STATE ELECTRICITY COMMISSION OF VICTORIA

LATROBE VALLEY OPEN CUTS

FIRE PROTECTION POLICY.

REVISION 1: November 1984.

SECV MEMO

TO MANAGER, PRODUCTION, MORWELL

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From MANAGER, PRODUCTION, YALLOURN

Memo to - MPM, MPLY, CEF, MAA, MES, MPS
Copy to - CPSY, M&CPE, Mr R Risk

LATROBE VALLEY OPEN CUTS
FIRE PROTECTION POLICY

An internal audit of fire protection facilities in the Open Cut was conducted earlier this year using the "Latrobe Valley Open Cuts - Fire Protection Policy" of December 1981 as the basis for the audit. It was evident from the audit that some aspects of the policy were not being fulfilled.

The policy of December 1981 was reviewed by myself and the Open Cut Coal Production Superintendents for its practicality. It was determined that certain changes to the policy were required for clarification and to provide alternative and/or more acceptable procedures for protection. The changes, which are detailed on the attachment, have been endorsed by the CEF and are included in the revised and updated "Latrobe Valley Open Cut - Fire Protection Policy" : Revision 1 : November 1984.

Please find enclosed your copies of the revised policy which is to be used as the basis for design and operation of fire protection in the SECV Latrobe Valley Open Cuts.

Distribution of "Latrobe Valley Open Cuts - Fire Protection Policy" : Revision 1 : November 1984 -

MPM	-	15
MPLY	-	15
CEF	-	10
CPSY	-	15
Internal Audit	-	2
M&CPE	-	3
MAA	-	1
MES	-	1
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ATTACHMENT

LATROBE VALLEY OPEN CUTS
FIRE PROTECTION POLICY
AMENDMENTS

Page 3, Section 1.1.3

Last subsection was reworded as follows:

> "Access roads internal to and on the perimeter of the Open Cut should be clearly sign posted and kept clear for emergency use."

Note that the reference to escape ladders has been deleted.

Page 4, Section 1.1.4

Second subsection was amended as follows:

> "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."

Third subsection was amended as follows:

> "Fire break zones extending down to full depth of batter should be established 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 metalled vehicle access ramps, a minimum of 8 m wide or in the form of a 20 m width clay covering.
>
> Alternatively, fixed spray breaks may be used, but it should be noted that water for these sprays has not been included under the maximum demand conditions, and this protection should not be considered as reliable as clay fire breaks or vehicle access ramps.
>
> Figure 2 shows examples of this protection."

Note: Although the vehicle access ramp is less than the previous standard fire break width requirement of 20 m, the access ramp allows water tankers to spray coal on both sides of ramp to give an equivalent protection.

Page 10, Section 1.2.5

First subsection under "Routing and Type of Supply" refers to Production Centre Manager instead of Manager, Coal Production.

Page 11, Section 1.3

The last subsection was reworded as follows:

> "Training sessions and exercises to ensure that each employee understands techniques for fighting brown coal fires and undergoes a refresher training session at three yearly intervals."

Page 12, Section 1.4.3

First and second paragraphs were reworded as follows:

> "Production centre Managers are responsible to ensure that the extent, type and management of forested or wooded areas within 5 km of the boundary of any open cut under their control do not present a significant fire hazard which will increase fire control difficulties during fire emergency affecting the open cut.
>
> There are to be no stands of trees of a type susceptible to combustion within the following proximities of Open Cut operating faces -"

Last subsection refers to Production Centre Manager instead of Manager, Coal Production.

Page 15, Section 2.5

An additional paragraph was included as follows:

> "The Coal Production Superintendent should arrange for a formal inspection and report to himself in September of each year of compliance with the policy and the status of fire protection."

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FIRE PROTECTION POLICY

INTRODUCTION

This Fire Protection Policy was initially introduced in December 1981 by the then Manager, Coal Production and Chief Engineer, Fuel as the basis for design and operation of fire protection in the SECV Latrobe Valley Open Cuts. In November 1984 this policy, with the approval of Production Centre Managers and the Chief Engineer, Fuel, was revised and updated for clarification and to provide alternative and/or more acceptable procedures for protection.

Due to the methods employed for the extraction and use of Brown Coal in the SECV 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 and readily degrades to a fine dust which ignites easily.

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 exit is readily available from machines, buildings and areas of exposed coal 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. In general, there are special techniques required to deal successfully with brown coal fires.

This Fire Protection Policy is based on the establishment of a system of fire protection in open cuts, (a) to protect all personnel within the open cut, and (b) to protect all plant and equipment required for the maintenance of coal winning operations. 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.

In the following sections the levels of protection to be provided are defined.

1 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 -

- The reduction to a minimum of the amount of loose dry coal in the open cut and coal bunker areas, by the application of appropriate design measures and good housekeeping practices.
- 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 use of an adequate communications system to mobilise and co-ordinate fire fighting facilities.
- 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. 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 policy 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.

1.1 EXPOSED COAL

1.1.1 Operating Area (refer to fig 1)

The operating area is to be protected by wetted corridors established along the working levels. (NOTE: If a dredger operates on more than one level, all of its levels are defined as working levels.) Pipelines are also to be established as close as practicable to the faces consistent with operating practice so as to wet down the operating faces. To achieve this, sprays are to be provided such that if all sprays on working levels were to operate simultaneously under light wind conditions -

- [redacted] of

- 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 250 m in length and 50 m in width. Portable or readily relocatable sprays are to be used if necessary to achieve this requirement. See Figure 1 for typical layout to achieve this.

1.1.2 Conveyor and Rail Transport Corridors

1.1.2.1 Batters

Exposed coal on all batters within each corridor is to be protected by rotary sprays located on the bench below each batter.

1.1.2.2 Berms

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

1.1.2.3 Benches Supporting Conveyors

All benches supporting conveyors are to be clay covered.

1.1.2.4 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 to limit the unwetted coal areas to less than 50 m x 250 m.

Where practicable, advantage is to be taken of the location of these sprays to provide protection for the trunk conveyors.

1.1.3 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 1.2.5.

- 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.

1.1.4 Worked Out Batters (refer to Fig 2)

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.
- Fire break zones extending down to full depth of batter should be established 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 metalled vehicle access ramps, a minimum of 8 m wide or in the form of a 20 m width clay covering.
- Alternatively, fixed spray breaks may be used, but it should be noted that water for these sprays has not been included under the maximum demand conditions, and this protection should not be considered as reliable as clay fire breaks or vehicle access ramps.
- Figure 2 shows an example of this protection.

1.1.5 Worked Out Floor of Open Cut

The floor of the open cut is to be protected by the provision of intersecting fire break zones across the floor of the open cut in the form of clay covering. Alternatively, water treatment, regulation or fire service ponds may form the protective barrier. For the period between exposure of the floor and clay covering or the establishment of ponds, protection shall be by the provision of wetted corridors as required for working levels.

1.2 PLANT AND EQUIPMENT (Refer to Appendix C for details of specific fire service equipment currently considered to be satisfactory)

1.2.1 Dredgers, Stackers, Mobile Slewing Conveyors and the Major Excavating Plant (Shovels and Draglines)

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 header of adequate diameter adjacent to the machine on its operating level. When unattended or non operational, machines are to be connected to hydrant manifolds by the required number and size of percolating canvas hoses or equivalent connection to give complete fire protection supply to the installed sprays and hose reels on the machine. A minimun pressure of 40 metres head at each rotary spray or hose reel 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 at 1.5 metre centres 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 header water supply.

d 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.

1.2.2 Conveyors

1.2.2.1 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 spray systems and other protective equipment are to be provided on the drive unit and trailing frame.

. Rotary sprays at 55 m intervals and hydrants spaced midway between the rotary sprays along both sides of the conveyor. The number of hydrants used concurrently should be limited to three per header when all the sprays on a header are operating, to avoid pressure losses at sprays.

1.2.2.2 Coal and Overburden Trunk Conveyors Below Grass Level (refer to fig 3)

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 1.1.2.

. 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.

. Inbuilt spray systems on drive, and belt turn-over and tail end units.

. Hydrants at not greater than 55 m spacings on both sides of the conveyor.

1.2.2.3 Coal Trunk Conveyors Above Grass Level (refer to fig 4)

The principle of protection is to locate the conveyor along a wetted corridor and within a fire break zone. This is to be achieved by the provision of the following -

. Birdsmouth spray lines along one 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 spray systems on drive, turnover and tail end units of the conveyor.
- Hydrants at not greater than 55 m intervals on both sides of the conveyor.
- A fire break zone of at least 25 m width on either side of the conveyor, free of combustible material.

1.2.2.4 Overburden Trunk Conveyors above Grass Level (refer to fig 5)

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 as shown in fig 5. This is to be achieved by the provision of the following -

- Inbuilt spray systems on drive, turnover and tail end units of the conveyor.
- Hydrants at 55 m intervals on both sides of the conveyor.
- A fire break zone of at least 25 m width on either side of the conveyor.

1.2.2.5 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 no more than 55 m spacing, on one side of the conveyor supplying protection for the conveyor, tripper and stacker.
- Inbuilt spray systems on drive and tail end units.

1.2.2.6 Elevated Conveyors (refer to fig 6)

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 and ground levels, spaced not more than 55 m apart, and located adjacent to all access points and escape ways.
- Fire hose reels at all conveyor level hydrant locations.

1.2.2.7 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 excape ways.
- Fire hydrants at conveyor and ground levels, spaced not more than 55 m apart, and located adjacent to all access points and escape ways.
- Fire hose reels at all conveyor level hydrant locations.
- A fire break zone at least 25 m width clear of any conveyor.

1.2.2.8 Enclosed Conveyors (refer to fig 7)

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 fallout on surfaces. 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 not more than 55 m apart and located adjacent to all access points and escape ways.
- Fire hose reels at all internal 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^2 per 100 m^2 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 maintained free of combustible material.

1.2.2.9 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 at not greater than 3 metre centres 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.

1.2.2.10 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 levels;
  b entering and leaving loading stations;
  c entering and leaving bunkers.

  Where possible, sprays should be train activated.
- Hydrants placed adjacent to the rail tracks within open cuts, spaced not greather 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.

1.2.2.11 Bunkers (refer to fig 8)

Fire protection for bunkers 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 fallout on surfaces. These aims are to be achieved by the provision of -

- Bunker structures designed to minimise the settling and accumulation of dust.
- Roof mounted spray system capable of spraying and keeping clean of dust the walls and walkways, and of spraying coal surfaces to inhibit the spread of fire. The spray system should be arranged such that it can be activated either from inside or from outside the bunker. Consideration should be given to supplying automatic detection systems to activate the sprays, where practicable.
- Fire hose reels, hydrants and hoses to be provided at readily accessible locations within the bunker including all entrance ways.

- A dust suppression system.
- Birdsmouth sprays to wet the conveyor belts.
- Escape facilities and access routes clearly marked.
- 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.
- 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.

1.2.3 Auxiliary Machines (Mobile Plant)

The protection of mobile plant from fire and elimination of 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 to reduce the risk of starting fires.
- Carrying of knapsack sprays and 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.

1.2.4 Motor Vehicles

The protection of motor vehicles from fire and elimination of 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 to reduce the risk of starting fires.
- Carrying of a knapsack spray and a chemical fire extinguisher as "first aid" measures.

1.2.5 Electrical Supplies

- 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 2.1.5.

- 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 Production Centre 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, i.e. "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.

- 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 the pole must be kept clear of combustible material.

- 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.

1.3 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.
- Training sessions and exercise to ensure that each employee understands techniques for fighting brown coal fires and undergoes a refresher training session at three yearly intervals.

1.4 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 for several kilometers outside the open cut boundaries 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 -

1.4.1 Fire Breaks

Fire breaks consisting of a continuous ploughed corridor, a minimum of 20 metres in width, are to be maintained around all sides and within 50 metres of the edge of an open cut at all times. There is to be no combustible material within the fire break corridor.

1.4.2 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 within one kilometre of the boundary of the open cut are to be kept grased to a low level of fire hazard during the fire season.

1.4.3 Timbered Areas

Production Centre Managers are responsible to ensure that the extent, type and management of forested or wooded areas within 5 km of the boundary of any open cut under their control do not present a significant fire hazard which will increase fire control difficulties during a fire emergency affecting the open cut.

There are to be no stands of trees of a type susceptible to combustion within the following proximities of open cut operating faces.

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

Stands of trees, shrubs, bushes, etc, not conducive to the rapid spread of fire may be planted or maintained within the abovementioned areas provided the following applies -

- No stand is within 20 metres of the edge of the open cut.
- The area of the stand does not exceed 2500 m^2.
- There is only one stand for every 250 m along the edge of each open cut, or where stands are provided for sight screens or wind breaks, the stands are discontinuous and of not greater than 20 metre plantation width.
- The types of trees, etc, planted, the disposition of the stands and their locations must be approved by the Production Centre Manager.

2 RESOURCES FOR PROTECTION

2.1.1 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.

2.1.2 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 all rotary sprays and all machine protection sprays on the working levels.
- An allowance to operate three hydrants on each header on the working levels.
- An allowance to operate the rotary and birdsmouth sprays protecting one quarter of the length of the trunk conveyor system.

Option B - Consisting of the sum of the following -

- An allowance to operate one half of the rotary sprays and all of the machine protection sprays on the working levels.
- An allowance to operate three hydrants per header for half of the number of headers protecting the working faces.
- 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.

2.1.3 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.

2.1.4 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 regulation.

2.1.5 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.

2.1.6 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.

2.1.7 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 1.2.5.

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 -

- More than two power supply feeders, or
- a sufficient number of individual pumps such that half the number of pumps supply more than 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 installationsshould take this level of reliability into account in design and operation stages.

2.1.8 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-emergenc 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.

2.1.9 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.

2.2 WATER RETICULATION (refer to fig 9)

2.2.1 Nomenclature

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

2.2.2 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.

2.2.3 Main Supply Lines

As required by Section 2.1.1 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.

2.2.4 Ring Main

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

2.2.5 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.

2.2.6 Tanker Filling Points

Tanker filling points are to be provided at each end of each transport working level. Consideration should be given to ease of access, location and reliability of water supply in the design of filling points.

2.2.7 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 the SEC and CFA.

2.3 MOBILE WATER SUPPLY

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

2.4 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.

2.5 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.

The Coal Production Superintendent should arrange for a formal inspection and report to himself in September of each year of compliance with the policy and the status of fire protection.

2.6 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 in fire emergencies. Also a mobile (caravan type) communication unit with radio and telephone facilities is to be available for either independant operation, or to supplement existing permanent facilities.

Fire spotter stations at least one of which is to be at the opposite end of the working faces from the Fire Service Office 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.

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.

2.7 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.

MORWELL OPEN CUT
FIRE PROTECTION
REPORT BY INVESTIGATING COMMITTEE
JUNE 1964

Personnel of Committee - Messrs D M Lombard, J Vines, E A Foote, W Graham, E Hassett, E Lewis and C Strong

Following the review of the fire protection of the Yallourn Open Cut, this investigation was made of the fire protection of the Morwell Open Cut.

Conditions generally at Yallourn and Morwell are similar and this report and recommendations included in it closely follows that for Yallourn Open Cut.

There is one important difference which influences the fire protection of the Morwell Open Cut.

In the Latrobe Valley, the dangerous fire winds generally come from the north, north-west or the west.

This makes those sides of any open cut the safer sides.

At Yallourn, almost all vital installations, such as rail transport, trunk conveyors, dredger pivot points, main access routes for motor vehicles, are on the safer side of the open cut.

In the case of fire, all dredgers and important rail tracks and conveyors would be concentrated there and comparatively easy to protect.

At Morwell, all trunk conveyors and the vital outlets to Morwell Briquette Factory, and later to Hazelwood Power Station, are situated on the vulnerable east and south sides of the open cut.

Special provision is made for the protection of these important installations.

It is not considered practical to make a complete spray coverage of all uncovered coal. The fire protection recommended is considered adequate for the full protection of the open cut.

The plan of protection, including the water requirements, pipe reticulation and wetted patterns proposed, is based on the following -

a Maximum security for machines and their loading tracks or conveyors.

b Wetted escape routes for machines from their operating locations to sanded areas.

c The protection of fire service pump installations, power supplies and access routes by the sanding or spraying of worked out benches and batters.

d Restoration of normal operating conditions as early as possible after a fire.

The Committee recommends the following -

1 Pipe Reticulation

The typical pipe reticulation, shown on Drawing No OY15/2/36, is for 1969. This layout is for the summer period (October to March inclusive) - a reduced number of spray headers may be available in the winter.

a The spray pipe headers along the levels are 6" or 8" diameter, and the connecting pipes to the mains are 18" or 12" diameter.

b Rotary sprays will be spaced along these headers at a distance of 180 ft apart with hydrants for fire hose connections midway between sprays.

c One header to each dredger will be under pressure at all times.

d The rotary sprays on the other headers will, where possible, be operated from valves at the ends of the levels.

e So as to provide wetted retreat routes for the dredgers to the sanded areas at the extreme western or northern ends of their faces, and to protect the face conveyors serving the dredgers, spray headers will be located about 150 ft apart.

f Other locations of headers will be at the toes of faces and elsewhere on the wider working levels as required.

g In any locations where dredgers will park during a fire or during extreme fire conditions, extra rotary sprays are to be installed to ensure a 100% wetting of the coal in those locations. At each parking location a 6" monitor with suitable nozzle is to be mounted direct on the pipe system to cover dredger. Where a batter exists below the parking location of a machine such as with Dredger No 19, an extra 6" monitor is to be installed to prevent or put out any fire on this batter.

h To assist in the wetting down of the dredger escape routes or of coal in the general vicinity of dredger parking area or to protect power cables, extra spray installation points are to be located at the hydrant points as necessary.

i Sufficient hydrants for connection of fire hoses from the dredger spray systems are to be installed on permanent manifolds at dredger parking locations and on temporary manifolds, as required for parking, when there is no crew on the machine.

j Because of the location on the eastern and southern sides of the open cut of the trunk conveyors, any uncovered coal batters are to be protected by rotary sprays spaced 180 ft apart.

Line of sprays to be located to give a good coverage of batter and at the same time wet down as much conveyor as possible.

k On the western or northern sides of each trunk or incline conveyor a 6" diameter pipe is to be located. Birdsmouth sprays are to be installed 10 to 15 ft apart on this pipe so as to give effective conveyors to the conveyor. Connections with valves to the mains are to be made at each end and from 1500 to 2000 ft apart along each of these pipes.

l Vital areas as determined at the Morwell and Hazelwood outlets are to have complete protection, firstly, by concreting or covering the areas and the regular cleaning of all coal from same and, secondly, by the location of rotary and birdsmouth sprays to completely wet down belts, coal which may have been left on belts and any spill and dust which may be present.

2 Worked Out Batters and Benches

Whenever possible, worked out batters should be covered by overburden and at least during summer months this covering is to be kept up to working faces so as to increase the protection and reduce the demands on the water supply. Uncovered coal areas and water requirements have been calculated on this basis.

Batter slopes will be a compromise between overall stability of edge of open cut, bench width for travelling machines and loss of coal left in batters and are normally designed so as to be cut within the cutting range of operating dredgers. Consistent with such open cut design, where possible batters between benches are to be flat enough to take this covering.

A slope of 1-3/8 to 1 seems the most suitable. Where fire protection requires it, permanent coal batters too steep for covering by clay are to have water protection.

This applies also to semi-permanent batters such as the southern batters of both the East and West Fields because of the concentration of trunk conveyors along this side of the open cut.

The western batter of the East Field will become working faces in from five to eight years and, although this is the side of the open cut where machines will be required to park during a fire or bad fire conditions, complete covering by overburden would not be economical.

Benches would be covered to provide sanded areas where machines would park at the extreme western ends of their faces.

Batters and any other uncovered coal in these locations will be protected as set out in 1(g).

3 Protection of Dredgers, Conveyors and Bunkers

a All dredgers which may operate on coal are to be fitted with spray systems.

b The spray system is to be connected to a charged 8" or 6" header by fire hoses whenever there is no crew on the machine. Sprays are operated from ground level.

c All coal conveyors in galleries or in permanent positions are to be fully protected by permanent sprays.

d All new belts being ordered as spares for the coal machines are to be of neoprene or equivalent fire-resistant material.

e A small pipe (2"), fitted with hydrants and hoses, is to be available in the vicinity of major production machines operating on overburden surfaces.

As an alternative a water tank may be installed on a machine and kept full and used for fire purposes.

f Each large excavating machine is to be fitted with a tank for water supply to hose reel.

g The raw coal bunker at Morwell and portion of the rising conveyors to it, is protected by a spray hydrant system pressurised from pumps at the Morwell Power Station.

The coal bunker at Hazelwood, the rising conveyors, transfer area and main line conveyors, will be protected by a similar spray and hydrant system pressurised from the Hazelwood Station.

Non-return valves prevent the draining of water from either of these systems to the open cut.

In the case of emergency these non-return valves may be by-passed and water supplied from the boosted system in the open cut up to the coal bunkers. Because of the possibility of mixing dirty water from open cut with the clean water at Morwell and Hazelwood these stations should be notified should this type of operation become necessary. The effectiveness of the various sections of the Hazelwood system is to be tested when it comes into operation.

h Fire extinguishers as listed in Fire Instructions are to be installed on each machine.

4 Power Supplies

a The present practice of duplicate power feeds to all fire service pumps with provision for isolation of any extensions of feeders into the open cut area is to continue.

b All wooden HT poles in use on coal are to be protected at their bases by a covering of overburden of minimum diameter of 30 ft or have adequate water protection.

The covered areas around transformers or electrical cubicles are to be of a minimum diameter of 20 feet.

c The questions of security of supply and operation and the use of fire-proof poles instead of wooden poles on the coal are to be again taken up with the Electrical Engineer.

5 Manning and Training of Personnel

The programme for the training of personnel is to be continued.

Special training for new staff and refresher training for existing supervisory staff is to cover Weather, Weather Forecasting, Fire Service Regulations and Instructions, Pipe and Pump Layout, Water Availability, Plant Protection and Strategy of Fire Fighting.

6 Access and Exits for Personnel

Provision is to be made for access by personnel to and from the various working levels of the open cut during conditions when fire makes the normal access unavailable.

This will call for special access arrangements at the eastern end of East Field working levels and later at southern end of West Field.

Access to and from the dredgers when in their parking location will be installed.

Exit provision is to be reconsidered every few years as faces change in length, direction and height.

Conveyor galleries and houses are to have escape doors clearly marked.

7 Water Requirement and Spray Coverage

Water requirements for the East and West Fields are shown in tabulation Water Requirements for Fire Protection, 16 June 1964.

Quantities of water are based on a rate of precipitation of 0.25" per hour on all uncovered coal including uncovered batters measured on the slope, and on the spraying of each trunk conveyor and uncovered batter above or below each trunk conveyor.

With the layout proposed for 1969 by operating all sprays in the open cut, about 50% of the uncovered coal can be wetted down. This will be done by the operation of up to half the sprays at a time making more pressure and water available to the individual sprays and giving a better coverage.

8 Water Supply

a Existing Supply

The existing water supply consists of a 120 million gallon low level reservoir on the eastern side of the open cut.

A 42" steel pipe runs from this reservoir to the edge of the open cut where two booster pumps are located.

These booster pumps each supply 5000 gallons/minute at a head of 240 ft and pump through a 30" main around the eastern and northern sides of the open cut.

Provision has been made for the installation of a third pump alongside the existing two. A 30" branch pipe from the 42" main is being installed and this gravity supply will deliver water direct from the reservoir to the lower levels of the open cut.

Water Available on Completion of Gravity Supply

Via 42" main and booster pumps (two)	10 000 gal/min
Via 42" main and 30" gravity system	15 000 gal/min
	25 000 gal/min

b Emergency Supply

An emergency supply is available from the Latrobe Valley Water and Sewerage Board's Buckleys Hill Reservoir.

The pipeline for this system is installed with valves at each end closed. Arrangements for the use of this system have to be made with the Latrobe Valley Water and Sewerage Board.

The amount of water available from this source would depend on a number of factors including requirements of Morwell Township and Morwell and Hazelwood Power Stations.

c Additional Booster Pump

The first addition to the water supply will be required by the 1967-68 summer when the water requirement reaches 26 000 gal/min.

When installing the present fire service which included two booster pumps, provision was made for a third booster pump. The installation of this pump would increase the maximum quantity of water by 5000 gal/min to 30 000 gal/min, or in actual practice would give a smaller increase and allow some down time for maintenance of one of the three pumps.

9 Major Extension for Water Supply

By 1970 when the water requirement reaches 30 000 gal/min the 120 million gallon reservoir will be operating to full capacity and an additional supply will be required.

From preliminary examination of the position at this stage of operations, it appears that the most likely additional supply will be obtained by installing pumps on the Hazelwood Cooling Pond and delivering the water via a pipeline to the open cut in the vicinity of the Hazelwood outlet.

a The construction of a pond and the installation of pumps at a location south of the West Field and close to the Morwell River.

This installation would be over coal and would later have to be removed for open cut extensions.

b The formation of a water storage in the bottom of the open cut. Space for this storage would not be available until after 1975 and, before a scheme of this nature were adopted, the possible effects of a storage in this location would have to be given serious consideration.

Signed: Chairman

Members of Investigating Committee

July 1964

YALLOURN OPEN CUT
FIRE PROTECTION
REPORT BY COMMITTEE APPOINTED JUNE 1962

PERSONNEL OF COMMITTEE

Messrs E D J Stewart, T J Bensen, J Robertson, D M Lombard, E J Hassett, E A Foote

The Committee reviewed the fire protection installations and their protective use for the purpose of preventing loss of plant or a serious interruption to coal supplies through the occurrence of fire.

Taking into consideration the existing circumstances at the second open cut (Morwell), and the need for Yallourn Open Cut to supply more than it was designed for, proper security is required.

This may change with the development of Hazelwood and a third open cut and should be reviewed in the light of changes in five years or earlier if the demand on the Yallourn Open Cut is altered considerably.

It is not practical to make a complete spray coverage of even a major portion of the uncovered coal. The fire protection recommended is an improvement on past standards and, in the opinion of the Committee, is adequate for the full protection of the open cut.

The plan of protection including the water requirements, pipe reticulation and wetted patterns proposed, is based on the following -

a Maximum security for machines and their loading tracks or conveyors.

b Wetted escape routes for machines from their operating locations to sanded repair bays at their pivot points.

c The protection of fire service pump installations, power supplies and access routes by the sanding or spraying of worked out benches and batters.

d Restoration of normal operating conditions as early as possible after a fire.

Data and detailed information used for this report is included in the specific items in the Appendices.

The estimated annual direct expenditure for the proposed fire protection based on a 12 million ton demand is from 173 000 pounds in 1963-64 (i.e. 3.5 pence per ton of coal), to 156 000 pounds in 1972-73 (3.2 pence per ton).

This expenditure must be treated as an insurance againse interruption of supply.

The Committee recommends the following -

1 PIPE RETICULATION

A typical pipe reticulation and spray layout are shown on Drawing No 0Y15/3/43A.

This particular layout is for the year 1967, by which time the coal faces will have reached their maximum lengths.

a The pipe headers along the levels are 8" diameter and the connecting pipes at the pivot point and swinging ends are 18" or 12" diameter.

b Rotary sprays will be spaced along these headers at a distance of 180 ft apart with hydrants for fire hose connections midway between sprays.

c One header to each dredger will be under pressure at all times.

d The rotary sprays on the other headers will, where possible, be operated from valves at the ends of the levels.

e The 8" headers will be located so as to provide wetted retreat routes for the dredgers to the sanded areas at the pivot points. They will also protect the loading tracks or, in the case of No 7 Dredger, the conveyor on coal.

f Other locations of headers will be at the toes of faces and on the wider working levels. After 1970 when the ends of the levels are swinging well to the west, the new face directions relative to the bad winds will bring problems in connection with the parking of dredgers and consideration should be given to the provision of sanded parking areas at the swinging ends.

g In any locations where dredgers will park at pivot points, extra rotary sprays are to be installed to ensure a 100% wetting of the coal in those locations.

At each parking location a 6" monitor with suitable nozzle is to be mounted direct on the pipe system to cover dredger.

Where a batter exists below a machine, such as with Dredgers Nos 8, 4, 1 and 2, an extra 6" monitor is to be installed on the lower level to prevent or put out any fire in the batter below dredger.

h To assist in the wetting down of the dredger escape routes, or to protect power cables, extra spray installation points are to be located at the hydrants midway between sprays.

j Sufficient hydrants for connection of fire hoses from the dredger spray systems are to be installed on permanent manifolds at dredger parking locations and on temporary manifolds, as required for parking when there is no crew on the machine.

2 SPRAY COVERAGE

With the proposed layout of operating all the sprays in the open cut not less than 40% of the uncovered coal can be wetted down. (This compares with 19% at the time of the 1944 fire.)

This will be done by the operation of up to half of the sprays on any one header at a time which will make more pressure and water available to the individual sprays and give a better coverage.

Recommendations apply to summer conditions.

A reduced number or spray headers may be available for operation during the winter months.

3 WATER SUPPLY

a High Level Pondage - The adoption of a High Level Pondage Scheme for the supply of water to the swinging ends of the levels arose out of the early deliberations of this Committee.

With its completion a full supply of water under pressure will always be available from this source.

The High Level Pondage will have a full capacity of 70 million gallons. A storage of 50 million gallons would give 70 hours of operation at the maximum rate of discharge of 12 000 gallons per minute.

Water drawn from the High Level Pondage will be replaced at a rate of from 2000 to 4000 gallons per minute by pumping either from the 10" drainage pumps on No 3 Level via the two 20" booster pumps, or by pumping from the Morwell River Fire Pumps.

At present water supply is dependent on pumping and subject to interference if power supply fails.

b Water Available - With the completion of the High Level Pondage for the 1964-65 season the quantity of water then available will be as follows -

Pivot point end of open cut -

Latrobe River pumps operating with Booster Pumps - 11 000 gallons per minute.

Swing end of open cut -

High Level Pondage (Gravity Supply) - 12 000 gallons per minute.

Morwell River Fire Pumps - 4000 gallons per minute.

Total - 27 000 gallons per minute.

The total quantity of water available from the Morwell River will vary according to the quantity ponded there and the flow of the river at the time.

This amount of water from all sources will operate the equivalent of 200 rotary sprays, i.e. half of the total installed at the one time and is considered sufficient for the protection of the open cut.

c Drainage Pumps - The High Level Pondage Scheme includes the installation for drainage of four 10" pumps on No 3 level and two 10" booster pumps on No 1 Level. These pumps will be located permanently at the eastern end of the present open cut clear of the southern limit of the spreader.

They will discharge to the settlement ponds on the eastern side of the open cut. They will be used as required to replenish the water in the High Level Pondage or to pump direct to the fire service reticulation in lieu of the Morwell River Fire Pumps.

4 WORKED OUT BATTERS AND BENCHES

Worked out batters and benches at the pivot point end of the open cut will be covered with sand or overburden.

These covered areas will extend to the sanded repair bays available for the dredgers. Where batters are too steep for covering with overburden, protection will be by rotary sprays installed on steel towers near batter toes and spaced no more than 400 ft apart, with closer concentration where necessary.

Benches at the swinging end will also be covered and batters would be covered for about a third of their length so as to break up and retard any fire in that location. No 3 Level to be treated in a similar way. Establishments on No 3 Level or on the swinging end batters such as pumps, pipe lines, HT pole lines and substations are to be fully protected by the covering of all coal in their vicinities.

5 PROTECTION OF DREDGERS AND CONVEYORS

a All dredgers which may operate on coal are to be fitted with spray systems.

b The spray system is to be connected to a charged 8" header by fire hoses whenever there is no crew on the machine. Sprays are operated from ground level.

c All coal conveyors in galleries or in permanent positions are to be fully protected by permanent sprays.

d All new belts being ordered as spares for the coal machines are to be of neoprene or equivalent fire resistant material.

e A small pipe (2"), fitted with hydrants and hoses is to be available in the vicinity of major production machines operating on overburden surfaces.

6 POWER SUPPLIES

a The present practice of duplicate power feeds to all fire service pumps with provision for isolation of any extensions of feeders into the open cut area is to continue.

b All wooden HT poles in use on coal are to be protected at their bases by a covering of overburden of minimum diameter of 30 feet or have adequate water protection.

c The questions of security of supply and operation and the use of fire-proof poles instead of wooden poles on the coal are to be again taken up with the Electrical Engineer.

7 MANNING AND TRAINING OF PERSONNEL

a The proposed manning for fire protection and dewatering is shown in Appendix "K". The main reasons for the reduction in numbers from present manning is the advent of the High Level Pond and the proposed operation of the spray headers from valves at their ends.

b The programme for the training of personnel is to be continued.

Special training for new staff and refresher training for existing supervisory staff is to cover Weather and Weather Forecasting, Fire Service Regulations and Instructions, pipe and pump layout, water availability, plant protection and strategy of fire fighting.

8 ACCESS AND EXITS FOR PERSONNEL

Provision is to be made for access by personnel to and from the various levels of the Open Cut during conditions when fire makes the normal access unavailable.

Special care is to be taken to ensure that personnel along the operating faces on each level can, if exit to pivot point end of Open Cut is dangerous, move out of cut by climbing the permanent batters at the swinging end or by climbing down the operating faces to the spreader dump toe, or up to natural surface on ground level.

Exit provision is to be reconsidered every few years, as faces become longer and their directions or heights change.

SIGNED: Chairman and Convener (Committee appointed)

Members

APPENDIX C

FIRE SERVICE EQUIPMENT DETAILS

ACCEPTABLE EXISTING EQUIPMENT

ROTARY SPRAYS:	Bauer Circular or SectorRainer SR42 or Perrott P46BSZ sprays with 18 mm nozzles at a minimum pressure of 0.4 MPa (40 metre head) and a maximum pressure of 1.15 MPa (115 m head).
BIRDSMOUTH SPRAYS:	4.8 mm orifice sprays as detailed on the accompanying sketch Drawing No OY12/41/238. Spray operating pressures should be a minimum 0.18 MPa but preferable working pressures of 0.2 MPa (20 metre head) should be adopted. Pressure reduction is achieved by orifice plates inserted within the spray line or valve stops. Birdsmouth spray lines are generally located about 1.8 m to 2 m offset from the conveyor. This position allows a good spray coverage to 1.22 m and 1.48 m of conveyors and allows access for mechanical cleaning of spilt coal under the conveyor For conveyor mounted sprays another type of nozzle may be necessary to allow adequate spray dispersion and coverage of the complete conveyor and ground under. The conveyor mounted spray type proposed for Loy Yang is a 6 mm orifice full jet wide angle spray mounted on the supporting frame on each side of the 2 m conveyor [illegible] system to designation number 1/2BB35W3
STANDARD FIRE HOSES:	For general fire service, 65 mm by 30 metre length canvas percolating hose. 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 percolation rate 5 litres/min/sq metre. As manufactured percolation rate 10 litres/min/m^2. Operating pressures for fire hoses are to be minimum 0.3 MPa (30 metres head) and a maximum of 1.15 MPa (115 metres head).
HYDRANTS:	Standard 65 mm Victorian Country Fire Authority fire couplings throughout.
FIRE HOSE REELS:	To be in accordance with AS 1221 - 1976. 19 mm ID hose by 30 m long with a 6.5 mm diameter 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)
TYPICAL DUST SUPPRESSION SYSTEM FOR BUNKER: (to be installed below roof level)	¼ TT2W "Unijet" nozzle by Spraying Systems (Aust) Pty Ltd spaced on a 3 m x 6 m grid.
FIRE SERVICE PRESSURE RANGE:	Minimum 40 m head and maximum 115 m head at any fire service outlet.

DEPARTMENTAL

STATE ELECTRICITY COMMISSION OF VICTORIA

Reference jav/mdr MFR 25

Extension 3510

Date 30 December 1977

From MANAGER, COAL PRODUCTION

To COAL PRODUCTION SUPERINTENDENT, LYL

Memo to: CPSY, CPSM, CPSHQ, CPSLYL, CEF

Copy to: MES, MS&GS

MORWELL OPEN CUT FIRE REVIEW
UPDATING OF 1964 FIRE PROTECTION REPORTS
MORWELL AND YALLOURN OPEN CUTS

The Morwell Open Cut Fire Review Committee noted that the policies with respect to fire protection in the Latrobe Valley Open Cuts were based on reports of 1964. The Fire Review Committee recommended that while the substance of these reports still appear valid, they are now 13 years old, and should be reviewed in detail, updated and repromulgated in the light of more recent experience and related recommendations contained in the report of the Morwell Open Cut Fire of November 1977.

In confirmation of discussion with the Chief Engineer, Fuel, on 19 December 1977, Coal Production Superintendent, LYL, will convene a committee consisting of Coal Production Superintendents, Yallourn and Morwell, Fire Service Officers Yallourn and Morwell from Coal Production Department, and Messrs D Holmes, R Reilly, and D Ballard from Fuel Department, to update the 1964 policy statements.

As agreed with Chief Engineer, Fuel, it appears appropriate to restate a general policy with respect to fire protection applicable to all open cuts, with specific aspects where applicable to individual open cuts. However, this may or may not prove feasible or ideal, and this matter will be left to the committee to consider.

The committee should submit their report in draft form for appraisal by Chief Engineer, Fuel and Manager, Coal Production. After agreement between Chief Engineer, Fuel and Manager, Coal Production on the detailed statement, it would be intended to promulgate this statement as an inter-departmental Policy Statement for use in each Department.

The review of the 1964 reports will provide opportunity for the restatement of some items in each report which have given problems in interpretation during intervening years and should also provide an interdepartmental means of claryfying policies to be applied to Loy Yang Open Cut fire protection installations and procedures.

Mr R Odgers, Coal Production Superintendent, LYL, will be required to convene an initial meeting of his committee in January 1978, with a view to progressive evaluation and restatements of the previous 1964 reports. Mr Odgers should arrange to co-opt additional assistance to aid the committee, to assign sections of the reports to various members of the committee for initial appraisal, to arrange substitutes for committee members unable to attend scheduled meetings. As a target I nominate mid April as a reasonable date for submission of a draft to Chief Engineer, Fuel and Manager, Coal Production, with a view to promulgation of the Statement of Policy by Chief Engineer, Fuel and Manager, Coal Production prior to the end of June 1978.

MANAGER, COAL PRODUCTION

Appendix E

LIST OF MEMBERS OF COMMITTEE OF REVIEW
MFR25

Coal Production Department -

R B Odgers (Convenor)
C I Runge
C K Ferguson who was replaced on his retirement by
R V Lethlean
C H Strong who was replaced on his retirement by
J R Lee
J D Tangey

Fuel Department -

D S Holmes
D K Ballard
R M Reilly who was replaced on his retirement by
G J Halas

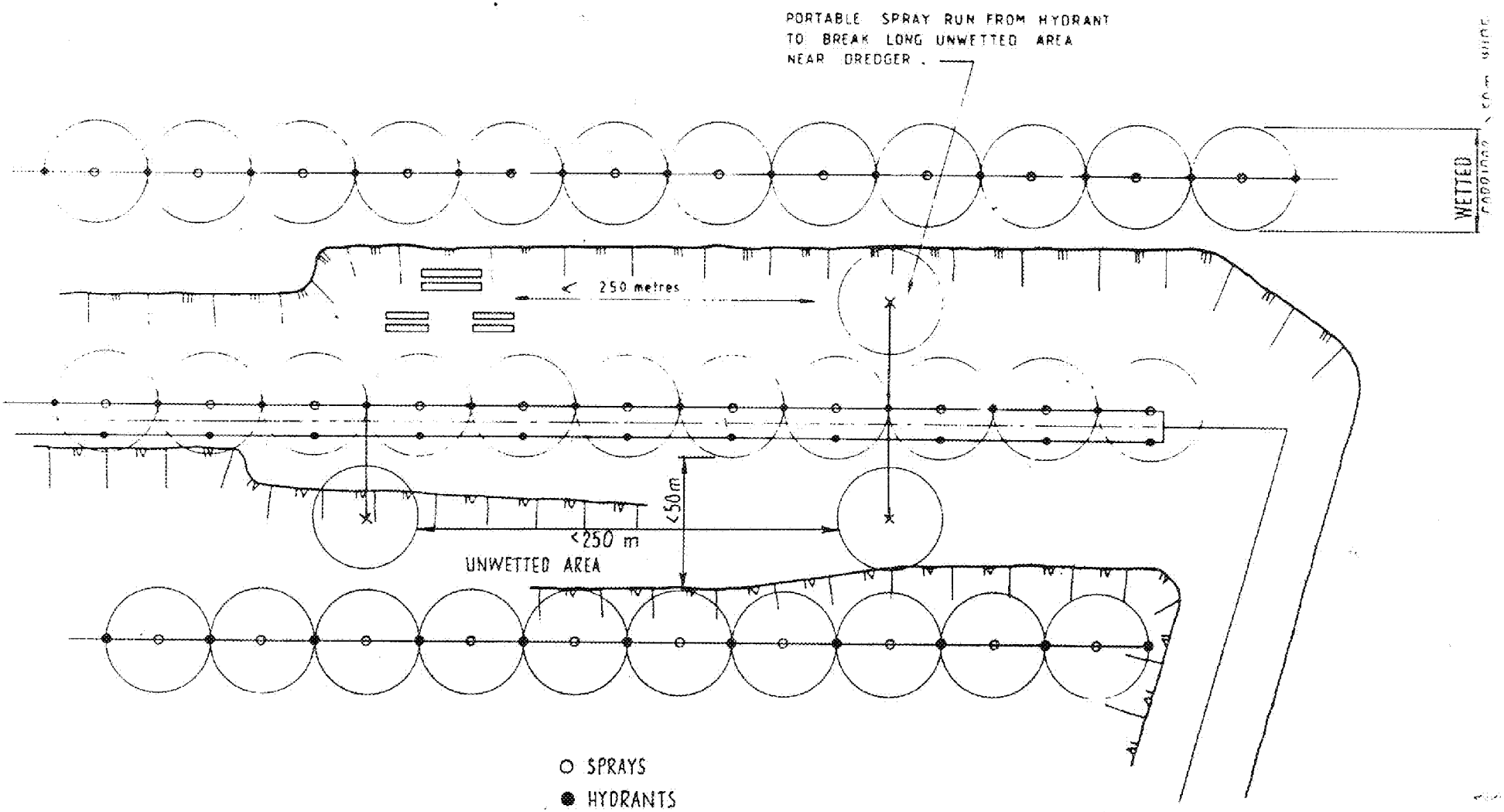


FIG — 1 EXAMPLE OF LIMITING UNWETTED AREA TO LESS THAN 50 DEP

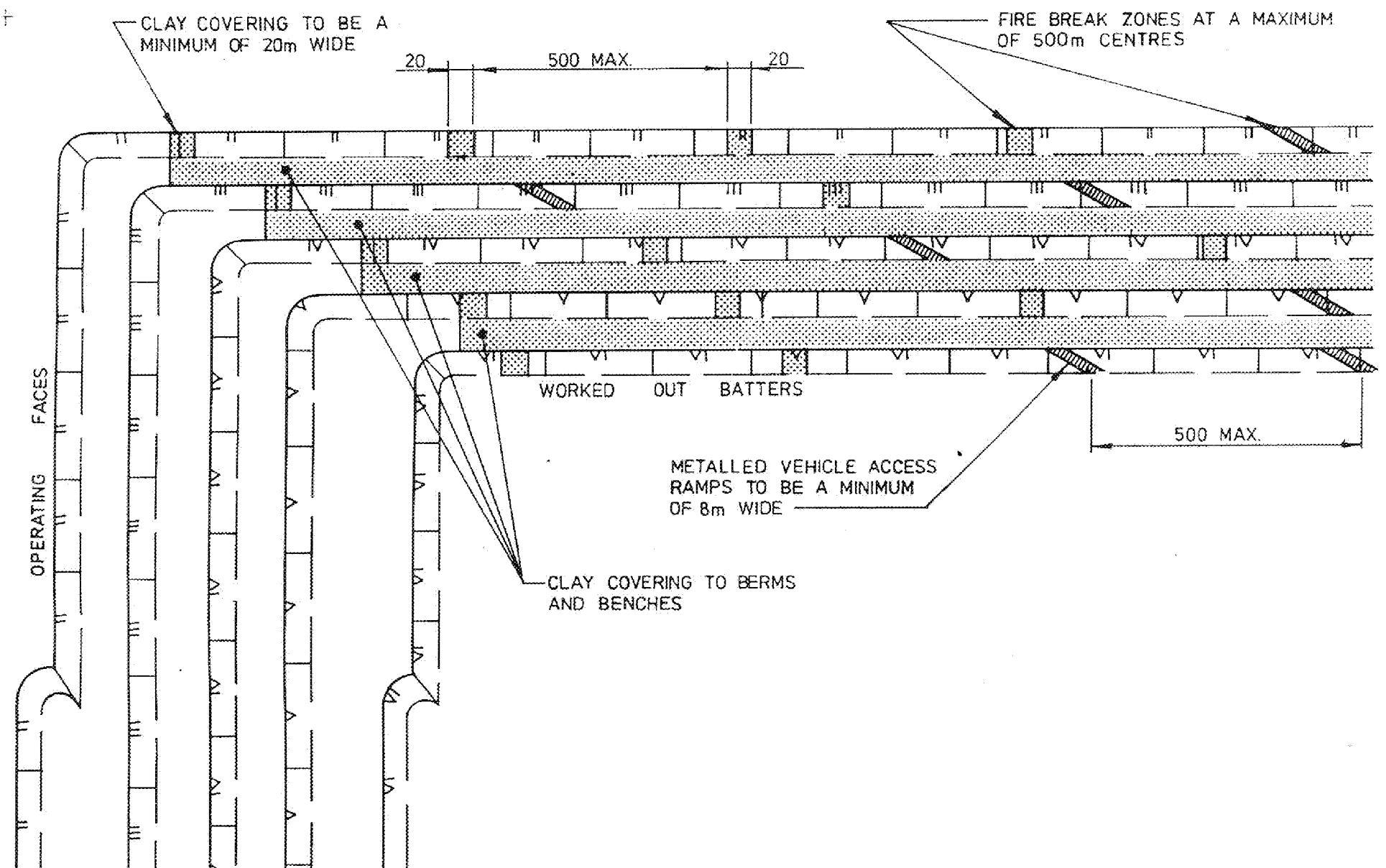
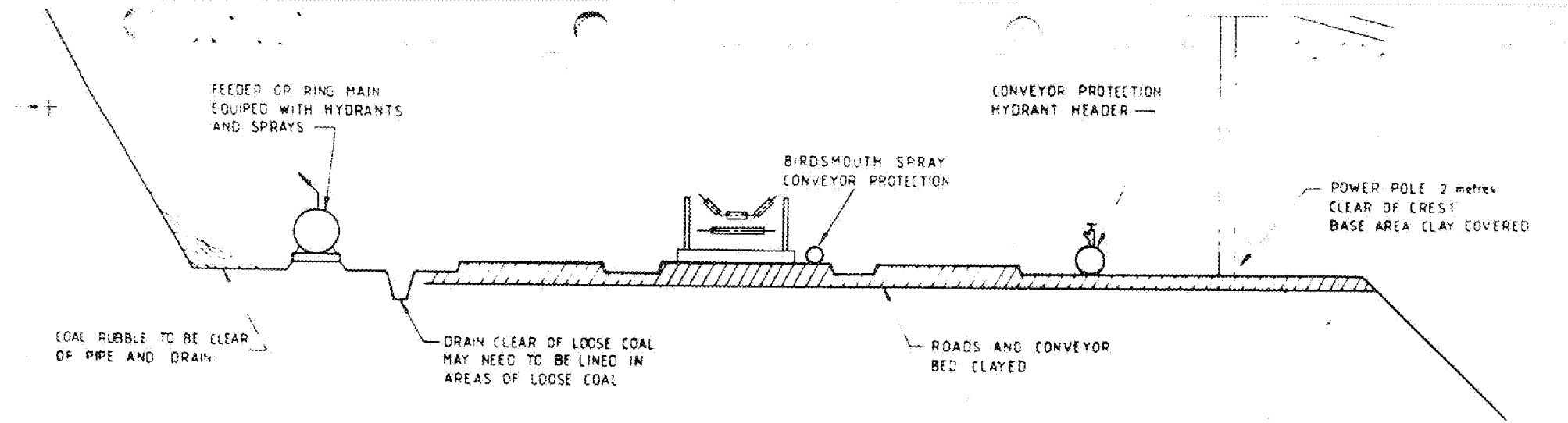
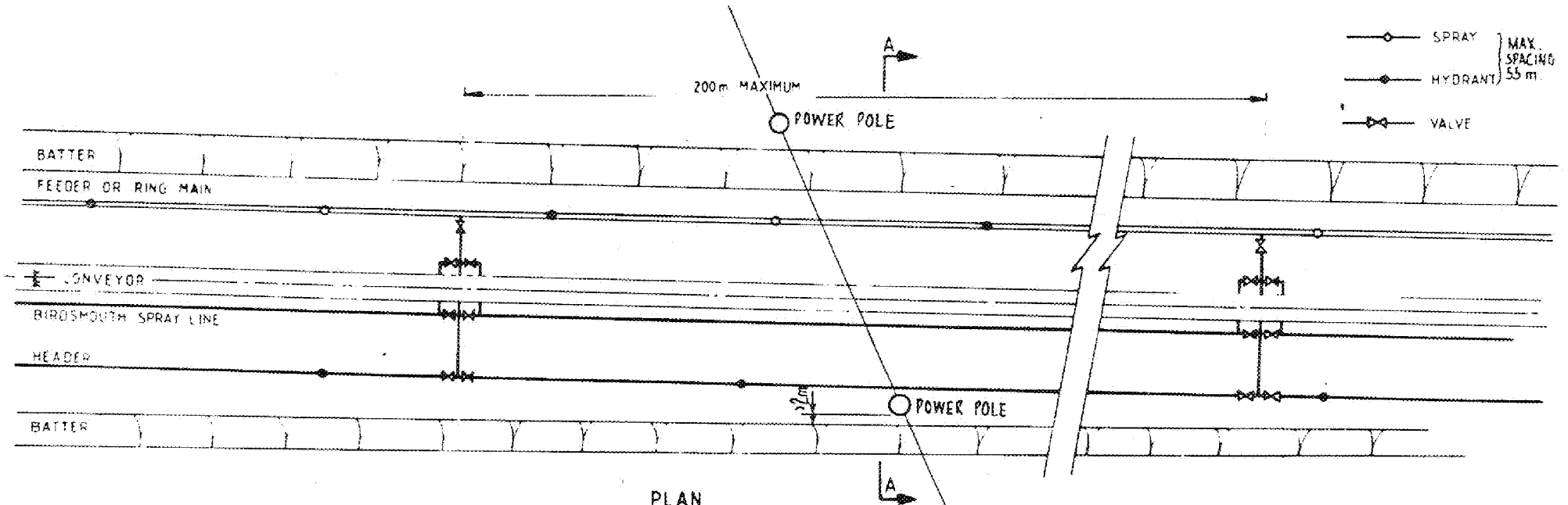


FIG. 2 WORKED OUT BATTERS-EXAMPLE OF FIRE PROTECTION



SECTION A-A



PLAN

FIG – 3 PERMANENT BATTER – TRANSPORT ROUTE – EXAMPLE OF FIRE PROTECTION

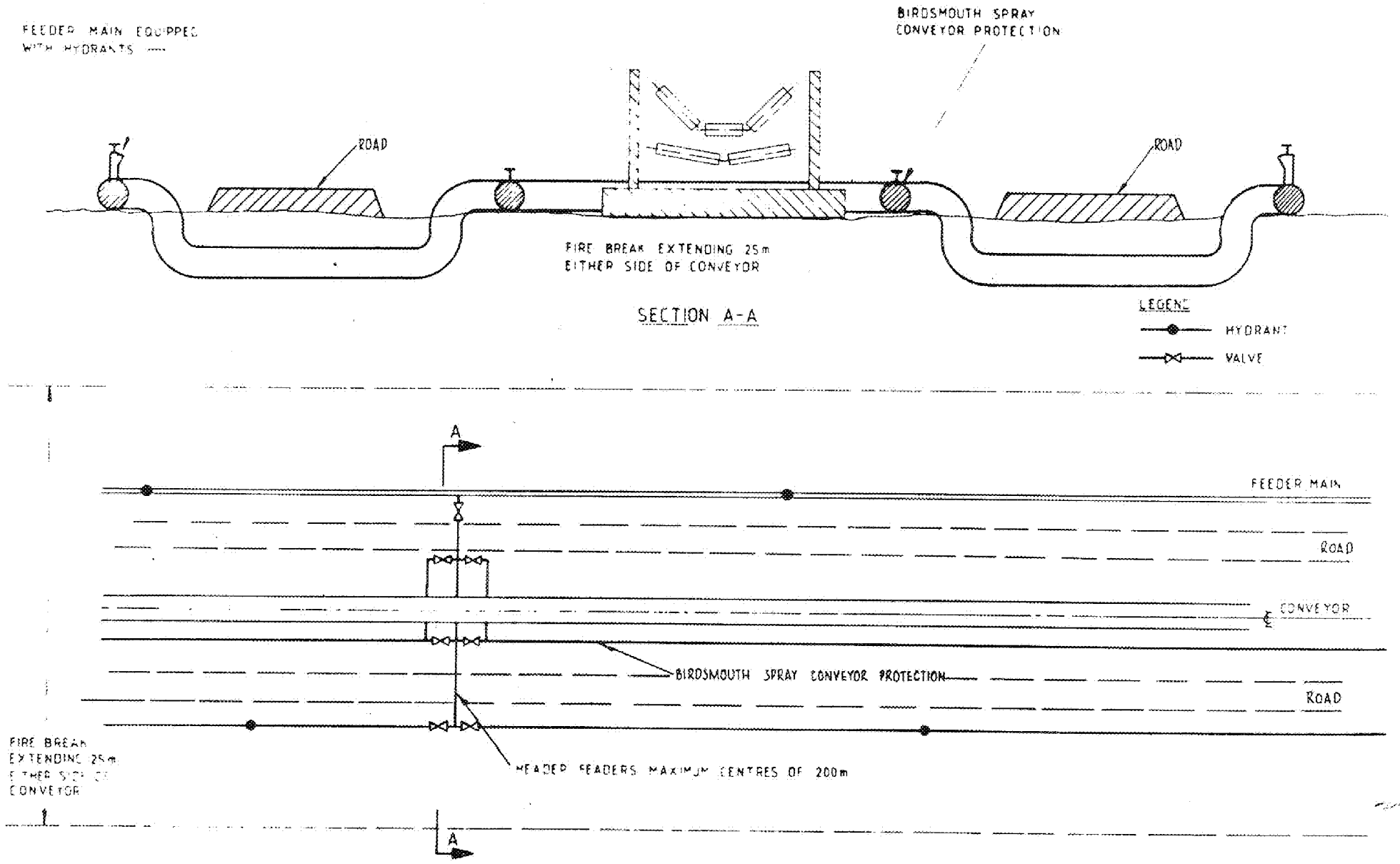


FIG-4 COAL TRUNK-CONVEYORS ABOVE GRASS LEVEL-EXAMPLE OF FIRE PROTECTION

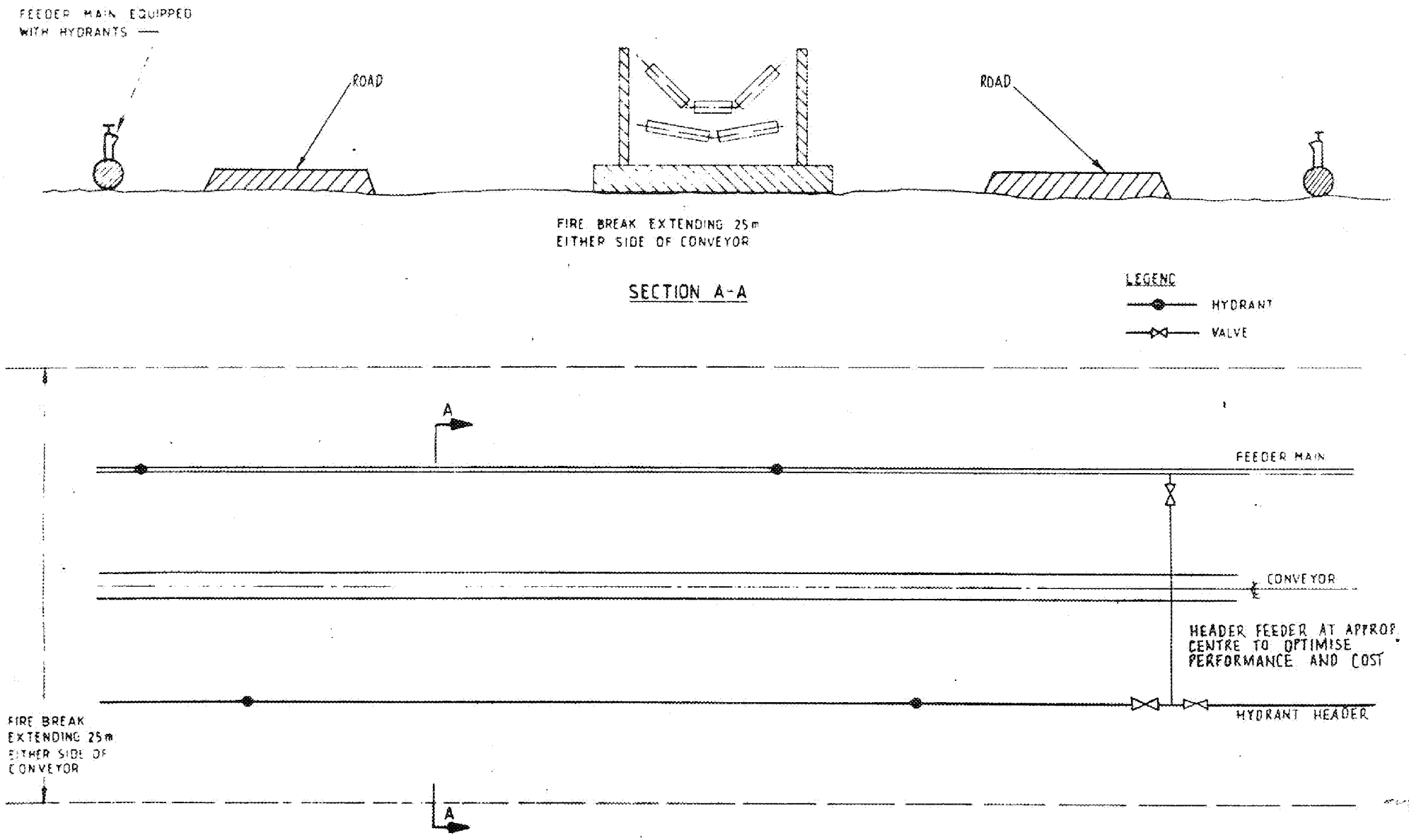
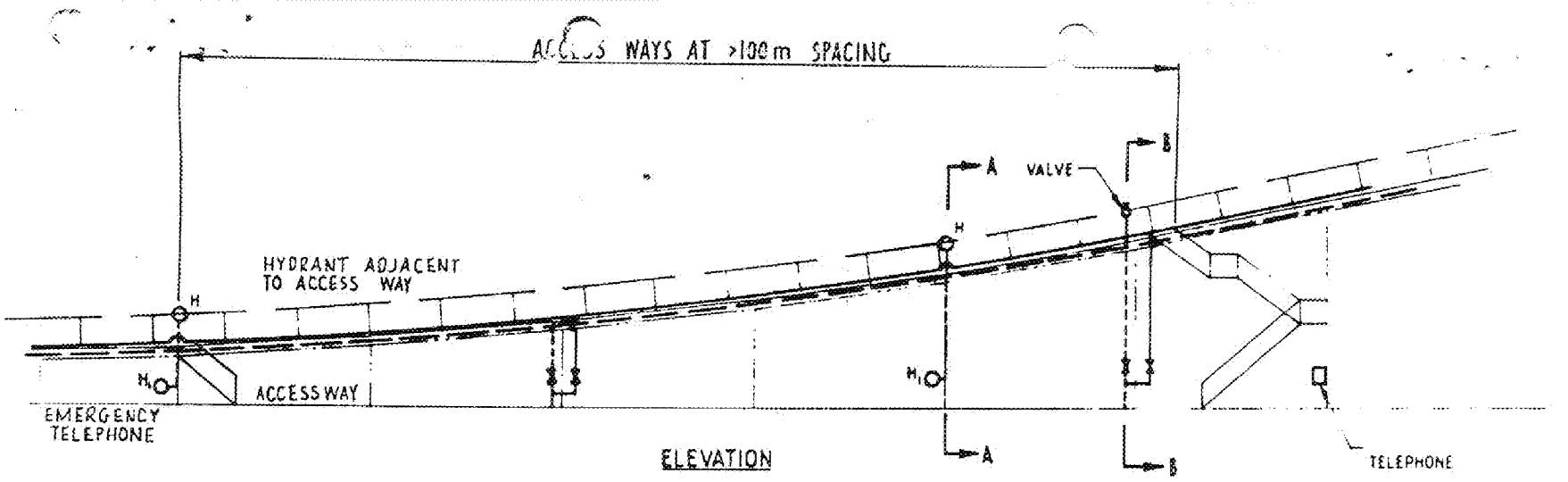
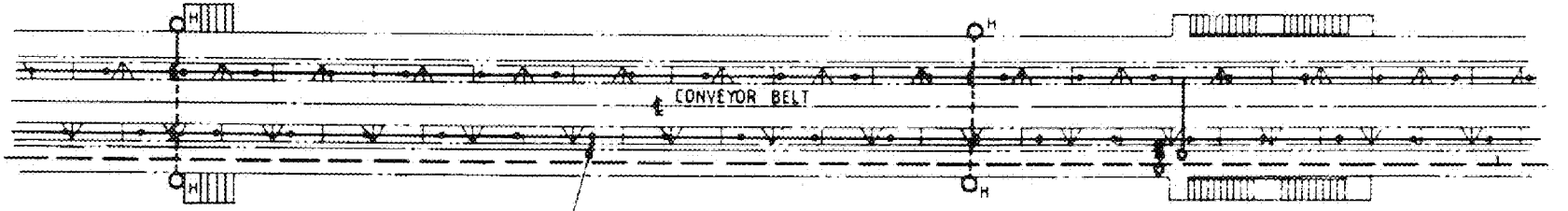


FIG-5 OVERBURDEN TRUNK CONVEYORS ABOVE GRASS LEVEL-EXAMPLE OF FIRE PROTECTION

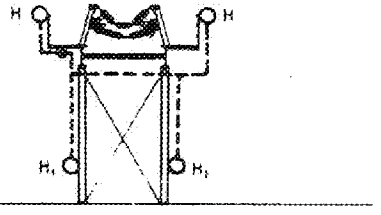


ELEVATION

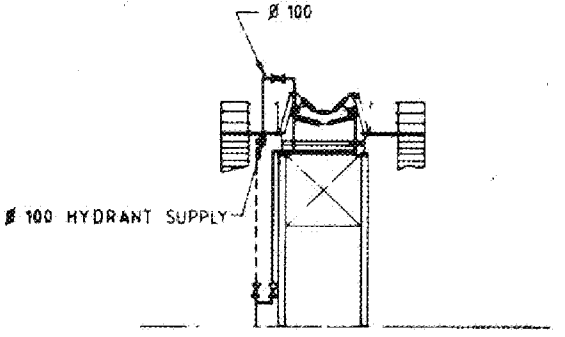


SPRAY NOZZLES PLACED ON BOTH SIDES OF CONVEYOR TO GIVE OPTIMUM COVERAGE OF ALL BELT SURFACES ALONG THE FULL LENGTH OF SPRAY LINES

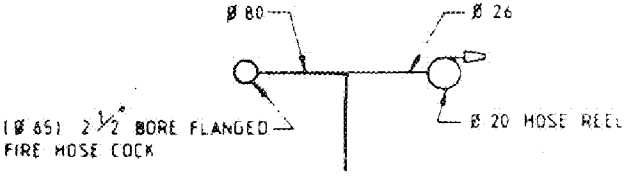
PLAN



SECTION A-A



SECTION B-B

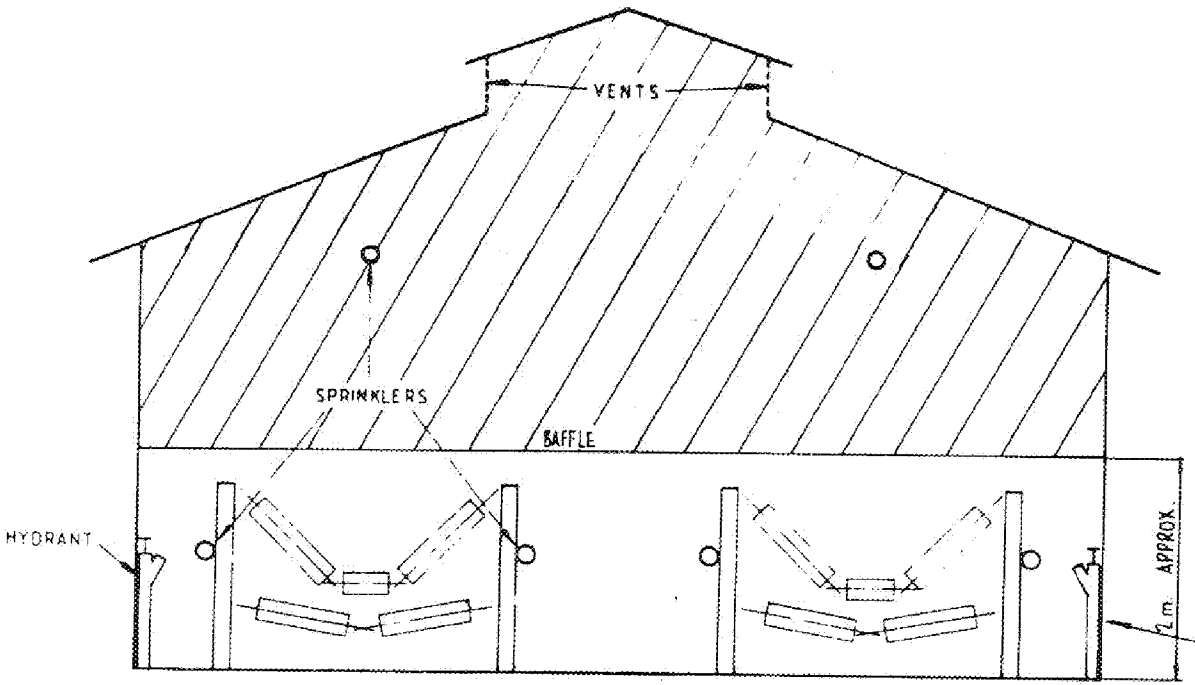


HYDRANT POINT (TYPICAL)

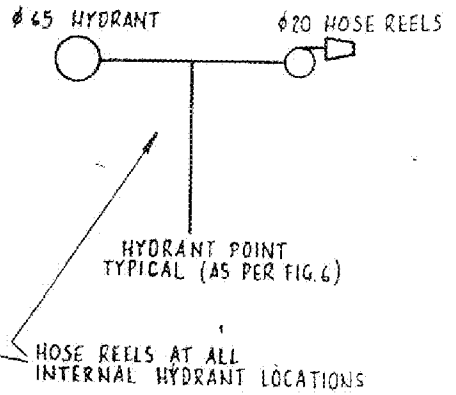
SCHEDULE

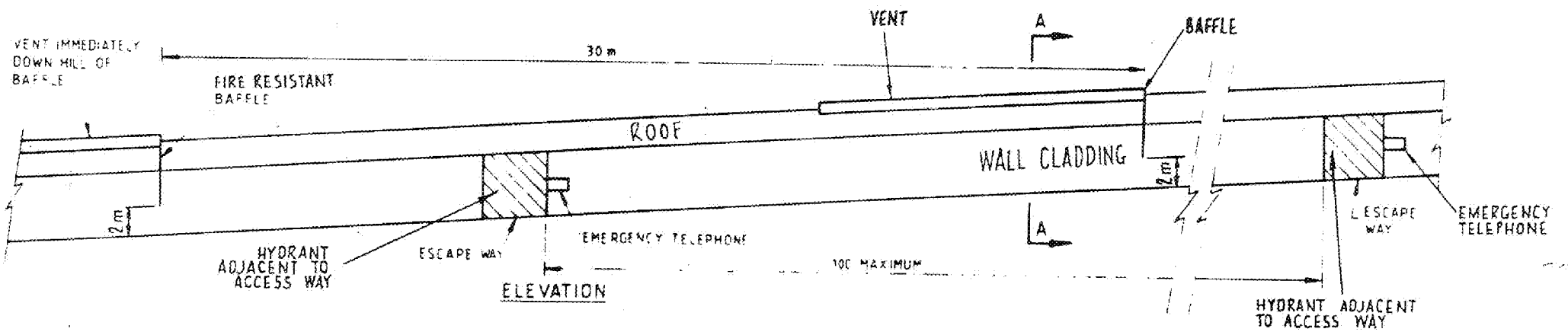
- SPRAY NOZZLE
- H — HYDRANT POINT (SEE DETAIL)
- H1 — HYDRANT POINT WITHOUT HOSE REEL
- VALVE

FIG.-6 ELEVATED CONVEYORS - EXAMPLE OF REQUIRED PROTECTION

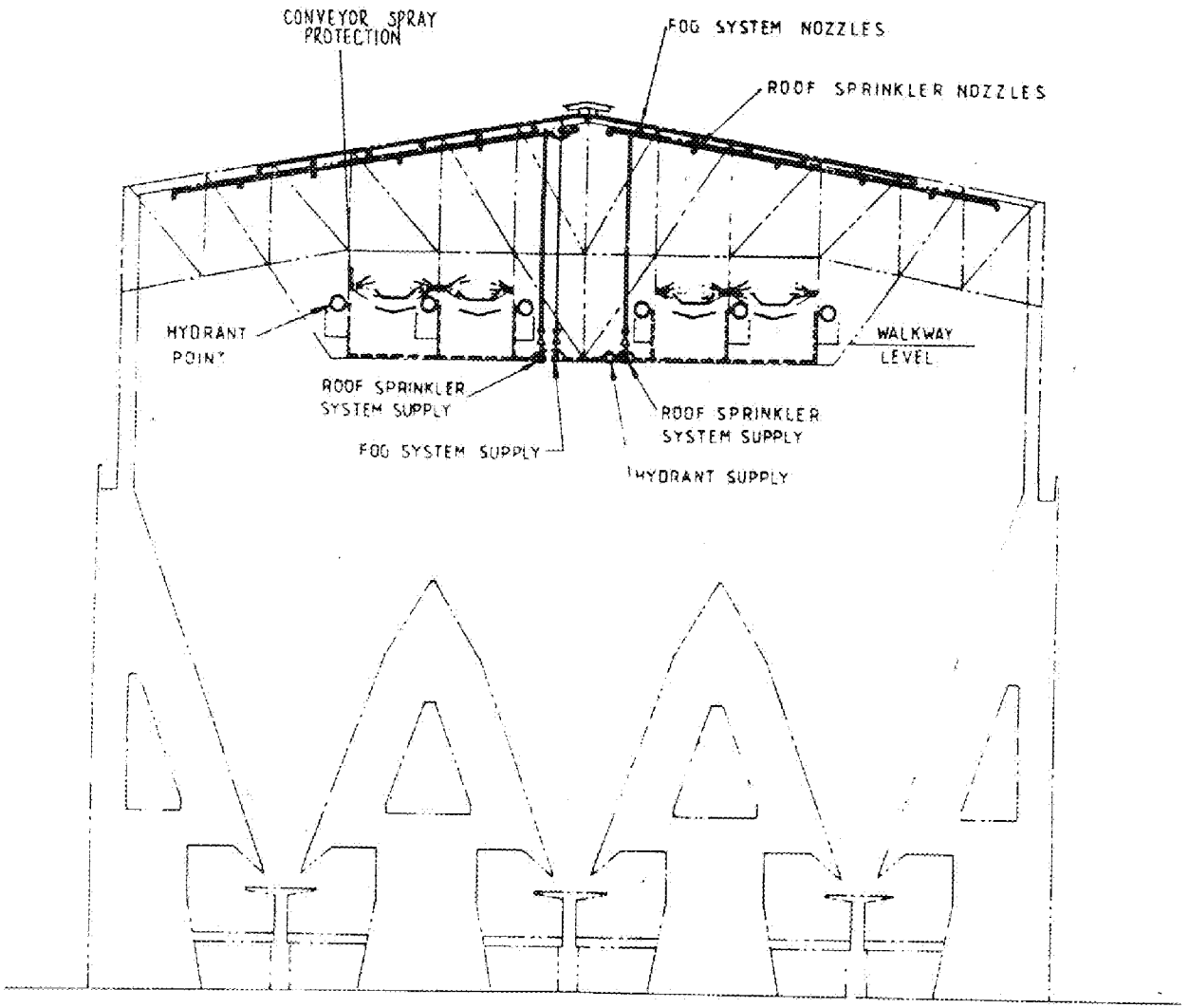


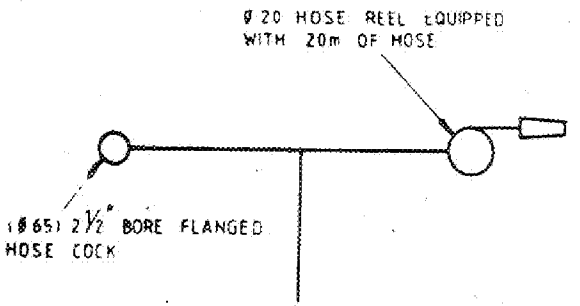
SECTION A–A





ELEVATION





HYDRANT POINT

FIG—8 TYPICAL CROSS SECTION OF BUNKER SHOWING REQUIRED PROTECTION

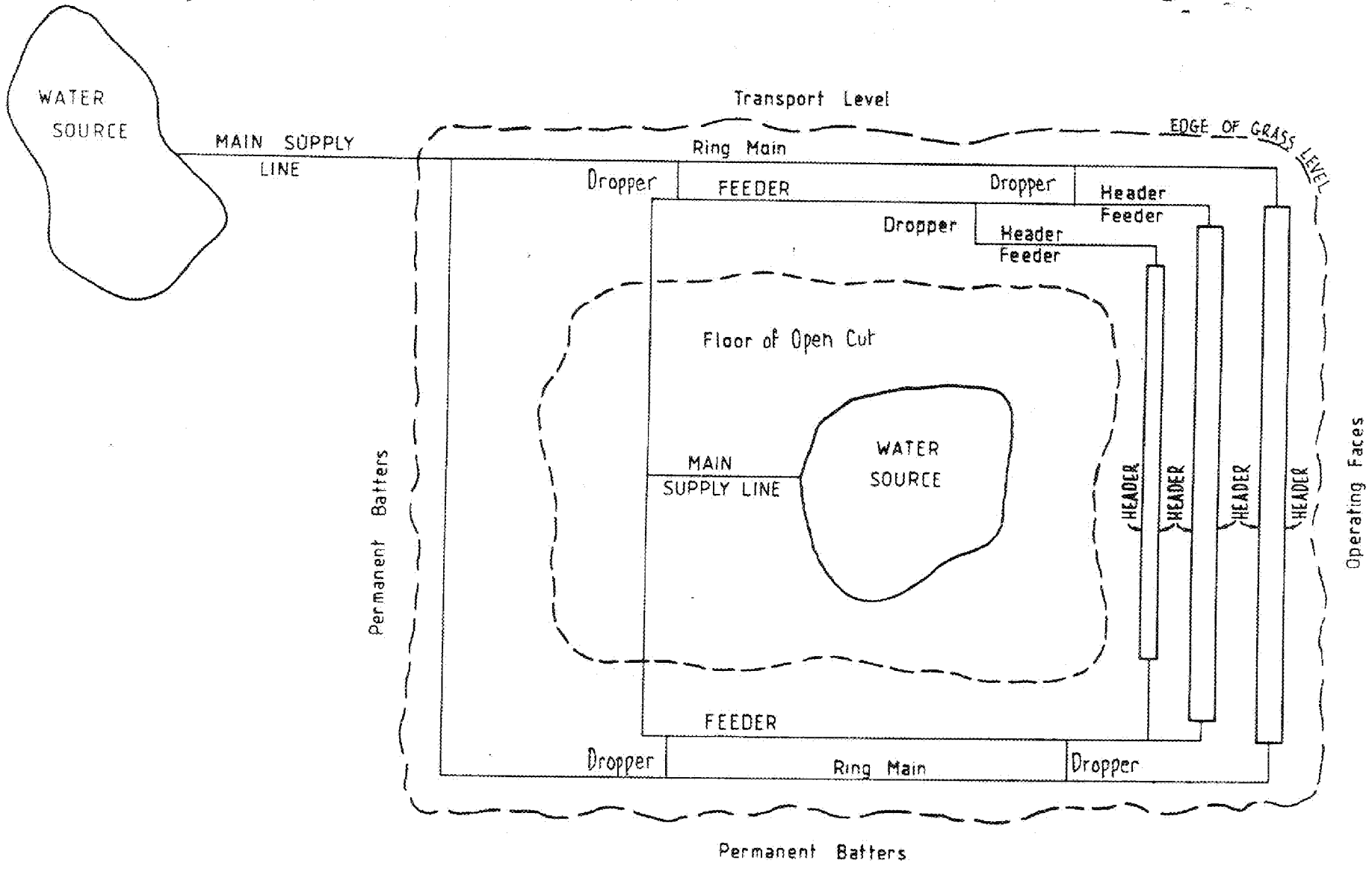


FIG — 9 PIPELINE NOMENCLATURE