekeeping practices.
- . The control of sources of ignition such as cutting and welding, mobile equipment and motor vehicles and the safe storage of potentially inflammable materials.
- . The effective limitation and management of forested, wooded or grassed areas external to the open cut to inhibit the progress and effect of an external fire.
- . Provision and maintenance of back-up facilities to fight and control any fire.

In order to properly protect all parts of the open cut, pipework and sprays are to be installed as laid down by this Policy and Code of Practice. However, it must be understood that a larger water supply system would be required to run all the sprays and protection systems simultaneously. This

policy provides for a diversity in the simultaneous application of the fire protection water supplies and distribution.

The maximum demand as defined in this Code of Practice is an allowance of water usage upon which the design of the water supply system is based. The maximum demand rate of water use is considered to be sufficient to meet any likely contingency within the open cut. The distribution of this allowance of water usage is reasonably flexible for any situation but the use of more water than allowed for in one area may cause a reduction in the performance of the system.

#### 4. EXPOSED COAL

##### 4.1 OPERATING AREA

The operating area is to be protected by wetted corridors established along the working levels. Pipelines and sprays are to be provided such that if all sprays on working levels were to operate simultaneously under light wind conditions:

- . A minimum of 50% of exposed coal on working levels would be wetted at a rate of at least 6 mm/hour.
- . The wetting down would be such as to provide intersecting corridors of wetted coal. The width of the wetted corridors should be a minimum of 50 metres. The unwetted coal areas should not exceed 12,500 m<sup>2</sup> in area with a maximum dimension in any direction of 250 m. Portable or readily relocatable sprays are to be used if necessary to achieve this requirement.
- . Appendix A.3 shows examples of this protection.

##### 4.2 CONVEYOR AND RAIL TRANSPORT CORRIDORS

###### 4.2.1 Batters

Exposed coal on all batters within each corridor is to be capable of being continuously wetted using rotary sprays located on the bench below each batter.

###### 4.2.2 Berms

All berms within the transport corridor are to be clay covered and where practicable graded such that they shed fretting coal or permit clean up thereof. Alternatively coal berms should be water protected as per benches in Section 4.2.4.

###### 4.2.3 Benches Supporting Conveyors

Benches supporting conveyors are to be clay covered except those supporting face conveyors.

#### 4.2.4 Benches Without Conveyors

Benches without conveyors are to be either clay covered or to come under the protection of the batter rotary spray system. Any additional sprays should be located so that the unwetted coal areas do not exceed 12,500 m<sup>2</sup> in area with a maximum dimension in any direction of 250 m.

#### 4.3 SERVICE AREAS AND CORRIDORS

Service areas such as power supply corridors, control system corridors, power distribution centres, pumping stations, access roads and escape routes shall be protected as follows:

- . Power supply corridors and control system corridors are to comply with the reliability criteria, clay covering and water protection required for pole lines and cables as laid down in Section 5.5.
- . Power distribution centres are to be located on clayed surfaces, of a minimum of 75 mm thickness, with at least 5 m of clayed surfaces beyond the perimeter of the power distribution centre.
- . Pumping stations are to be located on clayed surfaces and comply with requirements for protection of power supply and control systems.
- . Access roads internal to and on the perimeter of the open cut should be clearly sign posted and kept clear for emergency use.

#### 4.4 WORKED OUT BATTERS

As a minimum requirement worked out batters are to be protected as follows:

- . All benches are to be clay covered.
- . All berms are to be eliminated by trimming or by filling with clay such as to shed fretted coal provided that batter stability calculations indicate that neither of these options will cause batter failure.
- . Tanker filling points are to be provided such that a tanker on any part of the worked out batters is within 5 minutes travel of a tanker filling point. Fixed sprays should be used in conjunction with the droppers for the tanker filling points in order to provide wetted breaks.

Alternatively:

- . Where practicable, fire break zones extending down to full depth of each batter may be utilised such that the length of exposed coal in any one batter is not greater than 500 m. These zones can be in the form of metallised vehicle access ramps or clay

covering, a minimum of 8 m wide.

- . Appendix A.4 shows examples of this protection.

#### 4.5 WORKED OUT FLOOR OF OPEN CUT

The worked out floor of the open cut as excavated, normally consists of low grade coal and underburden. Ultimately these areas are used for overburden disposal or water storage which eliminates fire risk. Whilst exposed, fire protection is based on the provision of intersecting fire break zones across the floor of the open cut in the form of clay covering and the provision of tanker filling points as outlined in Section 4.4. Individual exposed coal areas left by these fire break zones shall be no greater than 12,500 m<sup>2</sup> in area.

For the period between exposure of the floor and the completion of clay fire break zones or the establishment of ponds or overburden dumps, protection shall be by the provision of wetted corridors as required for working levels.

To provide protection to the operating levels from fires spreading along the floor of the open cut, a clay fire break zone or a single header with sprays will be provided at no greater than 100 m from the toe of the bottom working level.

Appendix A.1 shows an example of the various mine areas.

## 5. PLANT AND EQUIPMENT

### 5.1 DREDGERS, STACKERS, MOBILE SLEWING CONVEYORS AND OTHER MAJOR EXCAVATING PLANT

The protection of dredgers and other major machines shall be based on the principle of protecting each machine where it stands by providing:

- . A charged water supply of adequate capacity adjacent to the machine on its operating level. When unattended or non operational, machines are to be connected to this supply. Maximum spacing of connection points on the dredger supply header shall be 200 metres. A minimum pressure of 40 metres head at each rotary spray (Or sufficient head to operate each rotary spray adequately, whichever is greater) is required for effective operation when all machine water outlets are operating.
- . Sufficient number of rotary sprays to provide a spray curtain to protect the machine against airborne combustibles. Stackers not subject to airborne combustibles are exempt from this.
- . Such additional sprays to the above as required to provide a saturated island for the machine to stand on. Stackers or other major plant which operate on a clayed area are exempt from this.

- . All rotary sprays are to be capable of being operated from ground level.
- . A spray system and equipment to protect the machine from fires occurring within the machine including:
  - a. Spray protection to conveyors with Birdsmouth sprays on each side and spaced along the entire length of the conveyor.
  - b. Fire hose reels conveniently located throughout the machine.
  - c. An adequately sized water storage tank capable of providing a supply to the hose reels when the machine is not connected to the charged water supply.
  - d. Portable extinguishers of appropriate type conveniently located throughout the machine.
- . Protection of power supply system by locating it within a clayed or wetted corridor.
- . Provision of fire resistant conveyor belting on dredgers. Provision of flame resistant impact idlers on all major plant. Consideration to be given to need and justification for fire resistant conveyor belting on mobile slew conveyors and stackers taking into account the size of machine and its influence on open cut reliability.

## 5.2 CONVEYORS

### 5.2.1 Dredger Face Conveyor

The protection of dredger face conveyors shall be based on the principle of providing a wetted corridor along the conveyor. The wetted corridor is to be provided as follows:

- . Inbuilt birdsmouth spray systems and other protective equipment are to be provided on the drive unit and trailing frame.
- . Rotary sprays shall be spaced to give a continuous wetted corridor along the conveyor. Hydrants shall be spaced at not greater than 55 metre intervals along both sides of the conveyor. Hydrant and dredger supplies shall be provided from a charged header.
- . Rotary sprays shall be capable of being operated from either end of the transport level, or from a remote location, to allow management of water usage during wetting down and fire fighting activities. If remote control is used the failure mode shall be to an open position.
- . The Mine Manager is to ensure special precautions are taken during beltshifts, fire main rearrangements or maintenance of pipework.

### 5.2.2 Coal and Overburden Trunk Conveyors Below Grass Level

The protection of trunk conveyors below grass level is based on the principle of locating the conveyor on a clayed surface and in a wetted corridor along its full length as follows:

- . Benches to be clayed and protected as per Section 4.2.
- . Rotary sprays shall be spaced to give a continuous wetted corridor along the conveyor. Hydrants shall be spaced at not greater than 55 metre intervals along both sides of the conveyor.
- . Birdsmouth sprays to be provided on at least one side of the conveyor for its full length. When one birdsmouth spray line only is provided, it shall be located on the opposite side of the conveyor to the rotary sprays and preferably on the north or west side of the conveyors. The birdsmouth sprays will be controlled by clearly marked valves spaced not more than 200 m apart and accessible from both sides of the conveyor.
- . Inbuilt birdsmouth spray systems on drive, turnover and tail end units.

Appendix A.5 shows an example of this protection.

### 5.2.3 Coal Trunk Conveyors Above Grass Level

The principle of protection is to provide a wetted area for the head, turnover and tail end units, and hydrant and birdsmouth spray supplies for the full length of the conveyor, which is to be located within a fire break zone. This is to be achieved by the provision of the following:

- . Hydrants shall be spaced at not greater than 55 metre intervals along both sides of the conveyor.
- . Birdsmouth spray lines along the north or west side of the conveyor. These sprays should be controlled by clearly marked valves spaced not more than 200 m apart and accessible from both sides of the conveyor.
- . Inbuilt birdsmouth spray systems on drive, turnover and tail end units.
- . A fire break zone of at least 25 m width on either side of the conveyor.

Alternatively:

A lesser fire break zone of 10 m would be acceptable where rotary sprays provide a continuous wetted corridor along the conveyor.

Appendix A.6 shows an example of this protection.



#### 5.2.4 Overburden Trunk Conveyors above Grass Level

The principle of protection is to provide a wetted area for the head, turnover and tail end units, and hydrant supplies for the full length of the conveyor, which is to be located within a fire break zone. This is to be achieved by the provision of the following:

- . Inbuilt birdsmouth spray systems on drive, turnover and tail end units.
- . Hydrants at not greater than 55 m intervals on one side of the conveyor.
- . A fire break zone of at least 10 m width on both sides of the conveyor.

Appendix A.6 shows an example of this protection.

#### 5.2.5 Overburden Dump Conveyor

The principle of protection is to provide a wetted area for the head and tail end units, and hydrant supplies along the full length of the conveyor as follows:

- . Provision of a header along the length of the conveyor with hydrants at not greater than 55 m intervals, on one side of the conveyor supplying protection for the conveyor, tripper and stacker.
- . Inbuilt birdsmouth spray systems on drive and tail end units.

#### 5.2.6 Elevated Conveyors

Fire protection for these areas is based on minimising coal spill by appropriate plant design and good housekeeping, and the use of a spray system capable of wetting the conveyors and support structure. This is to be achieved by the provision of:

- . A dust and coal spill clean up system.
- . Spraying and wetting down facilities to restrict the spread of fire. Clearly marked control valves to be accessible from both conveyor level and ground level.
- . Clearly marked access points and escape ways no more than 100 m apart.
- . Telephones or a fire alarm signalling system located adjacent to appropriate access points and escape ways.
- . Fire hydrants at conveyor level, spaced at not greater than 55 m intervals, and at conveyor and ground level located adjacent to all

access points and escape ways.

- . Fire hose reels at all hydrant locations.
- Appendix A.7 shows an example of this protection.

#### 5.2.7 Multiple Transfer Areas

Fire protection for these areas is based on minimising coal spill by appropriate plant design and good housekeeping and the use of a spray system capable of wetting the conveyors and support structure. This is to be achieved by the provision of:

- . A dust and coal spill clean up system.
- . Spraying and wetting down facilities to resist the spread of fire. Clearly marked control valves to be accessible from both conveyor and ground level.
- . Clearly marked access and escape ways.
- . Telephones or a fire alarm signalling system located adjacent to appropriate access points and escape ways.
- . Fire hydrants at conveyor and ground levels, spaced at not greater than 55 m intervals, and located adjacent to all access points and escape ways.
- . Fire hose reels at all hydrant locations.
- . A fire break zone at least 25 m width clear of any conveyor.

#### 5.2.8 Enclosed Conveyors

Fire protection for these areas is based on minimising coal spill and coal dust by appropriate plant design and good housekeeping, and the use of a spray system capable of wetting the conveyor and support structure. Within enclosed areas it is important to minimise the amount of coal dust in the atmosphere and the coal dust fall-out on surfaces and to minimise the potential chimney effect. These aims are to be achieved by the provision of:

- . A dust and coal spill clean up system.
- . Spraying and wetting down facilities to resist the spread of fire. Clearly marked control valves to be at internal and external locations.
- . Clearly marked access points and escape ways no more than 100 m apart.
- . Telephones or a fire alarm signalling system located adjacent to

appropriate access points and escape ways.

- . Fire hydrants at internal and external locations, spaced at not greater than 55 m intervals and located adjacent to all access points and escape ways.
- . Fire hose reels at all hydrant locations.
- . Fire resistant baffles should be located at no more than 30 m intervals along the length of the conveyor. These should comprise vertical curtains extending from the roof down to approximately 2 m from the floor. The curtains are to be fabricated from non combustible and non explodable materials.
- . Roof vents to reduce chimney effect. Vents should be placed immediately against the lower side of each heat baffle - vents are to be sized on the basis of 1 m<sup>2</sup> per 100 m<sup>2</sup> of floor area.
- . A one hour (minimum) fire rating bulk head is to be constructed across the full cross section of the enclosed conveyor at the junction of the conveyor with the coal bunker.
- . A fire break of at least 10 metres width on each side of the enclosed conveyor.

Appendix A.8 shows an example of this protection.

#### 5.2.9 Specific Protection of Conveyor Drive Units

Conveyor drive units below grass level in the open cut are to be protected by rotary sprays mounted either on headers or on the drive unit, or by portable rotary sprays such that a saturated island can be achieved under and around the drive unit, while at the same time achieving a spray curtain to protect the full height of the unit.

Protection against fires caused within all drive units is also to be achieved by live hose reels and by appropriate extinguishers conveniently located on or adjacent to the unit.

Protection of the conveyor belting within drive units is to be achieved by birdsmouth sprays spaced on each side of the conveyor but staggered to give optimum coverage of belt surfaces and idlers.

Hydrants should be located close to each drive unit for ready connection of portable rotary sprays and hosing facilities.

#### 5.2.10 Rail Track and Rolling Stock Protection

Protection of these areas is based on the provision of the following:

- . Facilities for cleaning coal dust from locomotives and rolling stock.

- . Rail centre track sprays located to wash down the underside of trains to prevent the carrying of fires along the rail tracks. In particular, protection shall be provided for trains:
    - a. Entering and leaving loading stations.
    - b. Entering and leaving bunkers.
- Where possible, sprays should be train activated.
- . Hydrants placed adjacent to the rail tracks loading station and bunker areas to be spaced not greater than 55 m apart and within 30 m of the track.
  - . Water supply with appropriate hose cocks at regular intervals and at all loops along the Interconnecting Railway between open cuts.

#### 5.2.11 Bunkers and Drive Towers

Fire protection for bunkers and drive towers is based on minimising coal spill and coal dust by appropriate plant design and good housekeeping, and by the provision of fire retarding and fire fighting facilities. Within enclosed areas it is important to minimise the amount of coal dust in the atmosphere and the coal dust fall-out on surfaces. These aims are to be achieved by the provision of:

- . Bunker and drive tower structures designed to minimise the settling and accumulation of dust.
- . Internal roof mounted spray systems capable of spraying and keeping clean of dust the walls and walkways, and of spraying coal surfaces to inhibit the spread of fire. Separate spray systems are to be provided for the bunker and drive tower. The spray systems should be arranged such that they can be activated either from inside or from outside the bunker/drive tower. Consideration should be given to supplying automatic detection systems to activate an alarm, where practicable, particularly where bunkers and/or drive towers are unmanned.
- . Fire hose reels, hydrants and hoses to be provided at readily accessible locations within the bunker and drive tower including all entrance ways.
- . A dust and coal spill clean up system for the drive tower.
- . A dust suppression system for use in the bunker when the level of air-borne dust is in excess of the relevant Health and Safety Standard.
- . Birdsmouth sprays to wet the conveyor belts.

- . Escape facilities and access routes clearly marked.
- . Telephones or a fire alarm signalling system located adjacent to appropriate access points and escape ways.
- . Lifts and lift wells to be external to the bunker and separated from it by a fire rated door and provided with an escape way.
- . System for the emergency emptying of the bunker other than to the Power Station. (To be provided for new structures.)
- . A wall between the drive tower and bunker to stop draughts and the passage of atmospheric dust, and to impede the progress of a fire from either side of the wall to the other side.

Appendix A.9 shows an example of this protection.

### 5.3 AUXILIARY MACHINES (MOBILE PLANT)

The protection of mobile plant from fire and the elimination of mobile plant as a source of fire when working on coal shall be based on the following:

- . Routine cleaning and prevention of coal build up.
- . Provision of an approved exhaust system, braking system and splash plates where required to reduce the risk of starting fires.
- . Carrying of knapsack sprays and/or chemical fire extinguishers as a "first aid" measure.
- . Machines to be parked on clay or sanded areas or provided with water spray protection when not in use.

### 5.4 MOTOR VEHICLES

The protection of motor vehicles from fire and the elimination of motor vehicles as a source of fire when travelling on coal shall be based on the following:

- . Routine cleaning and prevention of coal build up.
- . Provision of an approved exhaust system, braking system and splash plates where required to reduce the risk of starting fires. Approval shall be obtained from the Fire Service Officer. Vehicles without such approval shall not travel on coal surfaces.
- . Carrying of either a knapsack spray, or a CFA hose with nozzle, and/or a chemical fire extinguisher as "first aid" measures.

In an emergency, special tanker escort must be provided to vehicles not

meeting these requirements.

Access to coal levels may be restricted on Fire Danger days (Refer to mines Fire Instructions).

## 5.5 ELECTRICAL SUPPLIES

### 5.5.1 Reliability.

Duplication of supply, geographic separation of feeders and automatic switching is to be provided so as to achieve the required levels of reliability for open cut plant and equipment. Where practicable, duplicate supplies are to be provided from separate power distribution centres. Automatic fault isolation facilities are to be provided for all plant connections on feeders supplying fire service pumps. Where practicable the distribution system should be flexible enough to supply major items of plant from alternate feeders. Required levels of reliability for pumping stations are listed in Section 8.1.7.

### 5.5.2 Routing and Type of Supply.

Preferably, supply down batters should be via overhead lines. However, where overhead supply would interfere with plant movement, supply by mine power cable or flexible trailing cable may be provided. (See comments in this section : Cables on coal, Cables down batters, for required protective measures.)

Siting and protection of poles and cables is to be based on the following requirements:

- . Overhead or underground feeder arrangements should provide sufficient physical separation to preclude loss of more than one feeder as a result of a single event.
- . For parallel overhead feeders of standard open cut construction a minimum of 10 m spacing should be provided - for field situations where this cannot be achieved, specific approval of reduced spacing is required from the Mine Manager.
- . Alternate supply underground feeder cables should be routed separately, or if this is not possible they should be at least 2 m apart.
- . Crossovers of overhead lines should be avoided where at all possible - if this is not possible then consideration should be given to construction to minimise failure, ie. "super" spans, and to minimise interference with other feeders should failure occur. The use of cables, other than extensions of already necessary cables, to overcome crossing difficulties should be avoided.

### 5.5.3 Siting of Poles.

- . Poles should be sited at least 2 m from top of batters.
- . Poles adjacent to the toe of coal batters should be sited so that the protected area round the pole will remain free from accumulated coal fines.
- . Where practicable, poles should be sited on flat areas.
- . Poles on Coal.
  - . Poles should be protected by a 3 m radius area of compacted sand or clay with a minimum depth of 75 mm. For other transmission structures the protected area should extend 3 m beyond the perimeter of the structure.
  - . The protective covering should be inspected and maintained prior to each summer period.
- . Poles on Other than Coal.
  - . A 3 m radius area round timber poles must be kept clear of combustible material. A clear area is not required around concrete poles.

### 5.5.4 Siting of Cables

- . Cables on Coal.
  - . Machine cables are to be laid within the protected area of the rotary sprays.
  - . Fixed cables on flat surfaces are to be laid on compacted sand or clay mats at a minimum spacing of 0.5 m and with the mat extending 1 m on either side of cables - alternatively, cables can be run in covered concrete box troughing.
  - . Cables down batters should be run in open concrete box troughing or be provided with other equivalent protection. The troughing should be maintained free of accumulated coal fines.
  - . The use of racks or catenaries to route cables down batters should be avoided unless a protective spray system or equivalent protective measure is employed. Special attention is to be given to protecting the cables at the top and bottom of the batter.
- . Cables on Other than Coal.
  - . Cables should be laid at a minimum of 0.5 m centres and combustible material kept clear for 1 m on either side of cables.

## 6. PERSONNEL

The principles upon which the safety of all personnel is based are to provide:

- . As clean a working environment as is practicable to limit the occurrence of fire.
- . Control over sources of ignition such as cutting and welding, mobile equipment and motor vehicles. Potentially inflammable materials such as oil, greases and fuels should be stored and used in a safe manner.
- . Protected access and escape ways.
- . Access for fire fighting.
- . Provision of adequate communications equipment and systems.
- . An organised approach to prevention and suppression of fire and the formulation of emergency response plans and fire instructions.
- . Training sessions and exercise to ensure that each employee understands techniques and mine procedures for fighting brown coal fires and undergoes refresher training sessions at no greater than three yearly intervals.
- . Inspection and monitoring procedures to minimise potential fire sources on plant and within the mining environs.
- . Inspection and monitoring procedures to ensure appropriate fire protection equipment and procedures are in place and adhered to.

## 7. EXTERNAL PROTECTION

To reduce the hazard from a fire external to the open cut, provision of appropriate fire breaks and control of grassed and forested areas within the "zone of responsibility", as outlined in 7.3, are necessary. In order to inhibit a fire approaching the open cuts and to reduce the occurrence of burning fragments entering the open cut and its surrounds, the following requirements apply:

### 7.1 FIRE BREAKS

A continuous fire break, a minimum of 20 metres in width, is to be maintained around all sides and within 50 metres of the edge of an open cut at all times. Fire breaks may include perimeter roads, close mown areas, or other means which minimise combustible material within the fire break corridor.



## 7.2 GRASSED AREAS

All grassed areas within 200 metres of the edge of an open cut are to be kept mown or grazed to a low grass height during the fire season. All grassed areas under the mine managers control and within one kilometre of the boundary of the open cut are to be kept grazed to a low level of fire hazard during the fire season.

## 7.3 TIMBERED AREAS

Mine Managers are responsible for the management of treed and forested areas under their control to ensure the least possible fire hazard to the Open Cut mine consistent with operating and environment requirements. "Management" includes both the maintenance and establishment of treed and forested areas.

Areas under the Mine Managers' control are those within the perimeter of the open cut plus those Generation Victoria lands which are within the following proximities of open cut operational areas:

Northern side 1.0km	Western side 1.0km
Southern side 0.5km	Eastern side 1.0km

Within the distances mentioned above, treed and forested areas should primarily consist of:

- a. Scattered, tall, clean boled trees that have firm bark and an overall crown cover of less than 35% (over any given treed area) with a minimum of 3 metres of open space between crowns of individual trees.
- b. Grass and herbaceous understoreys that are kept short by grazing or mechanical means during those periods of high rural fire risk.

For areas under the control of Mine Managers but outside of the distances mentioned above, treed areas of greater density (ie. up to forest/plantation density) may be permitted. Approval of the Mine Manager is required for establishment of trees in these areas including matters such as location, species selection, provision of fire breaks and access, and on going management.

For non Generation Victoria land, where unacceptable hazards have been created within the vicinity of the mine, the Mine Manager should ensure that the Statutory Fire Prevention Officer is informed so that appropriate action can be taken.

This section of the Code of Practice is compatible with the requirements of the PGOD Bushfire Mitigation Manual and the SECV document "Trees and Fire Protection - Guidelines for the Latrobe Valley". Any applications of the above policy must be approved by the Mine Manager.

## 8. RESOURCES FOR PROTECTION

### 8.1 WATER SUPPLY REQUIREMENTS

#### 8.1.1 Water Supply

The source of water is to be designed so that supply is from at least two systems, such that the loss of the larger system or pumping station will not reduce the supply available below 50% of the designed maximum demand.

#### 8.1.2 Maximum Demand

The system should be designed to supply sufficient water to operate whichever is the greater of either Option A or Option B described below. The maximum demand criteria do not provide for coincident maximum demands above and below grass level of an open cut. (Both Options A and B define use of fire service networks below grass level in the open cut.)

**Option A** - Consisting of the sum of the following:

- . An allowance to operate rotary sprays to provide cover to 50% of exposed coal and all machine and conveyor protection sprays on the working levels.
- . An allowance to operate three hydrants on one header on each of the working levels.
- . An allowance to operate the rotary and birdsmouth sprays protecting one quarter of the length of the trunk conveyor system below grass level.

**Option B** - Consisting of the sum of the following:

- . An allowance to operate rotary sprays to provide cover to 25% of exposed coal and all of the machine protection sprays on the working levels.
- . An allowance to operate three hydrants on one header on each of the working level.
- . An allowance to operate the rotary and birdsmouth sprays protecting one half of the length of the trunk conveyor system.
- . An allowance to operate three hydrants per header for the headers protecting half of the length of the trunk conveyor system.

#### 8.1.3 Capacity of Storage

Water storages are to be provided for the following conditions:

- . Sufficient water for fire services throughout a fire service season in a drought cycle and sufficient additional storage to suppress one

major fire within the open cut.

- . Water reserve for suppressing a major fire is to be made up as follows - 24 hours at maximum demand, followed by 24 hours at 50% of maximum demand and an emergency reserve of 8 hours at maximum demand.

#### 8.1.4 Restoration of Storage

- . Within 10 days of a major fire there should be adequate water in storage to suppress another major fire. The water reserve required for this specific purpose is defined in the previous statement.
- . If water is stored in more than one storage, then the storage which provides the immediate source for the fire service system must be large enough to store the water reserve required to suppress a major fire plus an allowance for siltation and flood regulations.

#### 8.1.5 Location and Availability of Water Storages

The locations of the storages of water should take account of the reliability of supply and capacity requirements listed above. The storages should be dedicated to open cut use.

#### 8.1.6 Water Pressures

For personnel safety reasons, the static pressure in the reticulated water system should be designed not to exceed 115 m head at hydrants, rotary sprays and other points used for tapping the fire service water. The pressure shall not be lower than the pressure necessary to operate all fire service equipment effectively with a minimum of 40 m head at any tapping point.

#### 8.1.7 Reliability of Water Supply

Gravity supply of water to the pipe network is preferred because of its reliability. In some circumstances it may be necessary to provide pressure reduction systems in order to avoid pressure greater than 115 m head at hydrants and rotary sprays. Other circumstances require the provision of pressure boosting systems in the form of pumping stations.

Reliability of power supply to pumping stations is critical to the reliability of the fire protection system. Other requirements for the security of electrical supplies are detailed in item 5.5.

As a general requirement fire service pumping stations should be designed such that the loss of one power supply feeder should still allow the supply of 50% of the pumping station capacity either by the provision of:

- . Two or more power supply feeders, or

- . A sufficient number of individual pumps such that half the number of pumps supply at least half the required pumping capacity.

The reliability of the power supply to the fire service pumping system should be such that any one fault would not reduce the capacity of the system to meet the maximum demand by more than 50%, and then for no longer than 30 seconds.

This level of reliability is required for the dedicated fire service pumps, multipurpose pumps with a fire service component and fire service booster pumps.

The level of reliability required for other pumping installations such as dewatering pumps and fire service storage replenishment pumps, is that any single fault should not cause a loss of pumping capacity for more than four hours duration. The concept for such installations should take this level of reliability into account in design and operation stages.

#### 8.1.8 System Monitoring

Sufficient remote monitoring and control equipment is to be installed in the fire service system to allow reliable operation under normal and foreseen emergency conditions. Alarm signals, pressure, flow rate and status indications may be required at key locations to allow efficient operation of the system under a variety of circumstances.

#### 8.1.9 Rate of Precipitation

The spraying equipment on exposed coal is to be able to deliver a minimum precipitation rate of 6 mm/hour over the wetted area.

### 8.2 WATER RETICULATION

#### 8.2.1 General Requirements

Materials, installation techniques and siting of pipelines should take into consideration possible earth movement effects, corrosion, accessibility and provision for isolation and drainage.

The whole system of reticulation is to be such as to optimise the hydraulic efficiency with regard to performance and cost.

#### 8.2.2 Main Supply Lines

As required by Section 8.1.1 each source of supply should have a separate, secure Main Supply Line. The design and location of the Main Supply Lines should take into consideration their importance to the water supply system.

### 8.2.3 Ring Main

The principle of feeding headers from both ends to maximise hydraulic efficiency requires a ring feed arrangement.

### 8.2.4 Feeders and Headers

Headers are to be connected at each end to a feeder thus providing a ring feed system of reticulation. This optimises the performance of header sprays and allows at least partial operation of the header from either end.

Appendix A.2 shows an example of the various categories of fire service pipe.

### 8.2.5 Tanker Filling Points

Tanker filling points are to be provided at:

- . Each end of each transport working level.
- . For Worked out batters in accordance with Section 4.4.
- . On worked out floors in accordance with Section 4.5.
- . At grass level around the open cut at strategic locations.

Consideration should be given to ease of access, location and reliability of water supply in the design of filling points. (See Section 4.4)

### 8.2.6 Hydrants, Hoses, Sprays, Valves and Other Fittings

These should be appropriate for fire fighting purposes with due regard being given to interchangeability between various sections of Generation Victoria and the CFA.

## 8.3 MOBILE WATER SUPPLY

Each open cut is to have at least one dedicated mobile tanker unit available. Provision must be made for additional back-up mobile water supplies in the event of them being required.

Mobile tanker/s shall be positioned on the conveyor transport level when belt shifting is carried out without an adjacent header being charged.

## 8.4 MOBILE PLANT AND EQUIPMENT

Mobile plant and equipment are to be available for emergency use in open cuts to maximise fire fighting potential, e.g. such equipment as elevating platform vehicles, floodlights, cranes, tractors, pumps, etc.

## 8.5 COMMUNICATIONS

A fully equipped multi-channel communication system is to be provided in the Fire Service Office in each open cut, capable of being manned by additional operators on fire emergencies. Provision is also to be made to enable the CFA Incident Controller or the DISPLAN Co-ordinator to use the Fire Service Office as a control centre in the event of an emergency situation.

Fire spotter stations are to be available either dedicated or for emergency use for fire spotting purposes and provided with an adequate means of communication with the Fire Service Office. The Fire Service Office may be strategically positioned to also fulfil the role of a fire spotter station. Fire spotter stations are to be located such that an adequate view of all of the mine is available under various wind conditions.

Communications systems and alarms as described elsewhere in this document are required in bunkers, conveyor transfer areas, on elevated conveyors, near pumping stations and on all major machines.

## 8.6 ORGANISATION

A plan of the organisation and disposition of all open cut personnel and equipment for the fighting of major fires is to be kept and annually updated and issued by the beginning of October in each year.

## 8.7 FIRE INSTRUCTIONS

An up-to-date set of Fire Service Instructions is to be maintained for each open cut and re-issued to Supervisory staff and key operating personnel by the beginning of October each year. Additional copies are to be displayed or available for information of all personnel.

## 8.8 HIGH FIRE RISK DAYS

The CFA may declare a Total Fire Ban Day based on their assessment of fire risk within an area or throughout the state of Victoria. The accompanying restrictions apply to Generation Victoria property and operations.

When severe weather conditions exist in an open cut resulting in a high risk of fire spreading, the Mine Manager may declare a Fire Alert within the open cut area and en-act special precautions for fire watch, burning and welding, access and wetting down procedures as defined in the mines Fire Instructions.

## 9 ACCEPTABLE PRACTICES

As part of this Fire Protection Code of Practice, acceptable equipment and techniques are included for use in the prevention and suppression of fires

in the Latrobe Valley open cut coal mines. The equipment and techniques contained adhere to the requirements of the Fire Service Policy and this Fire Service Code of Practice. They may be employed in one or all of the mines depending on individual mine requirements.

The equipment and techniques contained in this Code of Practice have resulted from many years of fire service operation and development. Development of fire protection equipment and methods is an ongoing exercise and the Code of Practice will be the vehicle through which new practices are approved for general implementation.

**APPENDIX A          FIRE SERVICE PRACTICES**

1. MINE LAYOUT.
2. PIPELINE NOMENCLATURE.
3. EXAMPLES OF LIMITING UNWETTED AREAS.
4. WORKED OUT BATTERS
5. PERMANENT BATTER - TRANSPORT ROUTE.
6. CONVEYORS ABOVE GRASS LEVEL.
7. ELEVATED CONVEYORS.
8. ENCLOSED CONVEYORS.
9. TYPICAL CROSS SECTION OF BUNKER.



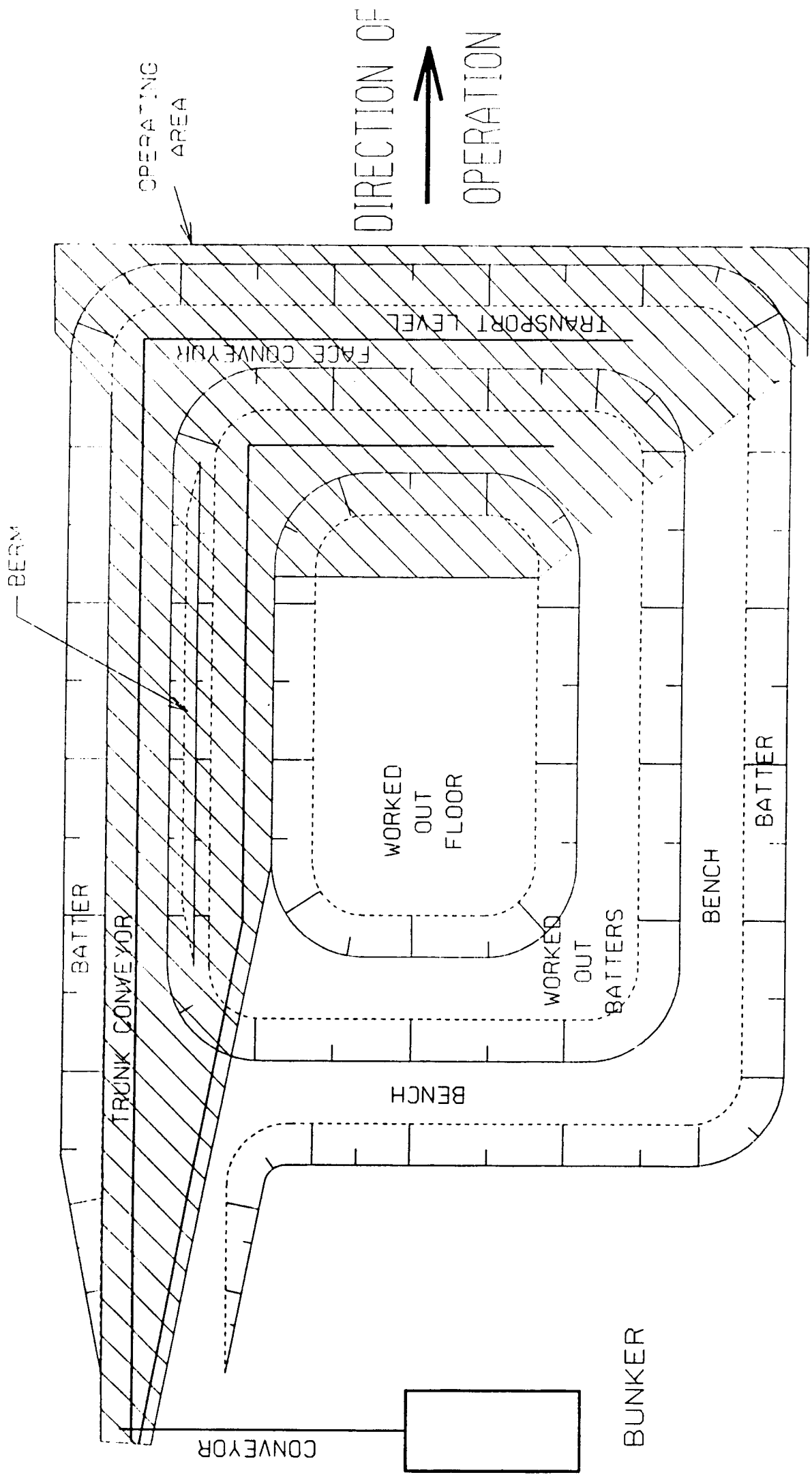


FIG - 1 DIAGRAMMATIC LAYOUT SHOWING MINE FEATURES

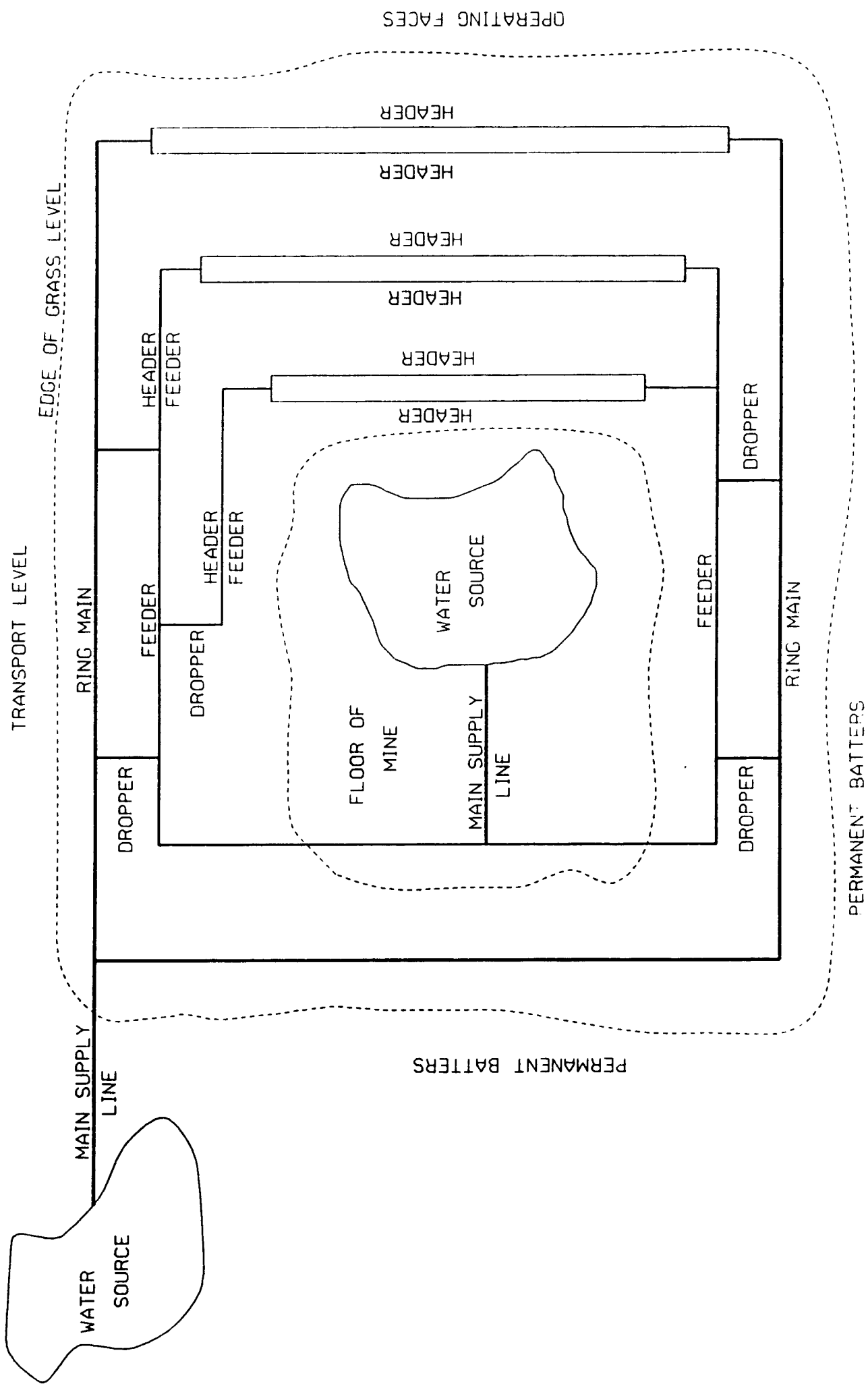


FIG - 2 PIPELINE NOMENCLATURE

1/1/1994

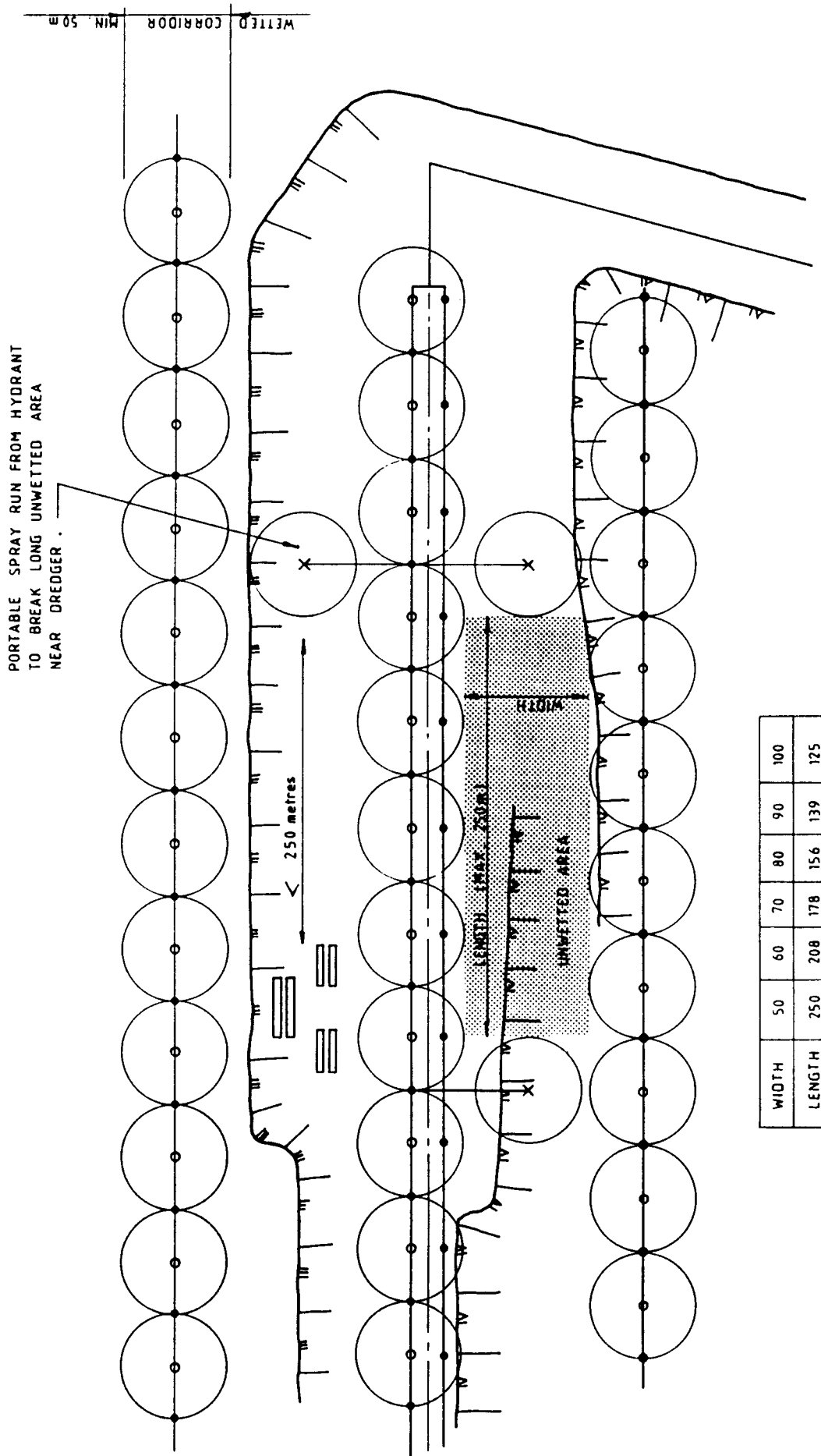


FIG - 3. EXAMPLE OF LIMITING UNWETTED AREA TO LESS THAN 12500 sq m

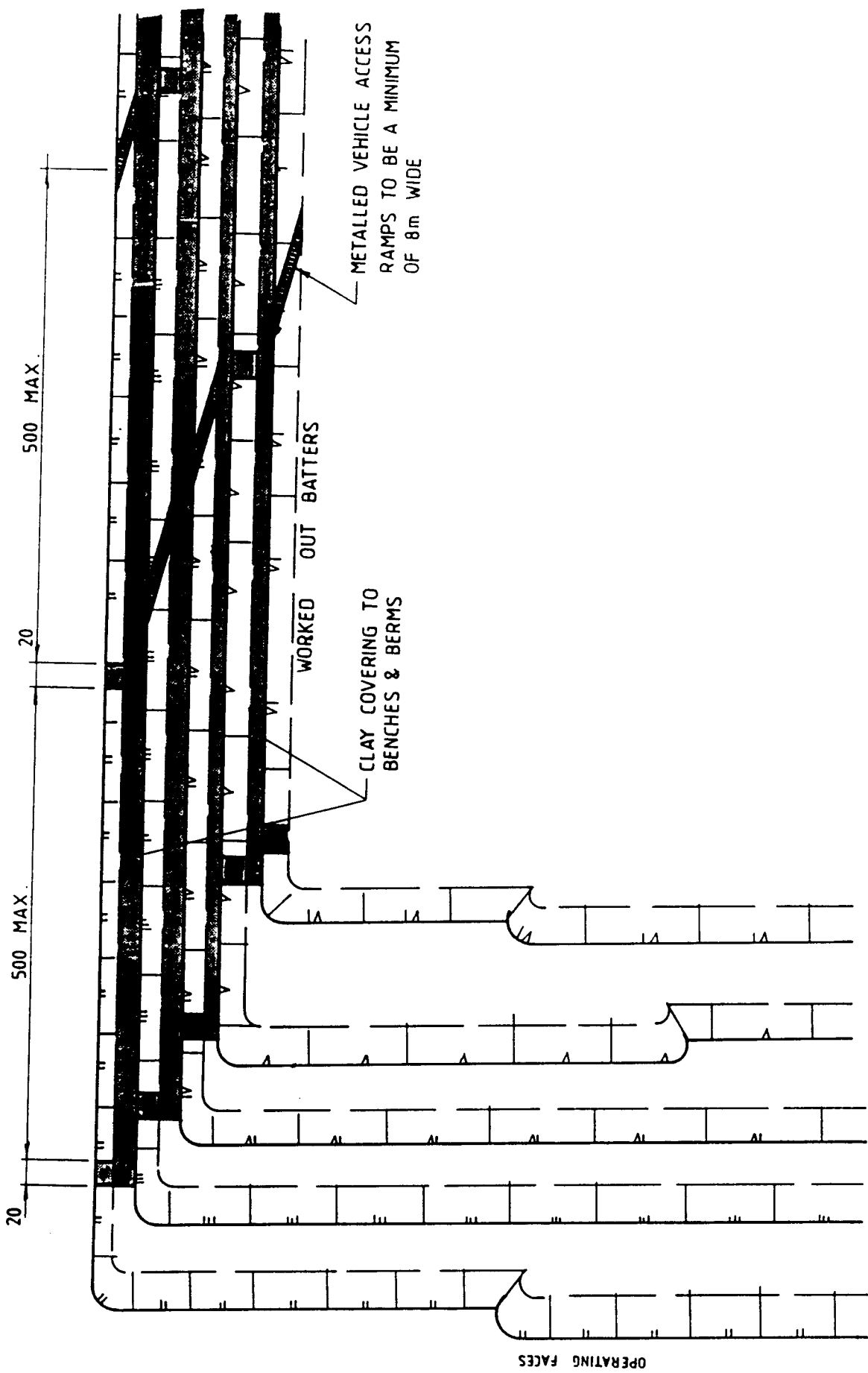


FIG - 4 WORKED OUT BATTERS - EXAMPLE OF FIRE PROTECTION

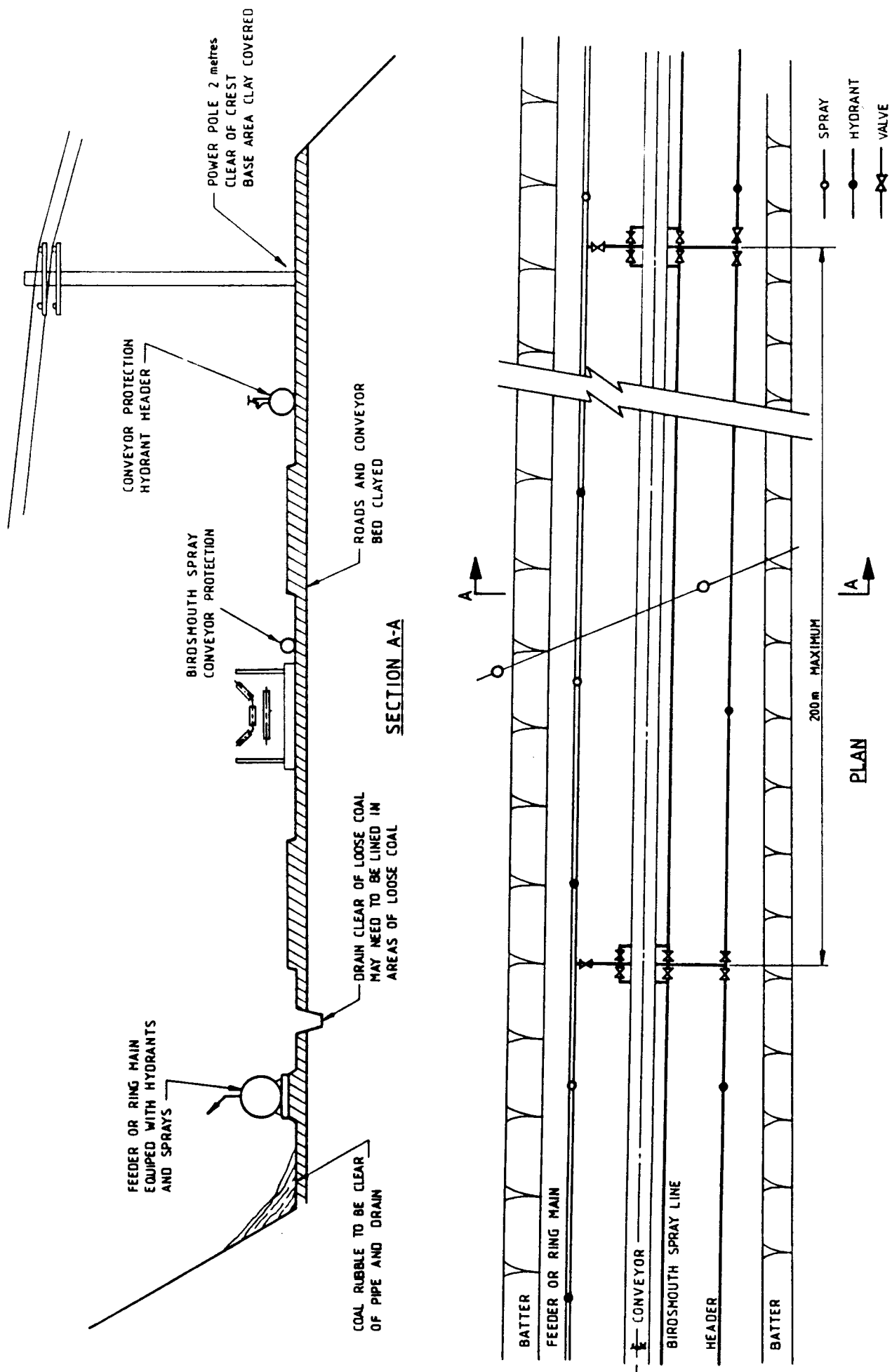


FIG-5 PERMANENT BATTER-TRANSPORT ROUTE-EXAMPLE OF FIRE PROTECTION

LV1/1-16-3/010

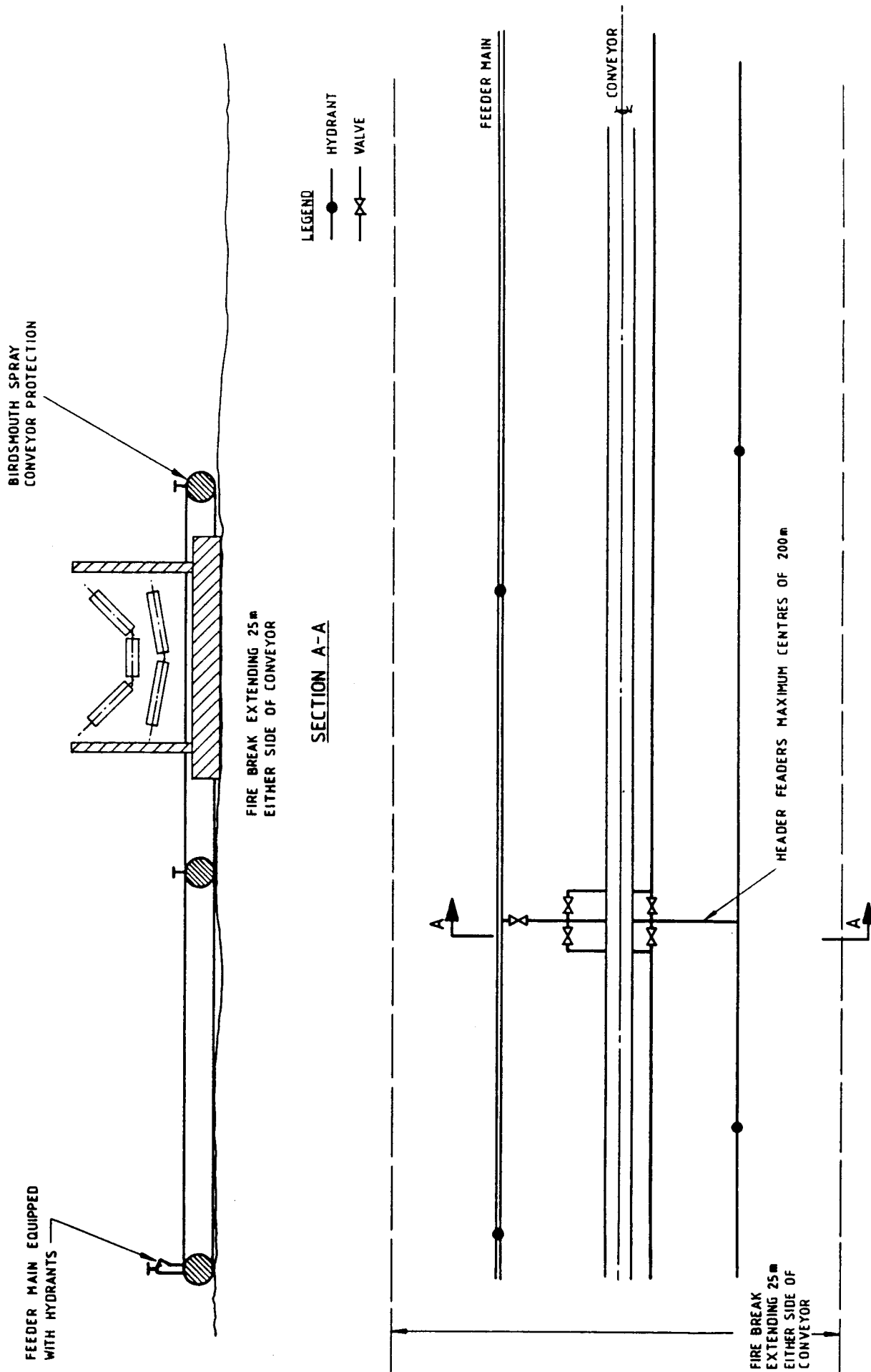


FIG - 6 - CONVEYORS ABOVE GRASS LEVEL - EXAMPLE OF FIRE PROTECTION

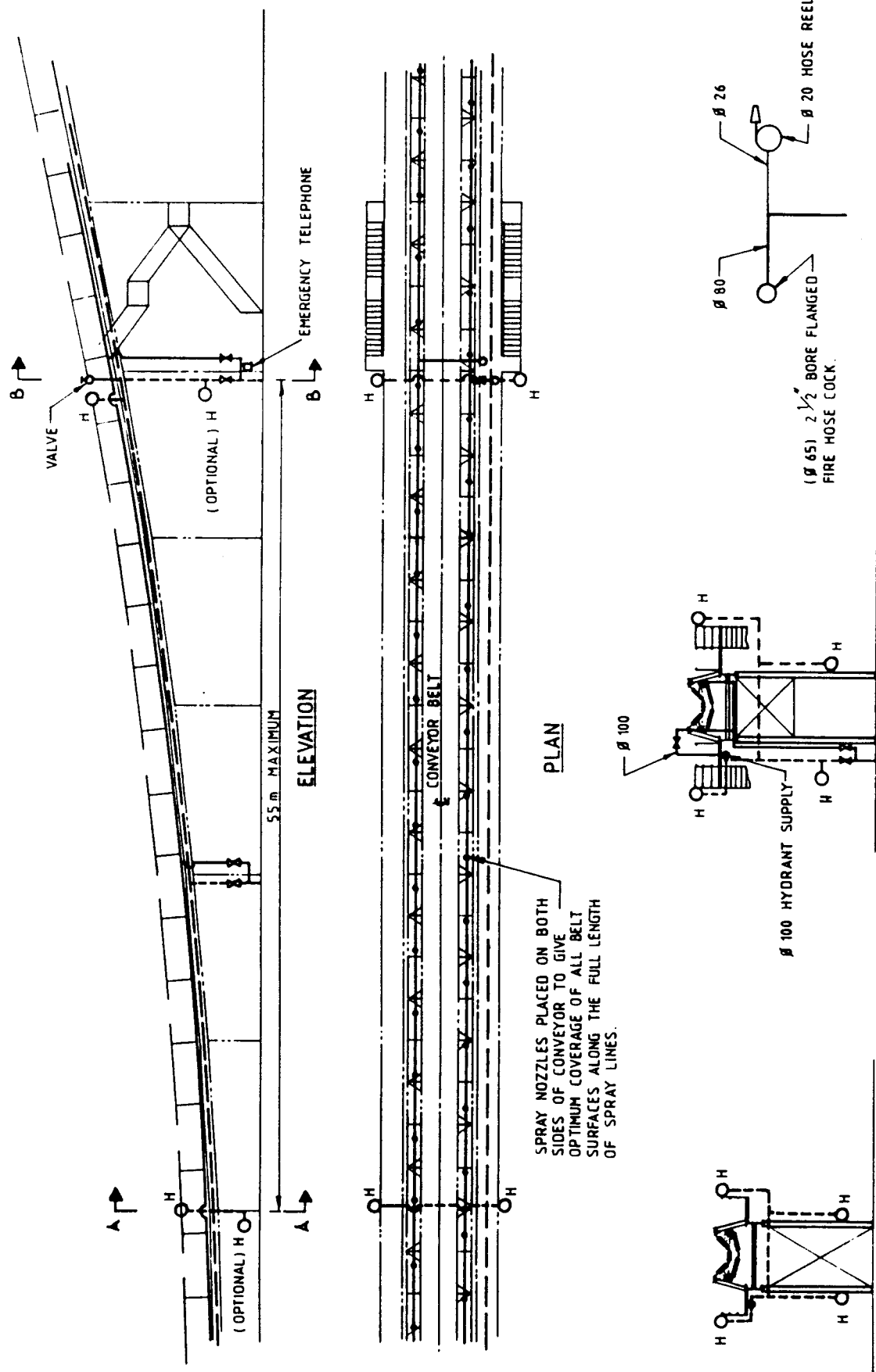


FIG-7 ELEVATED CONVEYORS - EXAMPLE OF REQUIRED PROTECTION

10/11/16, 3/017

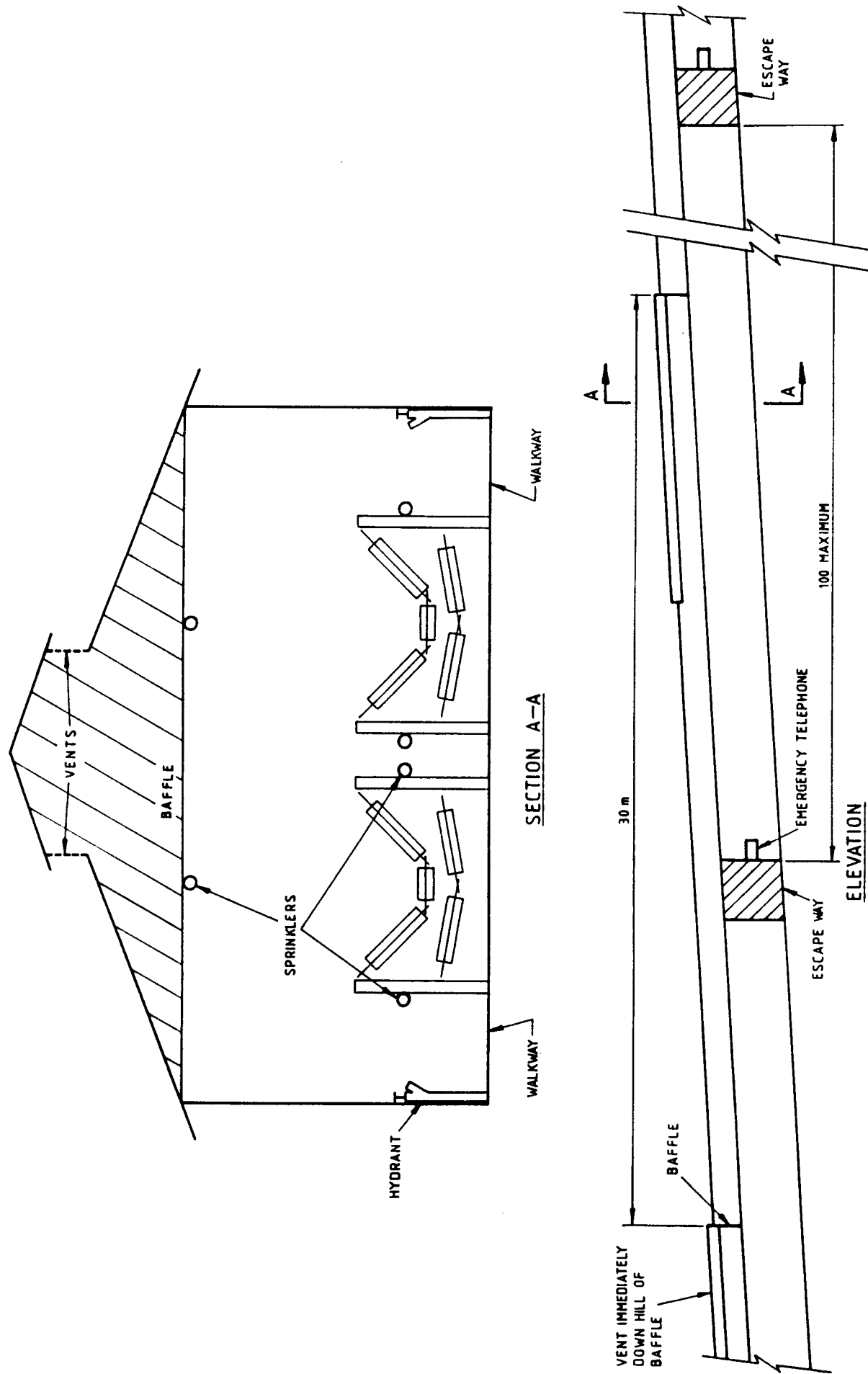


FIG - 8 ENCLOSED CONVEYORS - EXAMPLE OF REQUIRED PROTECTION



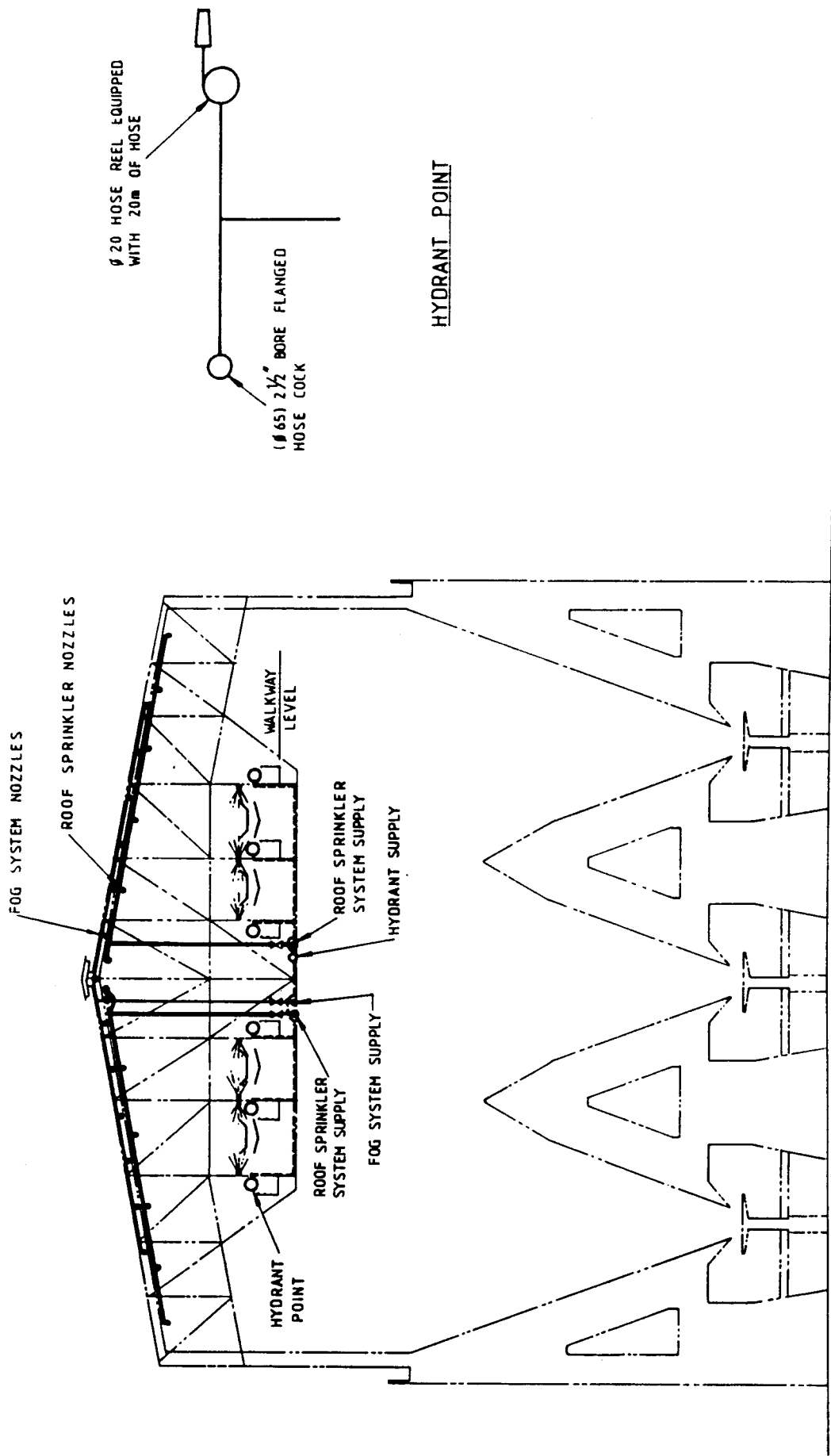


FIG-9 TYPICAL CROSS SECTION OF BUNKER SHOWING REQUIRED PROTECTION

LV1/1.16-3/014

**APPENDIX B            ACCEPTABLE FIRE SERVICE MATERIALS AND EQUIPMENT**

1. ROTARY SPRAYS
2. BIRDSMOUTH SPRAYS.
3. STANDARD FIRE HOSES.
4. HYDRANTS.
5. FIRE HOSE REELS.
6. TYPICAL DUST SUPPRESSION SYSTEM FOR BUNKERS.

ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
1. ROTARY SPRAYS:	a. Bauer Circular or Sector- Rainer SR42 or Perrott P46BSZ sprays with 18 mm nozzles.	To be used at maximum spacing of 55 m to give a continuous wetted area. Minimum working pressure of 0.4 MPa (40 metre head) and a maximum of 1.15 MPa (115 m head).

ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
2. BIRDSMOUTH SPRAYS:	a. 4.8 mm orifice sprays as detailed on the accompanying Drg. No OY12/41/238.	Birdsmouth spray lines are generally located about 1.8 to 2.0 m offset from the conveyor. The position allows a good spray coverage to 1.22 m and 1.48 m conveyors and allows access for mechanical cleaning of spilt coal under the conveyor.  Spray operating pressures should be a minimum 0.18 MPa but preferably working pressures of 0.2 MPa (20 metre head) should be adopted. Pressure reduction is achieved by orifice plates inserted within the sprayer valve stops.
	b. 6 mm type orifice full jet wide angle spray. (Spraying system Co designation number 1/2HH 35 W)	Conveyor mounted sprays for Loy Yang. Mounted on the supporting frame on each side of the 2 m conveyor. Spray operating pressures should be a minimum of 0.3 MPa (30 metre head)
3. STANDARD FIRE HOSES:	a. For general fire service, 65 mm x 30 metre length canvas percolating hose.  b. For supply to dredgers from header manifolds or hydrants, 90 mm by 30 metre lengths canvas percolating hose.	The percolating rate for these hoses are as follows:  . In service percolating rate 5 litres/min/m <sup>2</sup> .  . As manufactured percolating rate 10 litres/min/m <sup>2</sup> .  Operating pressures for fire hoses are to be minimum 0.3 MPa (30 metre head) and a maximum of 1.15 MPa (115 metres head).
4. HYDRANTS:	Standard 65 mm Victorian Country Fire Authority fire couplings throughout.	To be used at maximum spacing of 55 m on headers to give overlap with a standard fire hose.

ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
5. FIRE HOSE REELS:	To be in accordance with AS 1221 - 1976. 19 mm ID hose by 30 m long with a 6.5 mm dia. outlet shut-off nozzle.	Operating pressures for hose reels are to be in the range 0.3 MPa to 1.15 MPa (30 m to 115 metres head)
6. TYPICAL DUST SUPPRESSION SYSTEM FOR BUNKERS:	¼ TT2W "Unijet" nozzle by Spraying Systems (Aust) Pty Ltd.	To be installed below roof level spaced on a 3 m x 6 m grid.

**APPENDIX C            TESTING AND ACCEPTANCE PROCEDURES**

**EXAMPLE/S.**

1. TESTING OF ROTARY SPRAYS.

## TESTING OF ROTARY SPRAYS

(Page 1 of 2)

ITEM	TEST PROCEDURE	RESULT
ENDURANCE TEST	Spray to be operated with 115 m head inlet pressure until either unservicable or 500 operating hours are reached which ever is sooner.	<500 hrs - Fail ≥500 hrs - Pass
PRESSURE TEST	Spray to be operated from 40.0 m to 115.0 m head inlet pressure in steps of 25.0 m. Flow, Spray radius, thrust and rotation speed to be measured at each pressure step. Average precipitation rate to be calculated.  Head   Flow   Spray Thrust   Rot'n   Precip Rad.           Speed   Rate.  40.0 65.0 90.0 115.0	Produce graph of results.  Comment on performance or lack of.
PRECIPITATION	Precipitation rate to be measured at 10 m intervals from the spray to determine the precipitation pattern for the various pressure steps.	Each point to be within 25% of the average precip'n rate.
SECTORING TEST	Spray to be operated at various angle sectors ranging from 45° to 315° for a total of 100 operating hours.	<100 hrs - Fail ≥100 hrs - Pass
WIND DRIFT	Comment on drift of wetted area under various wind conditions.	
PRICE	Unit Price - Price of Replacable Parts -	
MAINTENANCE	Ease of maintenance - Availability of replacable parts -	

## RECOMMENDATIONS FOR USE:

- .       Spacing at various operating heads,
  
- .       Position of spray relative to personnel,

(Page 2 of 2)

. Mounting/attachment requirements,

. Limitations of use.

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Testing Officer \_\_\_\_\_ Date \_\_/\_\_/\_\_

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Health and Safety Approval \_\_\_\_\_ Date \_\_/\_\_/\_\_

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**APPENDIX D FIRE SERVICE AUDIT - CHECKLISTS**

The following is a broad list of the various topics from the Fire Service Code Of Practice. Check lists should be prepared for each of these topics for auditing purposes. These check lists should comprehensively cover the detailed requirements of the Code Of Practice.

1. OPERATING LEVELS
2. EXPOSED COAL, WORKED OUT BATTERS
3. DREDGERS, STACKERS, MOBILE SLEW CONVEYORS AND MAJOR EXCAVATION PLANT
4. DREDGER FACE CONVEYORS.
5. COAL AND OVERBURDEN TRUNK CONVEYORS BELOW GRASS LEVEL
6. COAL TRUNK CONVEYORS ABOVE GRASS LEVEL
7. OVERBURDEN CONVEYORS ABOVE GRASS LEVEL
8. OVERBURDEN DUMP CONVEYORS
9. ELEVATED CONVEYORS
10. MULTIPLE TRANSFER AREAS
11. ENCLOSED CONVEYORS
12. RAIL TRACK AND ROLLING STOCK
13. BUNKERS AND DRIVE TOWERS
14. AUXILIARY MACHINES
15. MOTOR VEHICLES
16. ELECTRICAL SUPPLIES
17. EXTERNAL PROTECTION
18. WATER SUPPLY REQUIREMENTS
19. WATER RETICULATION
20. PUMP STATIONS



## Latrobe Valley Open Cuts, Fire Protection code of practice Checklist Page 1 of 2

### Coal and Overburden Trunk Conveyors below grass level

Conveyor Number

Checked by.....

Date.....

Meets requirement ?

Section No.	Requirement under Code	Yes	No	If no, comment
4.2.1	Exposed coal on all batters within each corridor is to be capable of being continuously wetted using rotary sprays located on the bench below each batter			
4.2.2	All berms within the transport corridor are to be clay covered and where practicable graded such that they shed fretting coal or permit clean up. Alternatively coal berms should be water protected as per benches in Sect. 4.2.4			
4.2.3	All benches supporting conveyors are to be clay covered.			
5.2.2	Rotary sprays shall be spaced to give a continuous wetted corridor along the conveyor along the conveyor. Hydrants shall be spaced at not greater than 55 metre intervals along both sides of the conveyor.			
5.2.2	Birdsmouth sprays to be provided on at least one side of the conveyor for its full length. When one birdsmouth spray line only is provided, it shall be located on the opposite side of the conveyor to the rotary sprays and preferably on the north or west side of the conveyors. The birdsmouth sprays will be controlled by clearly marked valves spaced not more than 200 m apart and accessible from both sides of the conveyor.			
5.2.9	2 Carbon Dioxide and 2 Foam type fire extinguishers to be placed adjacent to the access steps of the drive unit. Live hose reels are also to be provided either on, or located adjacent to the conveyor drive unit.			

Latrobe Valley Open Cuts, Fire Protection code of practice  
 Checklist Page 2 of 2

**Coal and Overburden Trunk Conveyors below grass level**

Conveyor Number  Checked by..... Date.....

Meets requirement ?

Section No.	Requirement under Code	Yes	No	If no, comment
5.2.9	Conveyor drive units below grass level in the open cut are to be protected by rotary sprays mounted either on headers or on the drive unit, or by portable rotary sprays such that a saturated island can be achieved under and around the drive unit, while at the same time achieving a spray curtain to protect the full height of the unit.			
5.2.9	Protection of the conveyor belting within drive units is to be achieved by birdsmouth sprays spaced on each side of the conveyor but staggered to give optimum coverage of belt surfaces and idlers.			
5.2.2	Inbuilt birdsmouth spray systems are to be provided on drive, turnover and tail end units.			
5.2.9	Hydrants should be located close to each drive unit for ready connection of portable rotary sprays and hosing facilities.			