INTERNATIONAL POWER
GDF SUEZ
HAZELWOOD MINE

MINE FIRE SERVICE POLICY
&
CODE OF PRACTICE

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FIRE PROTECTION CODE OF PRACTICE

A. PURPOSE

The purpose of this Fire Service Policy and Code of Practice is to achieve the Fire Protection Policy requirements by providing acceptable operating procedures for fire protection services for Mining Operations.

This will be provided by:

- Establishing a clear strategy and standard of open cut fire protection to:
  (a) protect all personnel within the Hazelwood Mine;
  (b) protect all plant and equipment required for the maintenance of coal winning operations, and
  (c) protect coal reserves to enable continuation of coal winning activities.
- Ensuring that all personnel associated with the Hazelwood Mine 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 coordinated, coherent and translatable into action and to ensure that these objectives are carried out.
- Ensuring that relevant statutory regulations are met and that a cooperative and coordinated approach is undertaken with relevant statutory authorities. i.e. 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 being approved for general use in the Hazelwood Mine.

B. SCOPE

This Fire Service Policy and Code of Practice is applicable to the Hazelwood Mine located in the Latrobe Valley, Victoria.

FIRE PROTECTION CODE OF PRACTICE (cont')

C. DEFINITIONS

RESPONSIBLE PERSONNEL

- **Emergency Services Liaison Officer (ELSO)** – The person responsible to ensure proper liaison occurs between International Power/GDF Suez – Hazelwood and all external emergency agencies.
- **Mine Services Superintendent** – The person responsible for the day to day fire service activities within the Hazelwood Mine.
- **International Power/GDF Suez – Hazelwood Emergency Commander (EC)** – The senior Hazelwood Mine Manager/Supervisor/Officer who may take control of International Power/GDF Suez – Hazelwood resources if and when an emergency exists.
- **Incident Controller** – The senior officer of an external agency which may take control of an emergency involving the Hazelwood Mine.
- **Mine Production Manager** – The person responsible for all mining activity within the Hazelwood Mine and who has the principal management function.
- **Mining Shift Supervisor** – The person responsible for fire service activities within the Hazelwood Mine outside normal day work hours until such time as the **Mine Production Manager** or a **Senior 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 grass level 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 Hazelwood 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.

FIRE PROTECTION CODE OF PRACTICE (cont')

C. DEFINITIONS (Cont')

MINE AREA (Cont')

- **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
- **Transfer Point –** A location where two or more conveyors meet to discharge coal or overburden, normally a concreted area.
- **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.

- **Fire Alert –** A day of extreme fire danger in the Hazelwood Mine where special precautions are undertaken to minimise the risk of fire outbreak.
- **Tanker Filling Point –** An area where a mobile tanker can refill with water can be a stand pipe or a hydrant manifold.
- **Percolating Fire Hose –** A hose that sweats water when charged, to eliminate burning when engaged in a coal fire.
- **Permanent Fire Break Zone (Zone 1) –** An area that is not able to sustain fire.
- **Fuel Reduction Zone (Zone 2) –** An area of combustible material that is to be reduced before the proclaimed fire season.
- **External Zone (Zone 3) – Areas outside the International Power/GDF Suez –** Hazelwood boundaries which could be considered a threat to the Hazelwood Mine.

Refer to **Appendix A** – **Part 1** for a diagrammatic layout of the various Hazelwood Mine features.

FIRE PROTECTION CODE OF PRACTICE (cont')

C. DEFINITIONS (Cont')

PLANT

Excavation Plant – Bucket wheel excavators also known as dredgers.

Pipelines – For the purpose of these definitions, the generic term pipelines should be referred to in descending size from the reservoir as follows:

- Main supply lines
- Ring mains
- Feeders
- Droppers
- Header feeders
- Headers

Refer to Appendix A.2 for a diagrammatic layout of these pipelines in the Hazelwood Mine.

Transport Plant – Conveyors of various categories i.e. 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 fulfil the Fire Service requirements are contained in Clauses 1 to 8 of this Fire Service Policy and Code of Practice.

E. RESPONSIBILITIES

All personnel are responsible to:

- be alert and on watch for any outbreak of fire;
- ensure personnel safety
- take action to extinguish or control any fire immediately it is observed, etc.;
- report the fire to the **Control Centre or Mining Shift Supervisor** as soon as possible;
- assist other personnel already fire fighting;
- advise the **Services Superintendent** of any fire hoses, fire extinguishers or any other fire fighting equipment that has been used so that replacement can be maintained; and
- Use fire fighting equipment only for fire fighting purposes unless authorised by the **Mining Shift Supervisor or Services Superintendent**, and report to the 1x7 Services Group any missing or incomplete fire fighting equipment.

FIRE PROTECTION CODE OF PRACTICE (cont')

E. RESPONSIBILITIES (cont')

During hot, dry or windy conditions, there is a high risk of Fire rapidly spreading in the Mine. When such conditions are expected, the **Director of Mining, the Production Manager, the Services Superintendent, the Mining Shift Supervisor or the Mine Production Superintendent will declare a Fire Alert.**

The recommended conditions that a fire alert be called at are when the temperature exceeds 32°C, the humidity is below 25% and the wind speed is above 30km/hr and/or gusting above 40km/hr. These values are set in CITECT to set off an EXTREME fire danger warning.

The **Director of Mining** is responsible the strategic management of all fire protection Policy and Code of Practice within the Hazelwood Mine.

Fire Instructions at GDF Suez – Hazelwood Mine will detail specific responsibilities for the **Mine Production Manager**, **Services Superintendent**, **Mining Shift Supervisor** and other personnel who work at the Hazelwood Mine. Some specific responsibilities as outlined in this Fire Service Policy and Code of Practice are highlighted below and have been referenced to the pertinent clause.

The **Mine Production Manager** is responsible for all fire protection within the Hazelwood Mine and the surrounding associated area as outlined in this Fire Service Policy and Code of Practice.

Specific responsibilities include:

- Authorisation of fire instructions and emergency procedures, (See Clauses F and 7.7)
- Ensuring fire service audits are carried out and recommended corrective actions taken, (See Clause F)
- Notification to the CFA on any outbreak of fire or for other emergency situations.(See Clause F)

The **Services Superintendent** is responsible to comply with this Fire Service 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 Hazelwood Mine in relation to this Fire Service Policy and Code of Practice. (See Clauses F and 1 to 9).
- The operation and maintenance of the fire protection installations and related services in the Hazelwood Mine. (See Clauses 1 to 9).
- Fire fighting operations.
- Reporting all fires. (See Clause F).
- Providing support to the CFA Incident Controller or the Police Coordinator, 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 Hazelwood Mine. (See Clauses F - 3 and 4.4).

FIRE PROTECTION CODE OF PRACTICE (cont')

E. RESPONSIBILITIES (cont')

The **Mining Shift Supervisor** is responsible for the activities of the **Mine Production Manager** outside of normal day work hours or until relieved, and for the following:

- Reporting all fires to the **Mine Production Manager** or **1x7 Services Supervisor**.
- Ensuring all personnel follow Fire Instructions.

All GDF Suez – Hazelwood Mine employees have the responsibility to ensure that all work under their control meets the requirements of this Policy and Code of Practice.

Asset Management and Field Engineer(s) have 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 the Hazelwood Mine as part of the fire service procedures includes the following:

- Emergency Control Procedures for various situations where there is a threat to Hazelwood Mine assets or personnel. Fire Instructions and the Fire Fighting Organisation shall form part of these procedures which will be reviewed by the end of July of each year, and updated as required.
- An annual update of the **Check List for Season Specific Fire Preparedness and Mitigation Planning** is required to be completed prior to the annual audit of all fire service facilities, systems, and procedures, and covers the review of the following documents:

Item	Document Name	Paradigm Id.
1	Hazelwood Mine Fire Service Policy and Code of	2589
2	Hazelwood Mine Emergency Response Plan	2895
3	Hazelwood Mine Fire Instructions	2758
4	Hazelwood Mine Fire Training Manual	
5	Hazelwood Mine Guidelines for Season & Period Specific Fire Preparedness and Mitigation	36546
6	Hazelwood Mine Guidelines for Season Specific Fire Preparedness and Mitigation Planning	36547
7	Hazelwood Mine Check List for Fire Fighting Equipment Annual Audit and Inspection	36548
8	Hazelwood Mine Check List for Season Specific Fire Preparedness and Mitigation Planning	36549

- The **Mine Production Superintendent** shall arrange for the preliminary **Fire Fighting Equipment Annual Audit and Inspection** to be carried out during July of each year. Corrective action must be carried out prior to the Final **Fire Fighting Equipment Annual Audit and Inspection** which is carried out in September of each year. Refer to paradigm document containing the **Check List for Fire Fighting Equipment Annual Audit and Inspection**.

FIRE PROTECTION CODE OF PRACTICE (cont')

F. DOCUMENTATION (cont')

- A written report is to be submitted to the Director of Mining following the outbreak of any fire detailing the cause, nature, damage involved and method of control.
- Reports of all fires will be forwarded to the **C.F.A.** on the appropriate **GDF Suez Hazelwood Standard Fire Report Form** on a monthly basis. Refer to the **Mine Fire Instructions – Clause 7.2, (**Refer to **Paradigm Document Id:2758)**.
- A **Hot Work Permit** must be obtained from the **1x7 Services Supervisor, Services Superintendent, or Team Leader** (x**5777**) during normal day work hours, or from the **Shift Production Supervisor** (x**5881**) or **Control Centre** (x**5888**) at other times before any of the following work is carried out.
  - Welding, cutting, burning or grinding;
  - Use of open flame for maintenance of cables;
  - Use of open flame appliances in caravans; and/or
  - Use of portable internal combustion engines;

NOTE: There are two (2) categories of burning and welding permits, which each will only be issued on a daily basis. The **Category A Permit** is issued for the **Hazelwood Slot Bunker**, and the **Category B Permit** is issued for the **Hazelwood Mine.**

All qualified **Fire Persons** must have completed their respective **Permit** training in accordance with the **Fire Persons Duties Training Manual** (Refer to **Paradigm Document Id: 39769**) which describes the training requirements of each of these two **Permit Categories**. Before any burning and/or welding, use of naked flame etc can take place, a suitably qualified Fire Person is to be on site.

(See **Attachment No. 8 – FIREMAN TEST QUESTIONS & ANSWERS**).

- Restrictions to the issue of **Hot Work Permits** on **Fire Alert Days** and **Total Fire Ban Days** should be understood.
- Approval must be obtained from the **Services Superintendent** before any Motor Vehicle can be driven on exposed coal areas, usually approved Motor Vehicles carry a Modified Exhaust System. **NOTE:** Under this Policy all **Hazelwood Mine** Conveyor Transfer Points (**TP5** and **TP8**) are classed as coal surface and vehicles without Modified Exhaust Systems are not to enter these areas. An inspection for compliance of the vehicle's braking and exhaust systems will be required before approval is granted.

A testing and acceptance procedure for new materials and methods to ensure that they meet broad compliance within the **Hazelwood Mi**ne and from any other relevant bodies before inclusion in this **Fire Service Policy and Code of Practice**. **Appendix C** contains examples of testing and acceptance procedures. Approval by the **Director of Mining** is required before inclusion in this **Fire Service Policy and 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 **Hazelwood Mine Fire Service Policy and Code of Practice**. The committee will consist of the **Director of Mining** and nominated representatives from the Hazelwood Mine.

New equipment and techniques will be ratified by the Director of Mining and his committee before the inclusion in this **Fire Service Policy and Code of Practice**. The committee shall first consult with the Corporate Secretary if there is a likelihood of materially increasing GDF Suez – Hazelwood's insurance risk.

DETAILED PROCEDURES AND PRACTICES

1. INTRODUCTION

Hazelwood Mine has 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 Hazelwood Mine Fire Prevention Policy. However, fires have also been started from within the mine due to plant malfunctions. Notable amongst these have been fires on Dredgers and belt fires damaging belt, head ends and the rising conveyors. Fires have also been caused by vehicles and mobile plant due to coal deposited on hot exhausts igniting and dropping off to start a fire. Although many fires have started from outside, no fire has escaped the Hazelwood Mine and entered the external environment.

Due to the methods employed for the extraction and use of Brown Coal in the Hazelwood Mine operations, large areas of brown coal are generally exposed in the operating faces, permanent batters and floor of the mine. Whilst the brown 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, and can spontaneously ignite.

Potential sources of ignition are frequently present in the form of electrical faults, faulty mechanical equipment, vehicle exhausts, metal cutting and welding activities, etc. A fire within the Hazelwood Mine can put all nearby machinery and equipment at risk particularly if coal spill or dust accumulates. In the mine, 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. Although the effects of carbon monoxide need to be monitored in a large scale brown coal fire.

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 from 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. Sometimes, it is best to dig out the batter where a fire is smouldering to completely remove any remnants of it. Refer to the **Fire Training Manual** for the special characteristics of brown coal fires which also details the best methods for the suppression of fire using proven fire fighting techniques and equipment.

This Fire Service Policy and Code of Practice is based on the adoption of sensible precautions as well as the establishment of a system of fire protection in the Hazelwood Mine to:

(a) Protect all personnel within the open cut,

(b) Protect all plant and equipment required for the maintenance of coal winning operations, and

(c) Protect the brown coal reserves to enable continuation of coal winning activities.

The aim is to prevent or extinguish any fire which may threaten the brown 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.

DETAILED PROCEDURES AND PRACTICES (cont')

Different levels of protection are defined for various elements of the Hazelwood Mine based on the risk to personnel, plant and equipment and the brown 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.

2. PLAN OF PROTECTION

The necessarily large area of exposed brown 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 Hazelwood Mine is based on the following principles:

- 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.
- 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 coordinate fire fighting facilities.
- The use of approved & tested fire fighting equipment and fittings which are compatible with outside combat agencies.
- 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. **Note: Whenever pipelines are to be disconnected from the water supply, all efforts must be made to have water restored back to the affected line before the end of the shift. If this is unachievable, then a temporary water supply is to be set up.**
- The provision of adequate training sessions and exercises to ensure that each employee understands the appropriate techniques and Hazelwood 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 in conjunction with constant monitoring and wash down exercises where coal build up could become a fire hazard.

In order to properly protect all parts of the Hazelwood Mine, pipe work and sprays are to be installed as laid down by this Fire Service 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 diversity in the simultaneous application of the fire protection water supplies and distribution.

DETAILED PROCEDURES AND PRACTICES (cont')

The maximum demand as defined in this Fire Service Policy and 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 Hazelwood Mine. 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.

3. EXPOSED COAL

3.1. OPERATING AREA

Fire equipment such as fire hoses, fire extinguishers etc., are to be strategically placed throughout the operating area. (*See **Appendix B – Part 11 & Part 12** for locations, sizes, & quantities etc.*). 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^2 in area with a maximum dimension in any direction of 250 metres. Portable or readily relocatable sprays are to be used if necessary to achieve this requirement.

Appendix A – Part 3 shows examples of this protection.

3.2 CONVEYOR CORRIDORS

3.2.1 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.

3.2.2 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 clause **3.2.4 Benches without Conveyors**.

3.2.3 Benches Supporting Conveyors

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

3.2.4 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^2 in area with a maximum dimension in any direction of 250 metres.

DETAILED PROCEDURES AND PRACTICES (cont')

3.3 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 Clause 4.5.
- Power distribution centres are to be located on clayed surfaces, of a minimum of 75 mm thickness, with at least 5m 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.

3.4 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.

  NOTE: in the absence of tanker filling points a hydrant manifold will suffice. Fixed sprays should be used in conjunction with the droppers for the tanker filling points in order to provide wetted breaks.
- Where possible access to areas worked out to be maintained.

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 metalled vehicle access ramps or clay covering, a minimum of 8 m wide.
  Appendix A – Part 4 shows examples of this protection

DETAILED PROCEDURES AND PRACTICES (cont')

3.5 WORKED OUT FLOOR OF THE HAZELWOOD MINE

The worked out floor of the Hazelwood Mine as excavated, normally consists of low grade coal and overburden. 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 Clause 3.4. Individual exposed coal areas left by these fire break zones shall be no greater than 12,500 m^2 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 – Part 1 shows an example of the various Mine areas.

4. PLANT AND EQUIPMENT

4.1 Dredgers, Stackers, Mobile Slew Conveyors and 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, located on either side of the conveyors & adjacent to the machine, hydrants shall be spaced not greater than 55 metre intervals along both sides of the face conveyor. (**NOTE:** *All fire hydrants are to conform to specifications see Attachment No 2 Fire Hydrant Specifications).* When unattended or non-operational, the rotary spray systems of machines are to be connected to this supply. 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. (**Note**: only one machine is to be connected to any hydrant.)
- Sufficient number of sprays to provide a spray curtain to protect the machine against airborne combustibles. Stackers not subject to airborne combustibles are exempt from this.
- A clayed maintenance site is to be provided for machines out on extended maintenance. If this is not possible a sufficient number of rotary sprays are to be set up to protect the machine from airborne and ground combustibles. Stackers not subject to airborne combustibles are exempt from this.
- All rotary sprays are to be capable of being operated from ground level.
- Machines travelling on surfaced roads or clayed berms need not be protected by an external spray system.

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.1 Dredgers, Stackers, Mobile Slew Conveyors & Other Major Excavating Plant (cont')

- A spray system and equipment to protect the machine from fires occurring within the machine including:
  - **a.** Spray line protection will consist of a 38-90 mm diameter pipeline fitted on either side of the conveyor and installed with Birdsmouths or fog nozzles which are spaced at approximately 3.6m intervals along its entire length. Where machines are fitted with spill belts, the above will also apply. *(See **Appendix B - Part 1**).*
  - **b.** Fire hose reels located on walkways around 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. (*See **Appendix B - Part 12** for location, size, type and quantity*).
  - **e.** Automatic Fire Detection and Suppression System (FDSS) (currently only on D11)
- 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.

4.1.1 Protection Requirements for Dredgers, Stackers, Mobile Slew Conveyors and any Other Major Plant out under Maintenance

Protection requirements for Dredgers and other major plant will be based on protecting each machine where it stands by providing the following:

- Plant to be connected to a water supply. **Note: If plant is to be connected to a water supply by a fire hose, then 90 millimetre percolating hose must be used.**
- A water supply strategically set up so that it can be capable of being directed under pressure to any part of the machine and has the capacity of extinguishing a fire (e.g. a 150 mm water monitor).
- A **Hot Work Permit** will be required daily to cover any burning and welding activities on plant or any appliance using naked flame for cooking, heating, or any other purpose (permit to be obtained from Fire Service during day shift or from the **Mining Shift Supervisor** after hours.)
- Automatic Fire Detection and Protection System, if fitted, shall be kept operational whenever practical.

For Burning and Welding purposes it is essential that a percolating fire hose be used (*See **Appendix B Part 2** for appropriate percolating fire hose*) from the water supply to the machine, however there will be times when this could cause problems.

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.1 Dredgers, Stackers, Mobile Slewing Conveyors & other major excavating plant (cont')

In this case the **1x7 Services Supervisor** and a representative from the maintenance group will meet and come to some alternative agreed arrangement.

If during any maintenance activity any part of the fire service water supply system is disconnected, then the **Service Supervisor** is to be notified immediately, so that a temporary alternative can be put in place.

4.1.2 Site Offices and Amenity Buildings

When site offices and amenities buildings are required in the Hazelwood Mine they are to be sited on a clayed or hard standing area. They are to be a minimum of 10 metres from the nearest part of a Dredger and or any conveyor system. They are to be set up adjacent to a charged water supply and have sufficient rotary sprays attached to provide a saturated island around the buildings.

4.2 CONVEYORS

4.2.1 Dredger Face Conveyor

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

- Inbuilt birdsmouth spray or fog nozzle systems and other protective equipment are to be provided on the Conveyor Drive unit and Trailing Frame.
- Rotary sprays shall be spaced to give a continuous wetted corridor along the conveyor, and be capable of protecting the Head End and Tail End units. 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 **1x7 Services Supervisor** is to ensure special precautions are taken during belt shifts, fire main rearrangements or maintenance of pipe work.

4.2.2 Coal and Overburden Trunk Conveyors below Grass Level

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

- Benches shall be clayed and protected as per Clause 3.2.

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.2 CONVEYORS (cont')

- Rotary sprays shall be spaced to give a continuous wetted corridor along the conveyor and be capable of protecting the Head End and Tail End units. Hydrants shall be spaced at not greater than 55 metre intervals along both sides of the conveyor.
- Inbuilt birdsmouth or fog spray systems on Conveyor Drives and Trailing Frames

Appendix A – Part 5 shows an example of this protection

4.2.3 Coal Trunk Conveyors above Grass Level

The principle of protection is to provide a wetted area for the Conveyor head end, and tail end units, and hydrant and birdsmouth or fog spray supplies for the full length of the coal trunk 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.
- Rotary spray lines along the north or west side of the conveyor to give a continuous wetted corridor along the conveyor.
- Inbuilt birdsmouth or fog spray systems on Conveyor Drive Unit and Trailing Frame.
- A fire break zone of at least 25 m width on either side of the conveyor, or a lesser fire break zone of 10 m would be acceptable where rotary sprays provide a continuous wetted corridor along the conveyor.

Appendix A Part 6 shows an example of this protection.

4.2.4 Overburden Trunk Conveyors above Grass Level

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

- Inbuilt birdsmouth or fog spray systems on Conveyor Drive Unit and Trailing Frame.
- Hydrants at not greater than 55 metre intervals on one side of the conveyor.
- Rotary sprays at not greater than 55 metres on one side of conveyor and be capable of protecting the Head End and Tail End units. *(If sprays are of the Nelson Big gun type then spacings shall be not greater than 100 metres.)*
- A fire break zone of at least 10 m width on both sides of the conveyor.

Appendix A – Part 6 shows an example of this protection.

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.2 CONVEYORS (cont')

4.2.5 Overburden Dump Conveyor

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

- Provision of a header along the length of the conveyor with hydrants at not greater than 55 metres intervals, on one side of the conveyor supplying protection for the conveyor, tripper and stacker.
- Provision of a header along the length of the conveyor with rotary sprays fitted at 55 metres intervals, on one side of the conveyor supplying protection for the conveyor tripper, stacker, Head End and Tail End units. *(If sprays are of the Nelson Big gun type, then spacings are to be at 100 metres.)*
- Inbuilt birdsmouth spray systems on Conveyor Drive Unit and Trailing Frame.

4.2.6 Elevated Conveyors

Fire protection for these areas is based on minimising coal spill by appropriate plant design and regular clean-up of coal spill, and the use of a spray system capable of wetting the conveyors and support structure, which 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 metres apart.
- Fire hydrants beside the conveyor, shall be spaced at not greater than 55 metres intervals, and at conveyor and ground level located adjacent to all access points and escape ways.
- Fire hose reels shall be installed at intervals of no greater than 40 metres apart along elevated conveyors. **Note:** A standard fire hose reel consists of a 19 millimetre diameter x 20 metre length of non percolating rubber hose. *(See **Appendix B – Part 5** for hose reels).*

Appendix A – Part 7 shows an example of this protection.

Alternatively, a risk management approach may be used to provide adequate fire protection for elevated structures (i.e. Rising and Bridge Conveyor sections).

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.2 CONVEYORS (cont')

4.2.7 Multiple Transfer Areas

Fire protection for these areas is based on minimising coal spill by appropriate plant design and regular clean up of coal spill, plus the use of a spray system capable of wetting the conveyor system 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.
- Fire hydrants at conveyor and ground levels, shall be spaced at not greater than 55 metre intervals, and located adjacent to all access points and escape ways.
- Rotary sprays are to be installed on the highest point of the conveyor units & be strategically placed so that when all are being operated, a saturated island over the entire transfer point is achieved.
- Fire hose reels shall be installed at intervals of no greater than 40 metres apart on conveyors in the transfer area. **Note:** A transfer point is determined by the concreted area where conveyors intersect, as defined in the ***Mine Area*** *definitions clause* ***Transfer Point***.
- A fire break zone at least 25 metres width clear of any conveyor.

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.2 CONVEYORS (cont')

4.2.9 Specific Protection of Conveyor Drive Units

2 x Carbon Dioxide and 2 x Foam type fire extinguishers shall be placed adjacent to the access steps of each Conveyor Drive Unit. Live hose reels shall be provided either on, or located adjacent to each conveyor drive unit.

Conveyor drive units below grass level in the Hazelwood Mine are to be protected by rotary sprays mounted either on headers or on the conveyor drive unit, or by portable rotary sprays such that a saturated island can be achieved under and around the conveyor drive unit, while at the same time achieving a spray curtain to protect the full height of the conveyor drive 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 conveyor drive 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. Alternatively, fog nozzle sprays may be used spaced on one side of the conveyor but staggered to give optimum coverage of belt surfaces and idlers.

Inbuilt birdsmouth sprays or fog nozzle spray systems shall be provided on the Conveyor Tail Ends.

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

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.2 CONVEYORS (cont')

4.2.10 Bunkers and Galleries

Fire protection for bunkers and galleries are based on minimising coal spill and coal dust by appropriate plant design and the regular washing down of coal dust build up from bunker & gallery structures, the provision of fire retarding baffles, etc. (Baffles are used to retard the chimney effect of fires in areas like the Morwell Galleries), and the provision of an adequate water supply and strategically placed fire equipment. 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:

- Carry out the requirements of the **Check List For Hazelwood Slot Bunker Fires Services Wash Down Routine Inspection** – Paradigm Document Id **39540** on a 6 to 8 week interval.
- Bunker and gallery structures designed to minimise the settling and accumulation of dust.
- Internal roof mounted spray systems capable of suppressing airborne dust *(See **Appendix B – Part 6**)*. Separate spray systems are to be provided for the bunker and galleries; consideration should be given to supplying automatic detection systems to activate an alarm, where practicable, particularly where bunkers and/or galleries are unmanned.
- Fire hose reels, hydrants and hoses to be provided at readily accessible locations within the bunker and gallery including all entrance ways.
- A dust and coal spill clean up system for the gallery.
- 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. (*See **Appendix B – Part 6**).*
- Birdsmouth or fog sprays to wet the conveyor belts.
- Escape facilities and access routes clearly marked. *(see **Hazelwood Mine Evacuation Procedures** as per the **Hazelwood Mine Emergency Response Plan**).*
- 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.

A wall exists between the gallery 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 – Part 9 shows an example of this protection.

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.3 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. *(See **Appendix B – Part 7**).*
- When mobile plant is operating on coal surface, it is to be inspected every 2 hours or earlier if necessary for coal build up around working parts, and washed down as required.
- Carrying of a fully charged knapsack spray and/or chemical fire extinguishers, plus a 6 metre x 19 millimetre wash down hose fitted with a CFA 64 millimetre female coupling and spray nozzle as a "first aid" measure *(See **Appendix B – Part 9**).*
- If plant breaks down on coal surface and cannot be moved, a rotary spray is to be connected to a water supply and set up to protect machine.
- At the end of each of each shift, plant not required for operation during the next shift is to be travelled off coal surface and parked on a sanded or clayed area adjacent to a fire hydrant or rotary spray. **Note** plant is not to be parked within 10 metres of any Conveyor, Dredger, Machine or Building**.**
- During times of Fire Alert machines are to be travelled of coal surface, and parked adjacent to a water supply, unless otherwise instructed.

4.4 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 comply and be based on the following:

- Routine cleaning and prevention of coal build up
- Vehicles that operate on coal surface are to have their exhaust systems checked at least every 2 hours for coal build up and wash as required.
- 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 **Mine Production Manager**. Vehicles without such approval shall not travel on coal surfaces *(see **Appendix B – Part 7 & Part 8**).*
- Drivers operating vehicles on coal surface are not to exceed the speed limit of 15km/h.
- Carrying of a standard fire suppression pack as "first aid" measures.*(see **Appendix B – Part 9**).*

During times of **Fire Alert**, vehicles are not to enter coal surface unless permission from the **Mine Production Manager** is granted. (Refer to the **GDF Suez Hazelwood Mine's Fire Instructions**).

- Access to coal surfaces by non-compliant vehicles (ie: ambulances/emergency services vehicles) is only to be when under the escort of a fire tanker at all times.

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.5 ELECTRICAL SUPPLIES

4.5.1 Reliability

Duplication of the electrical supply, geographic separation of feeders and automatic switching is to be provided so as to achieve the required level of reliability for Hazelwood Mine plant and equipment. Where practicable, ensure that duplicate electrical supplies are provided from separate power distribution centres. Automatic fault isolation facilities shall be provided for all plant connections on feeders supplying fire service pumps. Where practicable, the electrical 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 Clause 7.1.8 **Reliability of Water Supply.**

4.5.2 Routing and Type of Supply

Preferably, electrical supply down batters should be via overhead lines. However, where overhead electrical supply would interfere with plant movement, supply by mine power cable or flexible trailing cable may be provided. (See comments in clause **4.5.4 Siting of Cables on Coal** & **Cables Down Batters**, for the 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 metre spacing should be provided – for field situations where this cannot be achieved, specific approval of reduced spacing is required from the **Mine Production Manager**.
- Alternate electrical supply underground feeder cables should be routed separately, or if this is not possible they should be at least 2 metre 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.

DETAILED PROCEDURES AND PRACTICES (cont')

4. PLANT AND EQUIPMENT (cont')

4.5 ELECTRICAL SUPPLIES (Cont')

4.5.3 Siting of Poles

- Poles should be sited at least 2 metre 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.

4.5.3.1 Siting of Poles on Coal

- Poles should be protected by a 3 metre radius area of compacted sand or clay with a minimum depth of 75 mm. For other transmission structures the protected area should extend 3 metres beyond the perimeter of the structure.
- The protective covering should be inspected and maintained prior to each summer period.

4.5.3.2 Siting of Poles on Other than Coal

- A 3 metres radius area round timber poles must be kept clear of combustible material. A clear area is not required around concrete poles.

4.5.4 Siting of Cables

4.5.4.1 Siting of 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 metres and with the mat extending 1 metre on either side of cables – alternatively, cables can be run in covered concrete troughing boxes.
- Cables down batters should be run in open concrete troughing boxes 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.

4.5.4.2 Siting of Cables on Other than Coal

- Cables should be laid at a minimum of 0.5 metres centres and combustible material kept clear for 1 metre on either side of cables.

DETAILED PROCEDURES AND PRACTICES (cont')

5. 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
- Evacuation Procedures *(see **Hazelwood Mine. Emergency Response Plan**).*
- 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 fires and undergoes refresher training sessions yearly.
- 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.

6. EXTERNAL PROTECTION

6.1 FIRE BREAKS

To reduce the hazard from a fire external to the Hazelwood Mine, provision of appropriate fire breaks and control of grassed and forested areas within the "zone of responsibility", as outlined in clause **6.3**, are necessary. In order to inhibit a fire approaching the Hazelwood Mine and to reduce the occurrence of burning fragments entering the Mine and its surrounds, the following requirements apply:

6.1.1 Permanent Fire Break Zone – (Zone 1)

A continuous 50 metre wide and permanently maintained fire break corridor around the perimeter of the Hazelwood Mine is to exist all year round. The fire break can include roads and may consist of the following:

- Grass not to exceed 100 millimetres in height;
- No trees, shrubs, scrub are permissible in this area; and
- Constant monitoring of the fire break corridor is required to ensure the above protection is maintained.

DETAILED PROCEDURES AND PRACTICES (cont')

6. EXTERNAL PROTECTION (Cont')

6.1 FIRE BREAKS (Cont')

6.1.2 Fuel Reduction Zone – (Zone 2)

From the outer edge of the 50 metre fire break zone to the Hazelwood Mine boundaries (in all directions) including all road verges, the following is to be observed during the proclaimed fire season:

- Grass is not to exceed 100 millimetres in height; and
- All combustionable material/s to be removed, such as tree branches, scrub etc.

6.1.3 External to the Hazelwood Mine Boundaries – (Zone 3)

Any fire hazard considered a threat to the Hazelwood Mine from external sources must be brought to the attention of Hazelwood Mine Statutory Fire Prevention Officer who can by contacting the following – Hazelwood Mine **Property Officer**, **CFA** and the Latrobe City, have the offending problem seen to (*see Attachment 1 the Hazelwood Mine Boundaries).*

6.2 PROTECTION PROCEDURES

6.2.1 Modes of Protection

- Slashing
- Grazing
- Burning
- Discing

It is essential that, before any decision is made on the mode of grass reduction in and around the Hazelwood Mine, the **Mine Production Manager** is to consult with the **Mine Environmental Officer** and solicit their advice and instructions on what mode of grass cutting is the most desirable for a particular area.

Grazing is carried out on leased land/s within the Hazelwood Mine and is the preferred option of grass reduction.

Grazing is managed so as to cover as much of the grassed lands as possible and is carried out as follows:

- The leaseholder is responsible for managing his lease and to comply with fire regulations pertaining to the CFA Act and this Hazelwood Mine Fire Service Policy and Code of Practice.
- The leaseholder is also responsible to keep the grass levels within the Hazelwood Mine boundaries to the required regulations as per Zone 1 and 2.

The Hazelwood Mine **Mine Production Manager** will continually monitor fuel levels within the Hazelwood Mine and take action as required. If any leaseholders are not meeting their fire protection obligations, then the Hazelwood Mine Property Officer is to be notified so as the appropriate action can be taken.

DETAILED PROCEDURES AND PRACTICES (cont')

6. EXTERNAL PROTECTION (Cont')

6.3 TIMBERED AREAS

The **Director of Mining** is responsible for the management of treed and forested areas under his control to ensure the least possible fire hazard to the mine consistent with operating and environment requirements. "Management" includes both the maintenance and establishment of treed and forested areas.

Areas under the **Director of Mining's** control are those within the perimeter of the Hazelwood Mine plus those lands which are within the following proximity's of Hazelwood Mine operational areas:
Northern side 1.0 km, Western side 1.0 km, Southern side 0.5 km and Eastern side 1.0 km.

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

1. Scattered, tall, clean barked 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.
2. 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 the **Director of Mining** but outside of the distances mentioned above, treed areas of greater density (i.e. up to forest/plantation density) may be permitted. Approval of the **Director of Mining** 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 International Power/GDF Suez land, where unacceptable hazards have been created within the vicinity of the mine, the **Director of Mining** should ensure that the Statutory Fire Prevention Officer is informed so that appropriate action can he taken.

DETAILED PROCEDURES AND PRACTICES (cont')

7. RESOURCES FOR PROTECTION

7.1 WATER SUPPLY REQUIREMENTS

7.1.1 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.

7.1.2 Water Supply 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 Water Supply 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 mine.)

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 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 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.

7.1.3 Water Supply Capacity of Storage

Water supply storage's 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 Hazelwood Mine. D*rought cycles calculated from rainfall data gathered over 20 years. See* ***Attachment 3****.*

DETAILED PROCEDURES AND PRACTICES (cont')

7. RESOURCES FOR PROTECTION (cont')

7.1 WATER SUPPLY REQUIREMENTS (cont')

7.1.4 Operational Modes of Water Supply Storages

7.1.4.1 Summer Period

Main Dirty Water Pondage is to be operated between –RL 64.3 &–RL65.1 during the months Dec, Jan, Feb, March unless adverse weather dictate otherwise (for approximate pondage capacities at this operating mode see appendix B.10).

7.1.4.2 Winter Period

Main Dirty Water Pondage is to be operated between -RL65.1 & -RL65.6 during the months of April through to November unless adverse weather dictates otherwise. (See **Appendix B – Part 10 Water Storages**).

7.1.5 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.

7.1.6 Location and Availability of Water Storages

The locations of the storage's of water should take account of the reliability of supply and capacity requirements listed above. The storage's should be dedicated to mine use.

7.1.7 Water Pressures

For personnel safety reasons, the static pressure in the reticulated water system should be designed not to exceed 115 metre 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 40m head at any tapping point.

DETAILED PROCEDURES AND PRACTICES (cont')

7. RESOURCES FOR PROTECTION (cont')

7.1 WATER SUPPLY REQUIREMENTS (cont')

7.1.8 Reliability of Water Supply

Gravity water supply 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 metre 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 Clause **4.5**.

As a general requirement, the 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 will 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.

7.1.9 System Monitoring

Sufficient remote monitoring and control equipment shall 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.

7.1.10 Rate of Precipitation

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

DETAILED PROCEDURES AND PRACTICES (cont')

7. RESOURCES FOR PROTECTION (cont')

7.2 WATER RETICULATION

7.2.1 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.

7.2.2 Main Supply Lines

As required by **Clause 8.1.1** each source of water 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.

7.2.3 Ring Mains

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

7.2.4 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.

Examples of the various fire service pipe categories are shown in **Appendix A – Part 2**.

7.2.5 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 Clause 3.4.
- On worked out floors, in accordance with Clause 3.5.
- At grass level around the Hazelwood Mine at strategic locations.

Consideration should be given to ease of access, location and reliability of the water supply in the design of tanker filling points. See also **Clause 4.4** on Motor Vehicles.

Note: A 4 hydrant manifold is acceptable as a tanker filling point in lieu of the normal stand pipe type.

DETAILED PROCEDURES AND PRACTICES (cont')

7. RESOURCES FOR PROTECTION (cont')

7.2 WATER RETICULATION

7.2.6 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 the Hazelwood Mine and the CFA.

7.3 MOBILE WATER SUPPLY

The Hazelwood Mine 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.

After normal work hours a mobile tanker will be parked outside the Conveyor Control Centre for emergency use after hours.

7.4 MOBILE PLANT AND EQUIPMENT

Mobile plant and equipment are to be available for emergency use in the Hazelwood Mine to maximise fire fighting potential, e.g. Such equipment can be elevating working platform vehicles (EWP), floodlights, cranes, tractors, pumps, etc.

7.5 COMMUNICATIONS

A fully equipped multi-channel communication system is to be provided in the Emergency Control Centre at the Hazelwood Mine, capable of being manned by additional operators during fire emergencies. Provision is also to be made to enable the **CFA Incident Controller** to use the **Fire Service Office** or the Emergency Control Centre as a control centre in the event of an emergency situation.

All Fire and Emergency calls are to be called to the Mine Control Centre (x**3333**) or by using the radio/emergency button on hand held radios. The Mine Control Centre is available for contact all hours.

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.

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 the whole of the Hazelwood Mine is available under various wind conditions.

DETAILED PROCEDURES AND PRACTICES (cont')

7. RESOURCES FOR PROTECTION (cont')

7.6 ORGANISATION

The Emergency Response Plan has a plan of the organisation and disposition of all Hazelwood Mine personnel and equipment for the fighting of major fires and shall be kept and annually updated and issued by the beginning of the declared fire season.

7.7 FIRE INSTRUCTIONS

An up-to-date set of **Fire Service Instructions** shall be maintained for the Hazelwood Mine and re-issued to Supervisory staff and key operating personnel prior to the beginning of the declared fire season. Additional copies are to be displayed or available for information of all personnel.

7.8 HIGH FIRE RISK DAYS

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

When severe weather conditions exist in the Hazelwood Mine resulting in a high risk of fire spreading, the Director of Mining may declare a **Fire Alert** within the Hazelwood Mine area and enact special precautions for fire watch, burning and welding, access and wetting down procedures as defined in the **Hazelwood Mine's Fire Instructions**.

A Mine Fire Preparedness and Mitigation Plan shall be prepared if the forecast conditions for the following days exceeds 32°C, and is below 25% humidity.

There may be times when the Hazelwood Mine's vigilance to fire outbreak and response, may be compromised. Poor visibility due to fog etc, or at times when the majority of the mines personnel exit the Hazelwood Mine for brew & lunch breaks, and/or any other reason the majority of the workforce is out of the Hazelwood Mine. To minimise this risk of fire outbreak, fire patrols are to be carried out during these times.

Fire patrols in the Hazelwood Mine are to be carried out as follows:

- Whenever the **Mine Production Manager** considers it necessary

DETAILED PROCEDURES AND PRACTICES (cont')

7. RESOURCES FOR PROTECTION (cont')

7.9 PRE-SUMMER & FIRE SEASON WORKS PROGRAM

- Organise and carry out fire training to all Hazelwood Mine personnel & relevant contractors by the beginning of the declared fire season.
- By the beginning of the declared fire season, **Mine Technical Services Manager** is to issue an up to date drawing of the **Fire Prevention, Slashing, Grazing Layout Plan**. Once the new layout plan has been received, organise to have grass cutting, slashing etc. carried out in accordance with the beginning of the declared fire season. **NOTE**: The actual starting and finishing dates for the grass cutting will depend on weather conditions.
- Carry out constant monitoring of fuel growth and any other fire hazards, particularly during the fire season.
- By the beginning of the declared fire season, a wet test is to be carried out on the mines water reticulation system. This wet test is to be carried out in the operational areas of the Hazelwood Mine, and all operational sprays are to be activated in conjunction with the major pumping stations. The aim of the wet test is to show up any deficiencies in the reticulation coverage, and or the spray system. It also highlights the areas where portable sprays require setting up, indicates how much water is being used, how much water is in reserve, and tests the entire system.
- Have the **Hazelwood Mine Emergency Response Plan / Hazelwood Mine Fire Instructions** updated by the beginning of the declared fire season, and distributed to the appropriate personnel.
- Inspect and test crane mounted monitors before the oncoming fire season.
- Inspect and monitor slip on fire tankers on a weekly basis during the fire season.
- Inspect and run the Low Quality Water system monthly during the fire season.
- Have **Mine Technical Services Manager** issue 5-off updated copies of the **Hazelwood Mine Orientation Plan** for placement in – the Control Centre, Fire Service Office, Command Centre, & one spare.
- Carry out the Annual Audit an inventory of fire fighting equipment before the fire season using the **Check List For Fire Fighting Equipment Annual Audit &-Inspection** – Preliminary and Final.
- Ensure that all foreseeable maintenance has been carried out on all critical fire service pumps & major pipelines before the fire service season.

8. 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 Hazelwood Mine. The equipment and techniques contained adhere to the requirements of the **Fire Service Policy and this Fire Service Code of Practice**.

The equipment and techniques contained in this **Fire Service Policy and this Fire Service Code of Practice** have resulted from many years of fire service operation and development throughout the Latrobe Valley brown coal mining operations. Development of fire protection equipment and methods is an ongoing exercise and the **Fire Service Policy and this Fire Service** Code of Practice will be the vehicle through which new practices are approved for general implementation.

APPENDICES

INDEX FOR APPENDIX A

FIRE SERVICE PRACTICES

Appendix A – Fire Services Practices

A1. Mine Layout

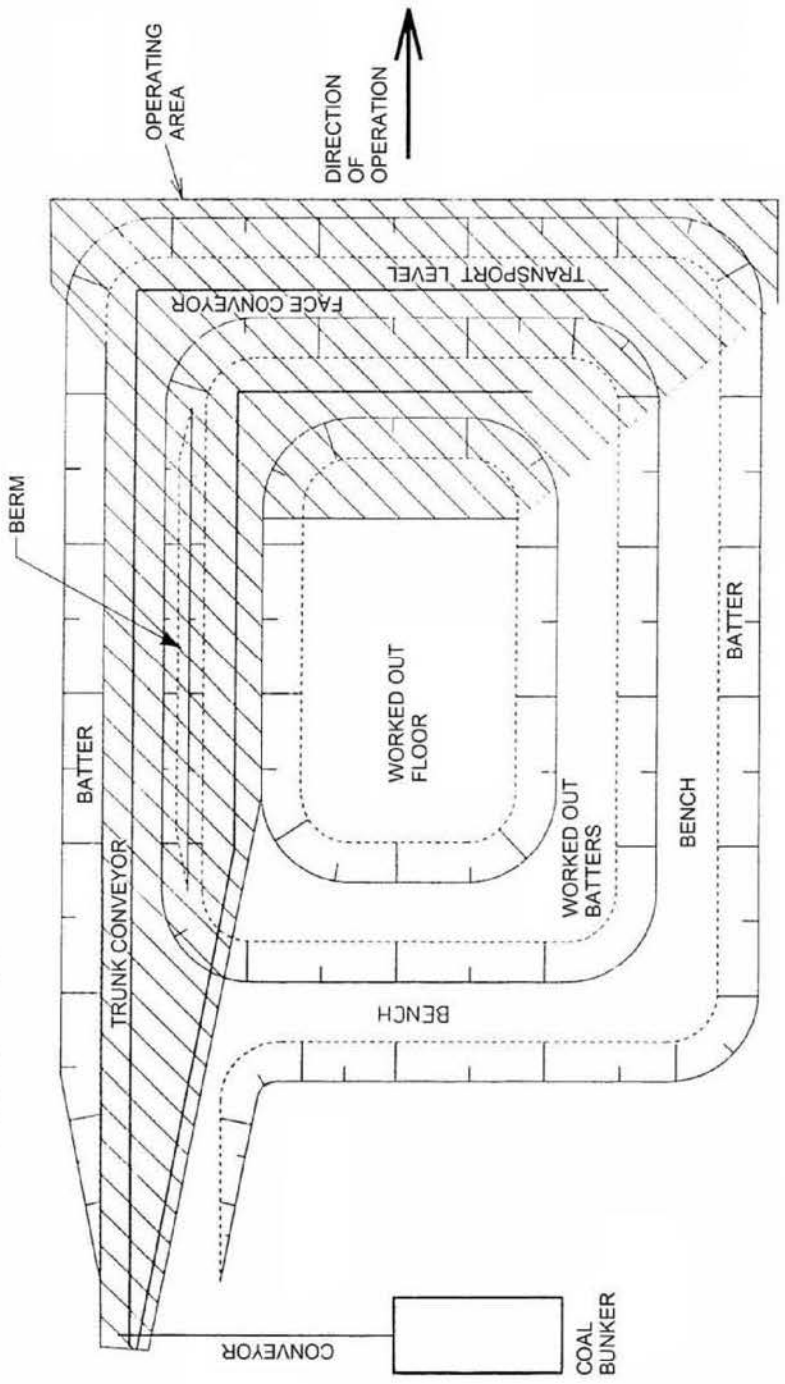


FIGURE 1 - DIAGRAMMATIC LAYOUT SHOWING MINE FEATURES

Appendix A – Fire Services Practices

A2. Pipeline Nomenclature

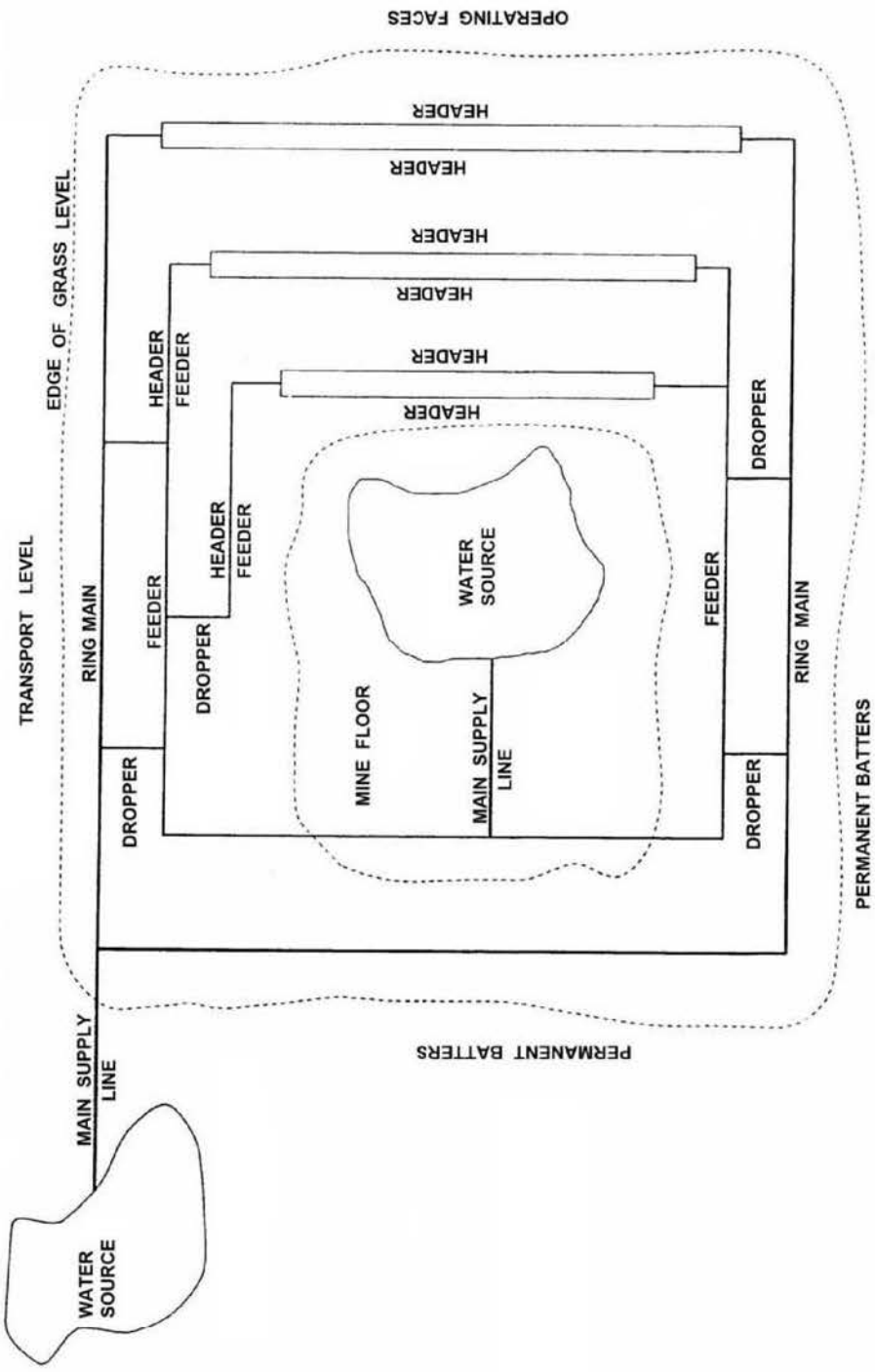


FIGURE 2 - PIPELINE NOMENCLATURE

Appendix A – Fire Services Practices

A3. Examples of Limiting Unwetted Areas

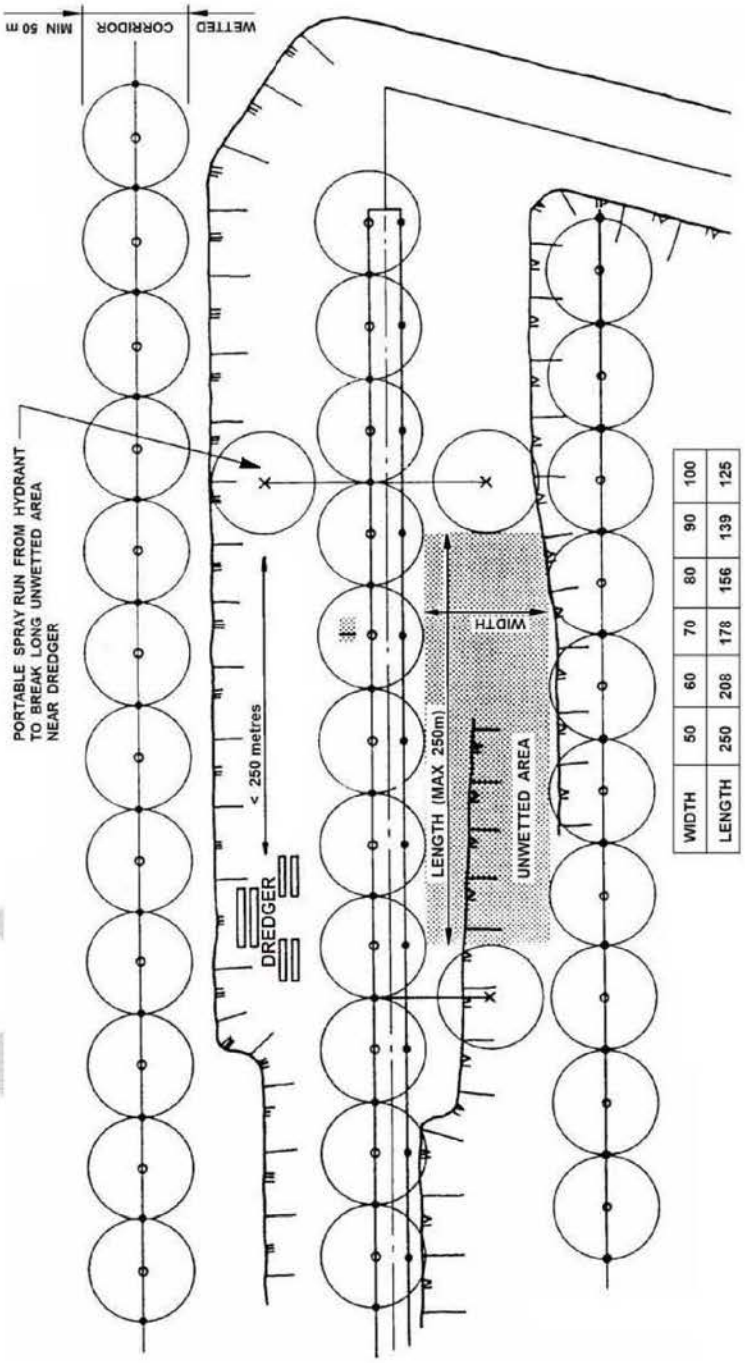
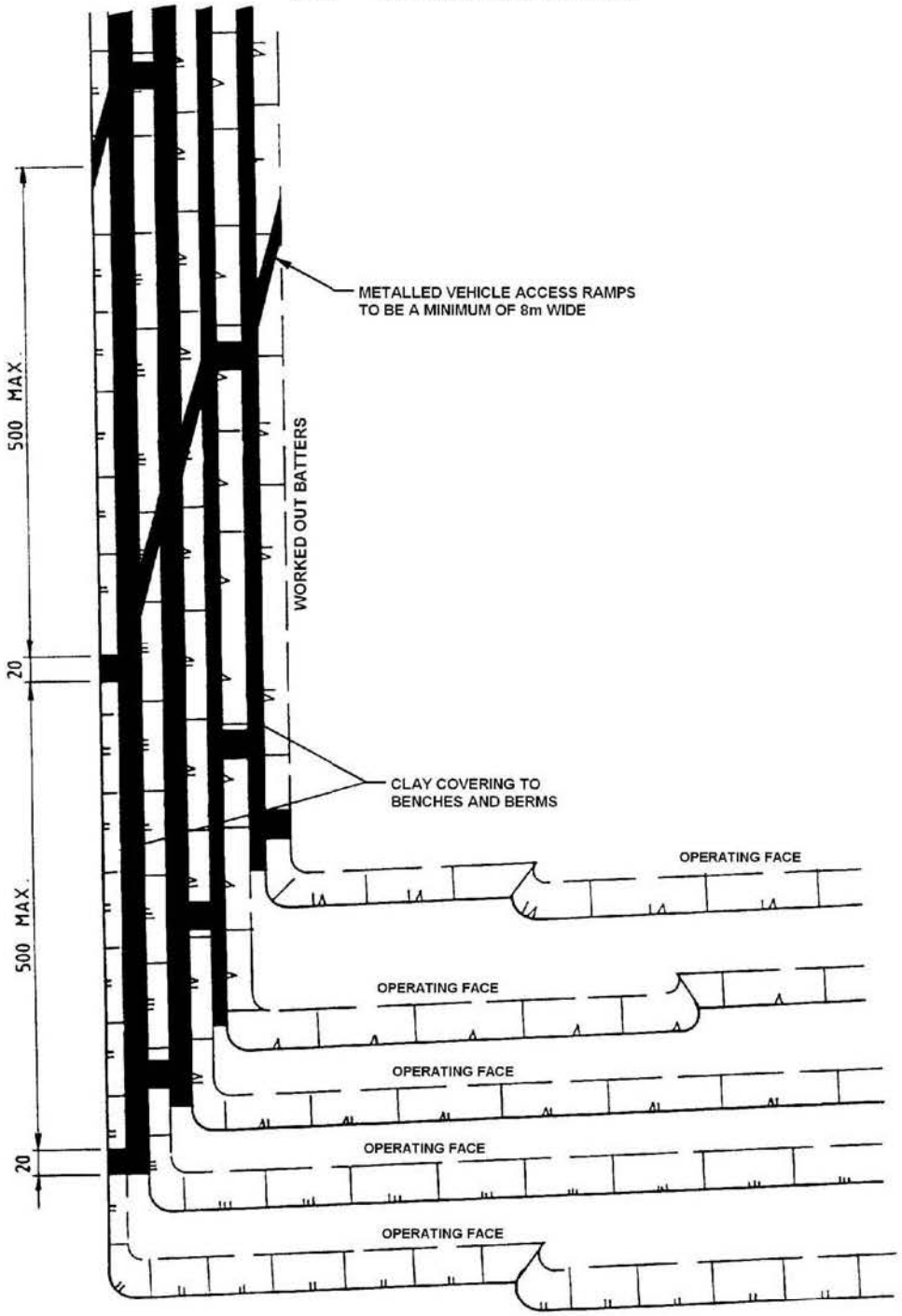


FIGURE 3 - EXAMPLE OF LIMITING UNWETTED AREA TO LESS THAN 12,500 sq metres

Appendix A – Fire Services Practices

A4. Worked Out Batters

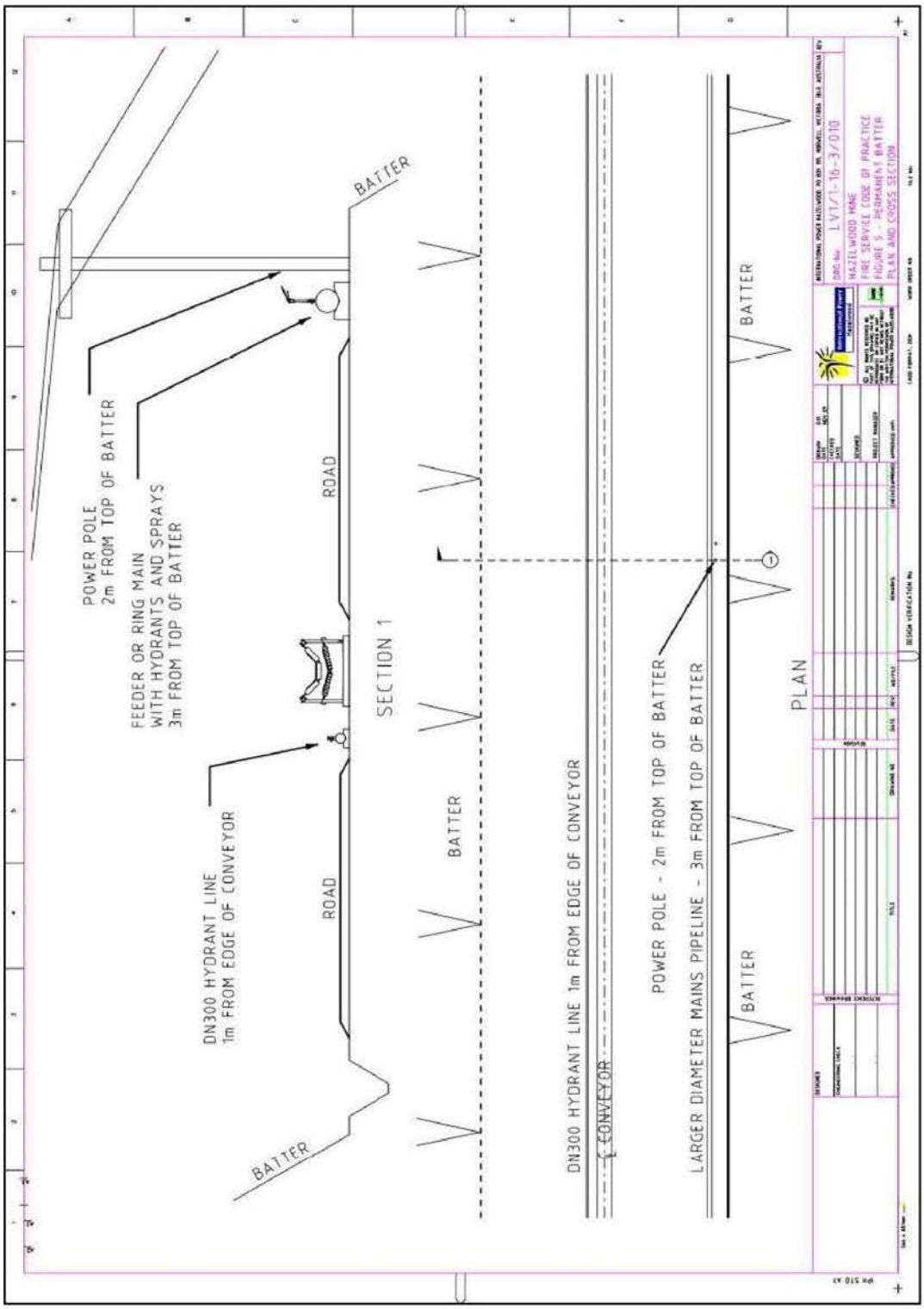


LV1/1-16-3/009

FIGURE 4 - EXAMPLE OF WORKED OUT BATTERS - EXAMPLE OF FIRE PROTECTION

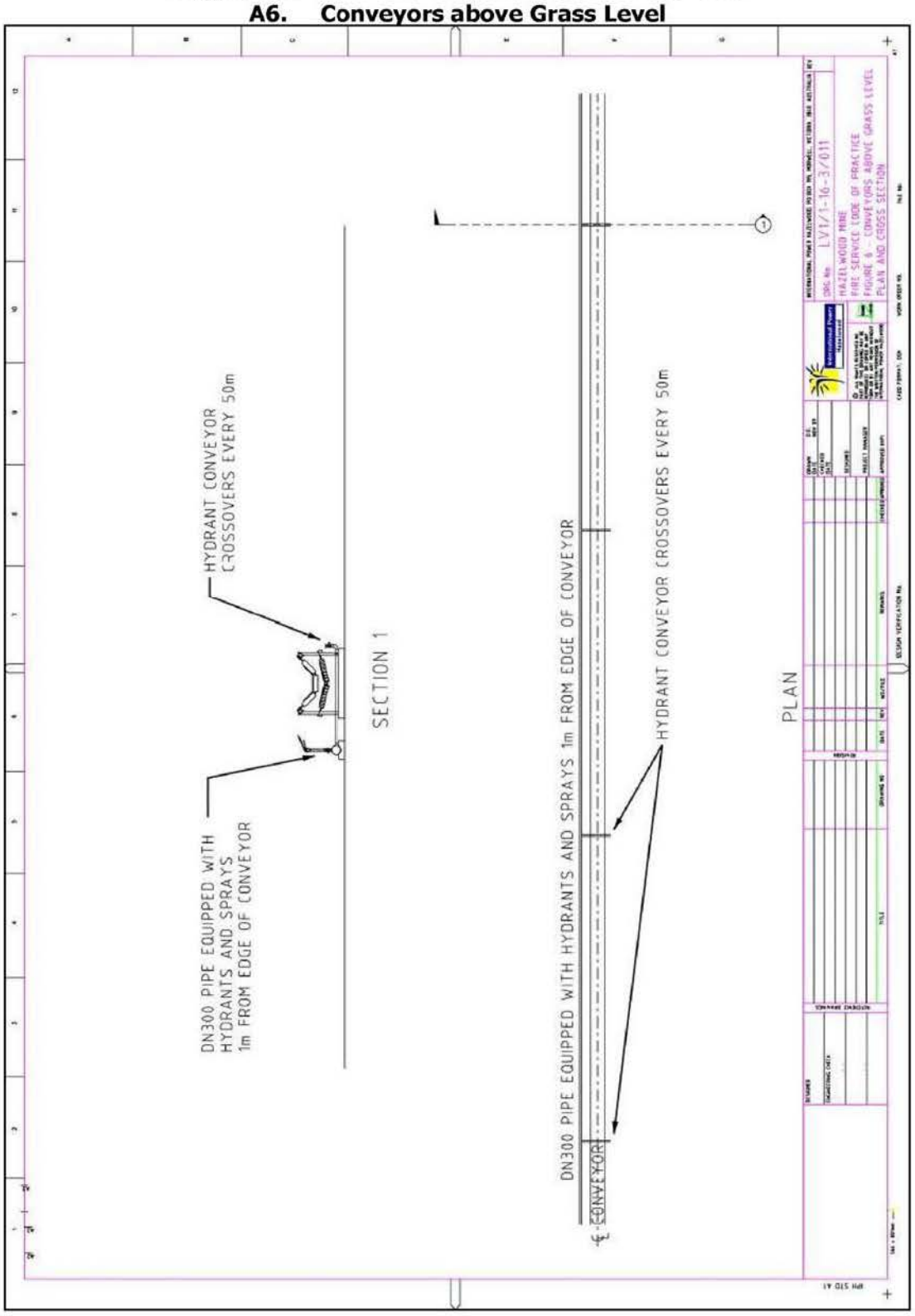
Appendix A – Fire Services Practices

A5. Permanent Batter – Transport Route



Appendix A – Fire Services Practices

A6. Conveyors above Grass Level



Appendix A – Fire Services Practices

A7. Elevated Conveyors

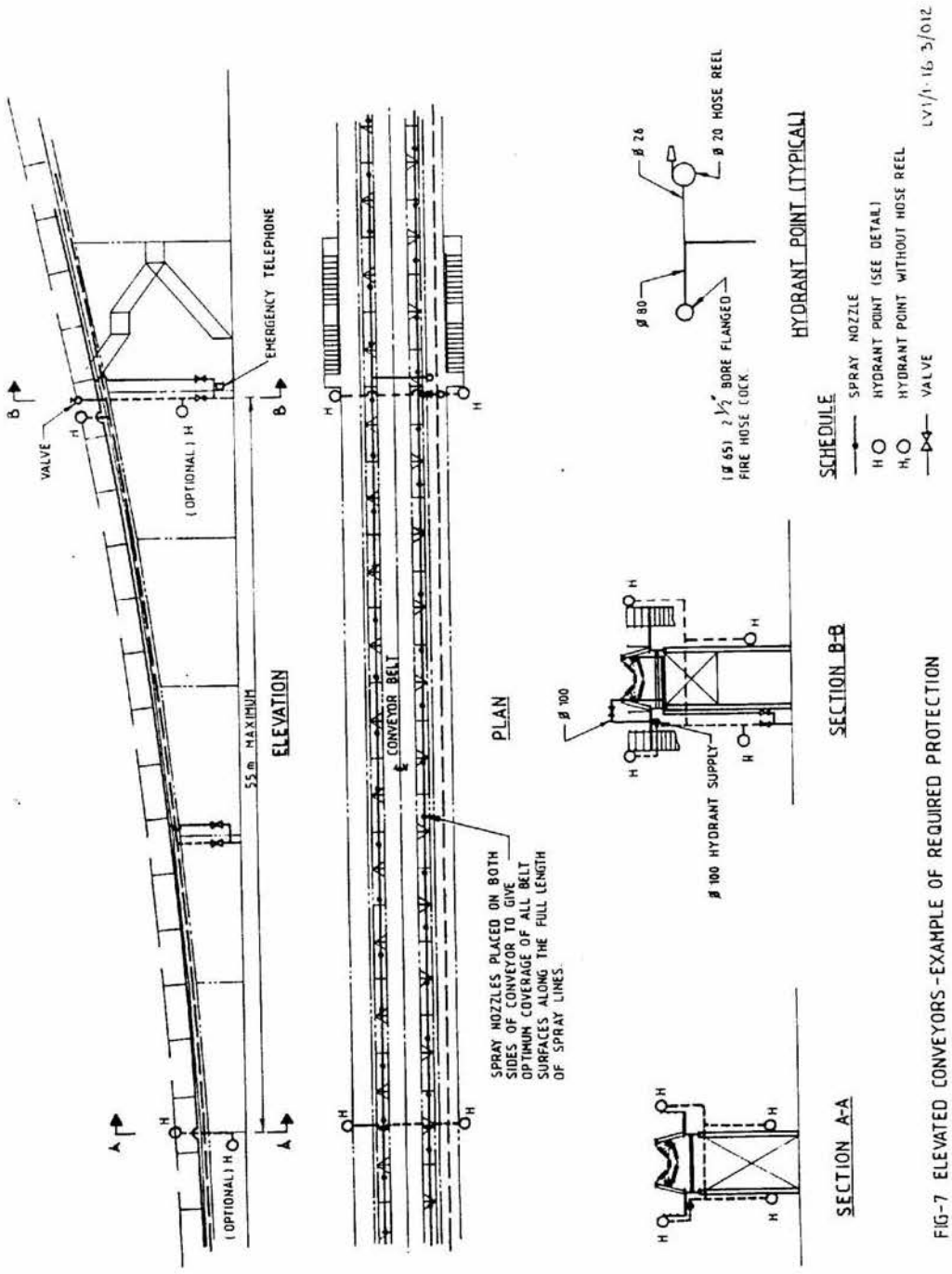
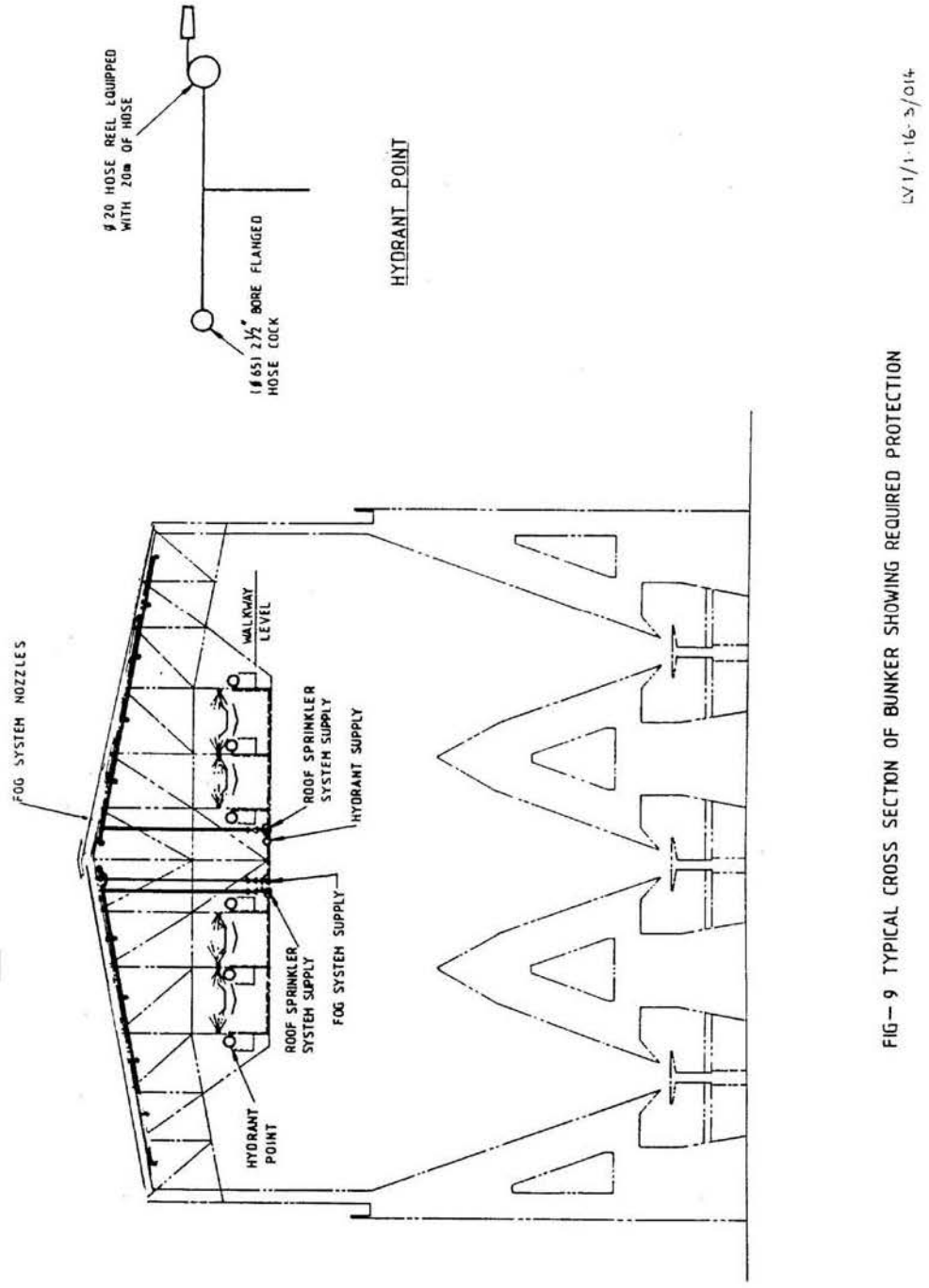


FIG-7 ELEVATED CONVEYORS-EXAMPLE OF REQUIRED PROTECTION

Appendix A – Fire Services Practices

A8. Typical Cross-Section of Hazelwood Slot Bunker



FIG– 9 TYPICAL CROSS SECTION OF BUNKER SHOWING REQUIRED PROTECTION

APPENDICES (cont')

INDEX FOR APPENDIX B

ACCEPTABLE FIRE SERVICE MATERIALS & EQUIPMENT

APPENDIX B

ACCEPTABLE FIRE SERVICE MATERIALS & EQUIPMENT

ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
Appendix B1. BIRDSMOUTH SPRAYS AND FOG NOZZLES	4.8 millimetre orifice sprays as detailed on Drawing No **0Y12/41/238**	Birdsmouth spray or fog nozzle lines are usually located about 1.8 to 2.0m offset from the conveyor. The position allows a good spray to 1.22 m and 1.48m along conveyors and allows access for mechanical access, and cleaning under the conveyor
	Birdsmouth sprays or fog nozzles as above	Dredger, Stackers, Mobile Slew Conveyors, and Conveyor Head Ends are to be fitted with 2 x 64 mm spray lines (either side of conveyor), fitted with Birdsmouth sprays or fog nozzles which are to be spaced at 3.6m intervals along the spray line. Spray operating pressure 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 spray or valve stops.
Appendix B2. STANDARD FIRE HOSES	**a.** For general fire service work 65 millimetre x 30 metre and 38 millimetre x 30 metre lengths of canvas or synthetic percolating hose is to be used **b.** For supply to dredgers from header manifolds or hydrants etc, 90 millimetre x 30 metre canvas or synthetic percolating hose is to be used.	High Percolating Fire Hose is a specially designed hose to comply with the Hazelwood Power specifications, re: percolating hose usage in the Hazelwood Mine, whilst at the same time exceeding the requirements of Australian Standard AS 2792:1992, therefore no fire hose is to be used in the Hazelwood Mine unless it meets these standards. **NOTE:** *for hose percolation rates & formulas see Attachment 7.*

APPENDIX B (cont')

ACCEPTABLE FIRE SERVICE MATERIALS & EQUIPMENT

ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
Appendix B3. HYDRANTS	Standard 65 millimetre Fire Hydrants of Gunmetal construction capable of discharging 15 litres of water per second minimum. Victorian Country Fire Authority fire couplings throughout	To be used at maximum spacing of 55 m on pipelines to give overlap with a standard fire hose.(*for hydrant specifications see attachment No2)*
Appendix B4. ROTARY SPRAYS	Bauer Circular or Sector – Rainer SR42 or Perrott P46BSZ sprays with 18 mm nozzles or alternatively Lanzoni Skipper, or Nelson Big Gun sprays.	To be used at maximum spacing of 55 metres, (*if Lanzoni Skipper, or Nelson Big Gun sprays spacings to be 100 metres*) to give a continuous wetted area . Minimum working pressure of 0.4 MPa (40 metre head) and a maximum of 1.15 MPa (115 metre head).
Appendix B5. FIRE HOSE REELS	To be in accordance with **AS 1221– 1976**. 19 millimetre ID hose by 30m long with a 6.5 millimetre 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 m head)
Appendix B6. TYPICAL DUST SUPPRESSION SYSTEM FOR BUNKERS	4 millimetre TT2W "Unijet nozzle by Spraying Systems (Australia) Pty Ltd.	To be installed below roof level spaced on a 3m x 6m grid

APPENDIX B (cont')

ACCEPTABLE FIRE SERVICE MATERIALS & EQUIPMENT

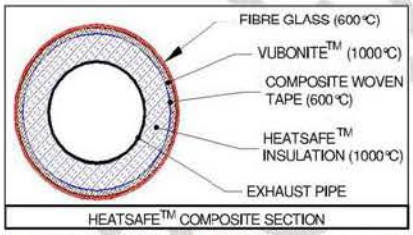
ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
Appendix B7. VEHICLE MODIFIED EXHAUST SYSTEMS	Any new vehicle prototype will be fitted with a modified exhaust system applicable to the Hazelwood Mine, and field tested by the Hazelwood Mine Mine Production Superintendent or his deputy. (See Exhaust Modifications Attachment 4). It will be tested for suitability and effectiveness in a controlled field test, in a standard coal slurry pit *(See Attachment 5)* to ascertain if modifications require being made to the vehicle to reduce coal splash to the engine compartment and exposed exhaust components. Installation of metal guard to cover all exposed exhaust system components at front of vehicle (and must clear muffler by 25 millimetres all around). Guard is to be fitted as such, so that it doesn't protrude past the face of the bumper (extend bumper mounts if required). Muffler is to be mounted on the bumper with flexible exhaust mounts. Wheel arch guards are to be fitted where coal splash is being directed onto exhaust system or up into engine cavity. Belly plates to be fitted to the underneath of the engine cavity to protect exhaust from coal splash. Mud flaps to be installed on the back side & front side of front wheels to protect end of exhaust pipe from coal splash.	Guard to be manufactured from 1.6 millimetre galvanised mild steel or expanded mesh. Perforations are to be a minimum of 43 square millimetres, and a maximum of 625 square millimetres. The distances between the perforations are not to exceed 3 mm. Exhaust pipe & muffler are to be kept above the chassis members and be 25 mm clear of all vehicle components. (Heat shields to be fitted where required). If heat shields are to be used they are to be constructed from 1.0 mm mild steel minimum. (Asbestos materials will not be accepted). Where the exhaust pipe exits the exhaust manifold through the front panel of the vehicle there is to be a 12 mm minimum clearance all around. If this is not possible, a hole will need to be cut out of the front panel to allow the 12 mm clearance. Exhaust pipe exit from muffler is to run along the inside of the bumper cavity with 25 mm minimum clearance from the inside of the bumper and finish in the centre of the front wheel mud flap. Provide extractors, headers or inverted manifolds to redirect exhaust system if required.

Continued...

APPENDIX B (cont')

ACCEPTABLE FIRE SERVICE MATERIALS & EQUIPMENT

ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
Appendix B7. VEHICLE MODIFIED EXHAUST SYSTEMS (cont')	Contractor is to ensure that muffler is positioned as such to allow maximum air flow to the radiator (which also affects the air conditioner) and the correct operating temperature is achieved.	
Appendix B8. COATED VEHICLE EXHAUST SYSTEMS	**HeatSafe**™ insulation is a high temperature thermal dry blanket non-combustible insulation, with a non-toxic coating and fibre glass wrap applied to the outside to protect the underlying composite from the normal wear and tear of driving in the Hazelwood Mine.	The first coating, 12.7mm thick **HeatSafe**™ insulation, which has a thermal resistance of up to 1000°C, is applied to directly to the bare vehicle exhaust piping and fittings. This is held in place using a Composite Woven Tape and has a resistance of up to 600°C and holds the underlying composite in position against the surface of the vehicle exhaust system. The third layer is approximately 3mm thick and is applied to the Composite Woven Tape as a two part mix and also has a thermal resistance up to 1000°C, is odourless, non-toxic, non-combustible and non-smoke producing. This third layer is also an insulation layer separating the dry blanket from the forth layer of fibre glass acting as an atmospheric protector. The fibre glass is applied as a two coat composite consisting of the fibre glass matting and a fibre glass resin which can also withstand temperatures of up to 600°C.



HEATSAFE™ COMPOSITE SECTION

APPENDIX B (cont')

ACCEPTABLE FIRE SERVICE MATERIALS & EQUIPMENT

Appendix B9. VEHICLE & PLANT FIRE EQUIPMENT	As per International Power/GDF Suez Hazelwood Rationalisation of Fire Equipment Policy *(See Attachment 10).*	All vehicles & plant that operate in the Morwell Mine are to be fitted with the appropriate fire suppression equipment.
Appendix B10. WATER STORAGES & CAPACITIES	Approximate calculations for the confirmation of Summer & Winter Dirty Water Pond operating levels	**Summer operation** – High level RL – 64.3 **Summer min operating level** RL – 65.1 **Winter operation** – High level RL – 65.1 **Winter min operating level** RL – 65.6 *(for approx calculations on pond capacities see **Attachment 6**)*

APPENDIX B (cont')

ACCEPTABLE FIRE SERVICE MATERIALS & EQUIPMENT

ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
Appendix B11. FIRE HOSE & SUNDRY EQUIPMENT LOCATIONS	All fire fighting hose to be of the high percolating (H.P.) type with the exception of the 38 mm hose with the only stipulation being, that it be percolating hose (High Percolating). 38 mm hose loses too much water through percolation to be effective. For hose percolation rates & formulae see Attachment 7. All fire hose in the Hazelwood Power Mine will be fitted with standard CFA couplings.	**Conveyor Head Ends**: – 4-off x 30metres fire hoses plus 2-off branches installed in 2-off hose boxes located adjacent to the Conveyor Head end. **Conveyor Tail Ends**: – 2-off x 30m fire hoses plus 1-off branch installed in one hose box adjacent to Conveyor Tail End. **Reserve Coal Levels**: – For every pipe **header** on the level, one hose box containing 2-off x 30 m fire hoses and 1-off branch are to be installed at each end of each pipeline. **Dredgers & major coal winning plant**: – 4-off 64mm or alternatively 38 mm x 30m fire fighting hose plus 5-off 90 mm x 30m for dredger hook up. **Vehicles**: – 2-off 30m x 38 mm percolating fire hose, with a spray nozzle. A fire hose branch and fully charged knapsack is also to be carried in the vehicle. **Plant**: – A 6 metre x 19mm fire hose reel type hose is to be carried on all plant in addition to a charged 9 Litre foam extinguisher.

APPENDIX B (cont')

ACCEPTABLE FIRE SERVICE MATERIALS & EQUIPMENT

ITEM	DESCRIPTION	OPERATING PROCEDURES LIMITATIONS OF USE
Appendix B12. FIRE EXTIGUISHER TYPES, LOCATIONS & SERVICING	Fire extinguisher types in the Hazelwood Mine consist mainly of 4 types:– CO_2 (Carbon Dioxide gas) 9 Litre Stored Pressure Foam 9 Litre Stored Pressure Water Dry Chemical Powder **NOTE:** A standard group of extinguishers consists of:– 2-off CO_2 x 2.2Kg (minimum weight) extinguishers. 2-off x 9 Litre Foam extinguishers	**Conveyor Head Ends**:–1 Standard group of fire extinguishers. **Pump Stations**: - 1-off CO_2 x 2.2Kg (minimum weight) per pump cubicle **Bore Pump Cubicles**: – 1-off CO_2 x 2.2Kg (minimum weight) per pump cubicle **Dredgers**:– 1-off CO_2 x 2.2Kg (minimum weight) adjacent to operators cabin **Crib Shack**:–1-off CO_2 x 2.2Kg (minimum weight) extinguishers **Slew Area**: – 1-off Standard group of fire extinguishers. **Main Electrical Switch Room**:– 1-off Standard group of fire extinguishers. **Travel Area**:– 1-off Standard group of fire extinguishers. **Travelling Hopper**:– 1-off CO_2 x 2.2Kg (minimum weight) extinguisher. **Mobile Slew Conveyors**: – **Travel Area**: – 1-off Standard group of fire extinguishers. **Main Electrical Switch Room**: – 1-off Standard group of fire extinguishers. Slew area: – 1-off Standard group of fire extinguishers. **Operators Cabin**: – 1-off CO_2 x 2.2Kg (minimum weight) extinguisher. TS 2 Travelling Stacker: – **Tripper**: – 1-off Standard group of fire extinguishers, and **Stacker Travel**: – 1-off Standard group of fire extinguishers

APPENDIX C

TESTING AND ACCEPTANCE PROCEDURES

EXAMPLES

Appendix C1. **TESTING OF ROTARY SI**

ITEM	TEST PROCEDURE	RESULT
ENDURANCE TEST	Spray to be operated with 115m head inlet pressure until either unserviceable or 500 operating hours are reached whichever is sooner.	<500 hrs – Fail >=500hrs – Pass
PRESSURE TEST	Spray to be operated from 40m to 115m head inlet pressure in steps of 25m. Flow, spray radius, thrust and rotation speed to be measured at pressure step. Average precipitation rate to be calculated.	
PRECIPITATION	Precipitation is measured at 10m intervals from the spray to determine the precipitation pattern for the various pressure steps.	Each point to be within 25% of the average precipitation 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 ≥ 100hrs – Pass
WIND DRIFT	Comment on drift of wetted area under various wind conditions.	
PRICE	Unit Price – Price of Replaceable Parts	
MAINTENANCE	Ease of maintenance – Availability of replaceable parts	

Head	Flow	Spray Radius	Thrust	Rot'n Speed	Precip Rate
40					
65					
90					
115					

APPENDIX C (cont')

TESTING AND ACCEPTANCE PROCEDURES

Spacing at various operating heads,

Position of spray relative to personnel,

Mounting/attachment requirements,

Limitations of use

Testing Officer _____

Health and Safety Approval _____

INDEX FOR APPENDIX D

FIRE SERVICE AUDIT CHECK LISTS

The following is a broad list of the various topics from the Fire Service Policy and Code of Practice. The Hazelwood Mine Fire Services equipment is audited in accordance with the **Check List For Fire Fighting Equipment Annual Audit & Inspection** – Paradigm Document Id **36548**:

International Power/GDF Suez – Hazelwood Mine Fire Protection Check List
Coal and Overburden Trunk Conveyors Below Grass Level

Conveyor No: M_____ **Location: _____**

Inspected By: _____ **Inspection Date: ___ / ___ / ___**

Policy and Code of Practice Requirement	Meets Requirement Yes	No	If No, Comment
3.2.1 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.			
3.2.2 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 clause 3.2.4 Benches without conveyors.			
3.2.3 Benches Supporting Conveyors			
Benches supporting conveyors are to be clay covered except those supporting face conveyors.			
4.2.2 Coal and Overburden Trunk Conveyors below Grass Level			
Rotary sprays shall be spaced to give a continuous wetted corridor along the conveyor and be capable of protecting the Head End and Tail End units. Hydrants shall be spaced at not greater than 55 metre intervals along both sides of the conveyor.			
Birdsmouth sprays or fog nozzles are to be provided on at least one side of the conveyor for its entire length. When one birdsmouth spray or fog nozzle 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 conveyor. The spray lines carrying the birdsmouth sprays or fog nozzles shall be controlled by clearly marked valves spaced at not more than 200 metres apart and accessible from both sides of the conveyor.			

International Power/GDF Suez – Hazelwood Mine Fire Protection Check List
Coal and Overburden Trunk Conveyors Below Grass Level

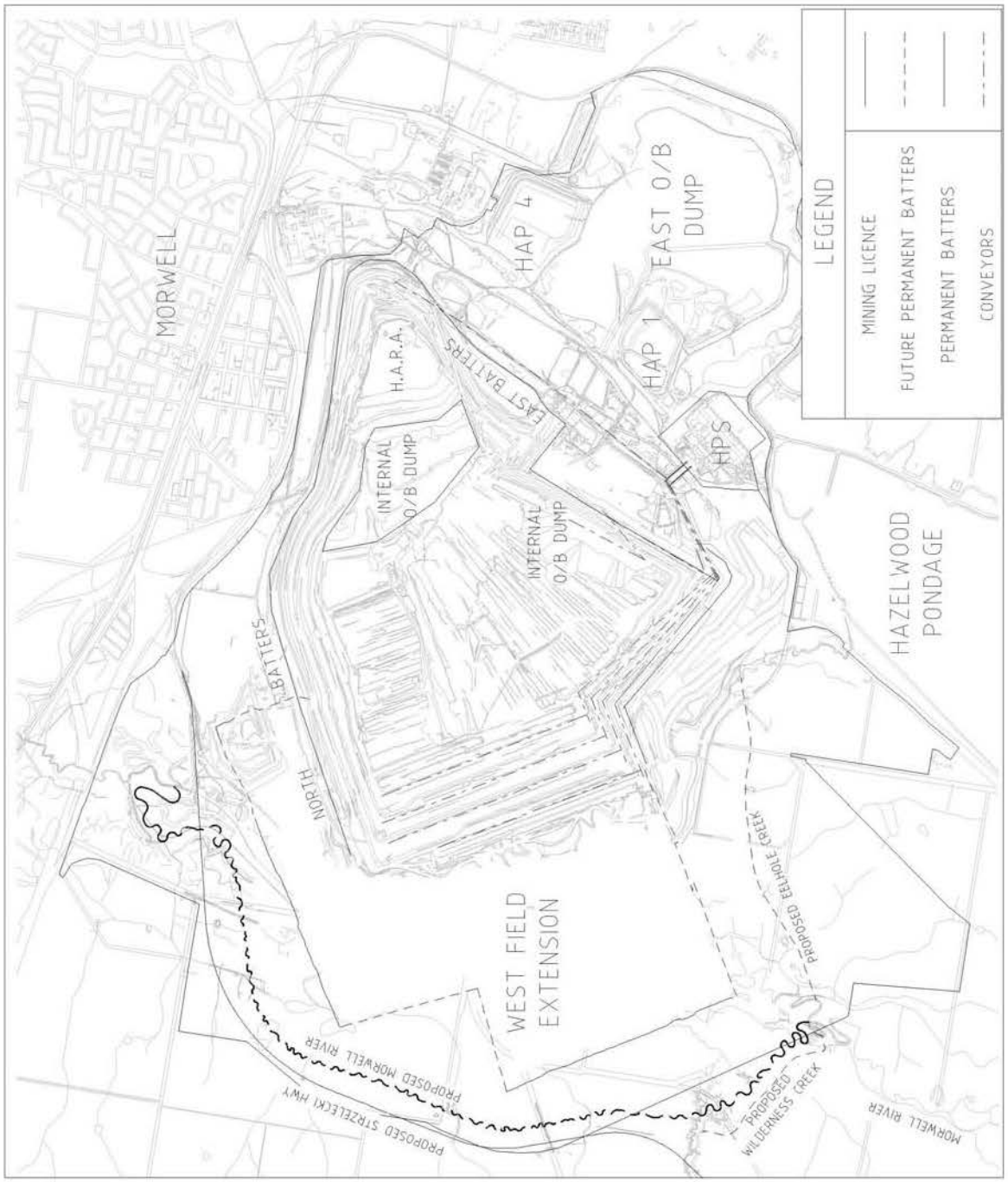
Conveyor No: M_____ Location: _____

Inspected By: _____ Inspection Date: ___ / ___ / ___

Policy and Code of Practice Requirement	Meets Requirement Yes	No	If No, Comment
4.2.9 Specific Protection of Conveyor Drive Units			
2 x Carbon Dioxide and 2 x Foam type fire extinguishers shall be placed adjacent to the access steps of each Conveyor Drive Unit. Live hose reels shall be provided either on, or located adjacent to each conveyor drive unit.			
Conveyor Drive Units below grass level in the Hazelwood Mine are to be protected by rotary sprays mounted either on headers or on the conveyor drive unit, or by portable rotary sprays such that a saturated island can be achieved under and around the conveyor drive unit, while at the same time achieving a spray curtain to protect the full height of the conveyor drive unit.			
Protection of the conveyor belting within the Conveyor Drive Unit 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. Alternatively, fog nozzle sprays may be used spaced on one side of the conveyor but staggered to give optimum coverage of belt surfaces and idlers.			
Inbuilt birdsmouth sprays or fog nozzle spray systems shall be provided on the Conveyor Turnover Units and Conveyor Tail Ends.			
Hydrants should be located close to each Conveyor Drive Unit for ready connection of portable rotary sprays and hosing facilities.			

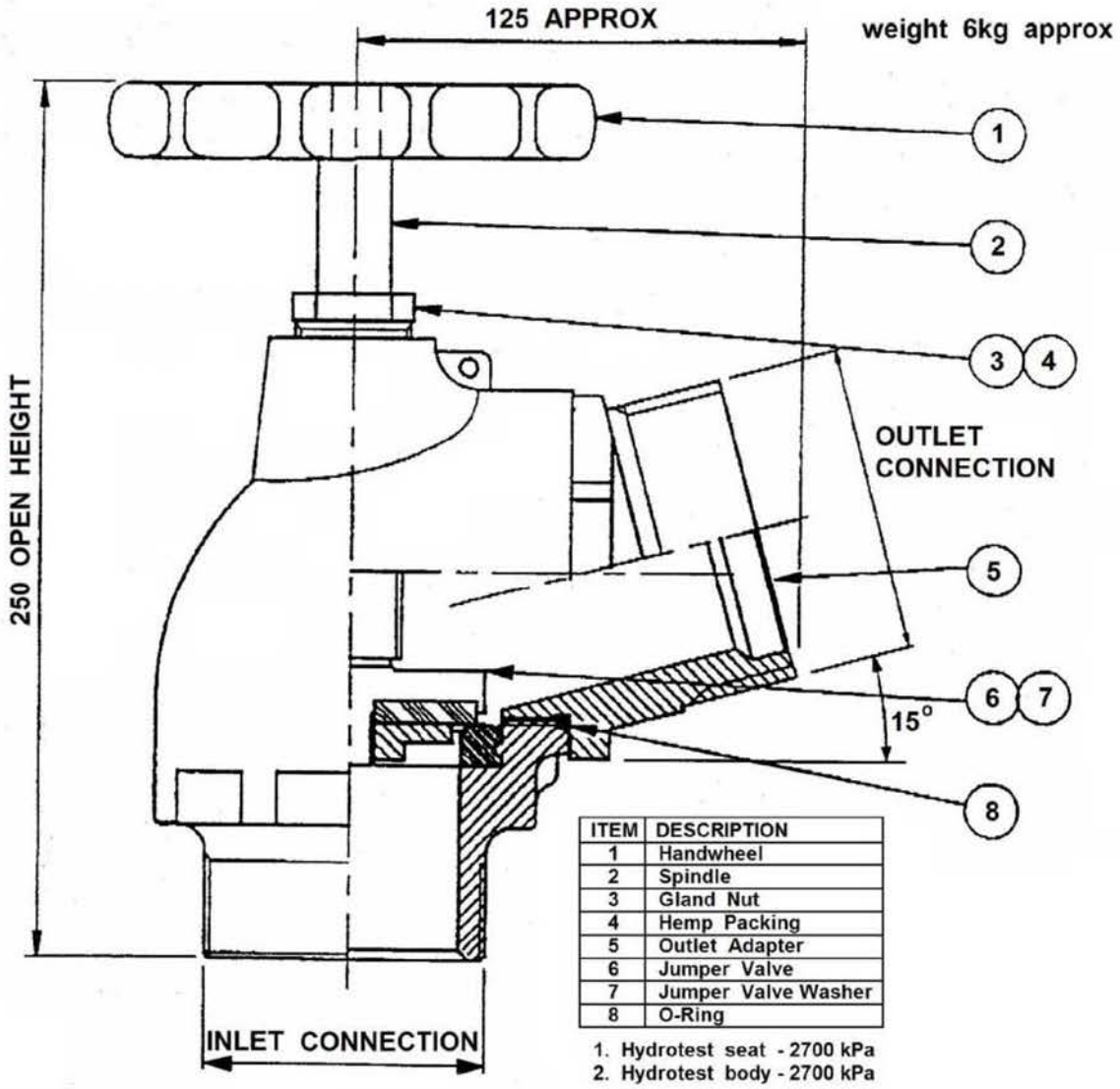
INDEX OF ATTACHMENTS

ATTACHMENT 1 HAZELWOOD MINE BOUNDARIES



ATTACHMENT 2 FIRE HYDRANT SPECIFICATIONS

CFA LANDING VALVE



ITEM	DESCRIPTION
1	Handwheel
2	Spindle
3	Gland Nut
4	Hemp Packing
5	Outlet Adapter
6	Jumper Valve
7	Jumper Valve Washer
8	O-Ring

1. Hydrotest seat - 2700 kPa
2. Hydrotest body - 2700 kPa

Continued...

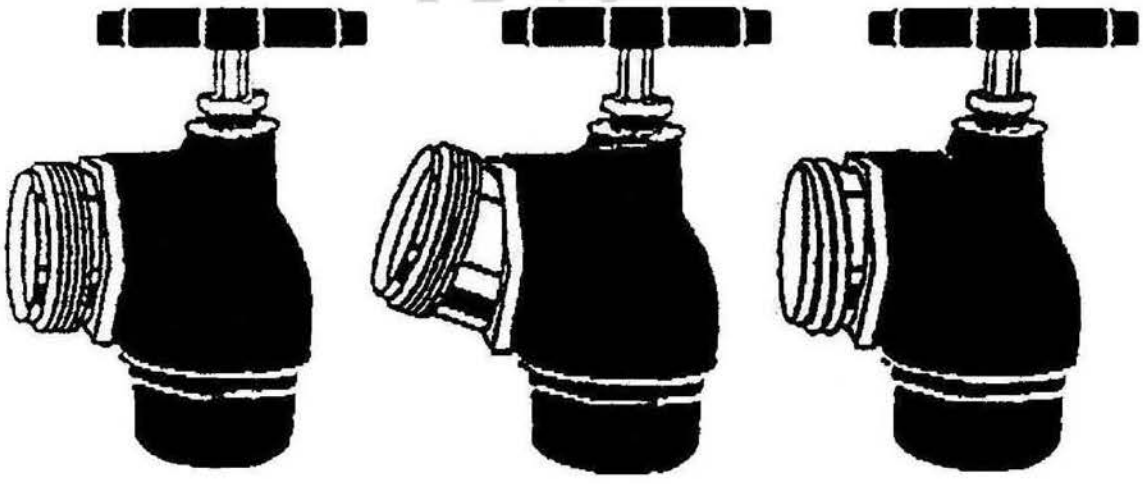
ATTACHMENT 2 FIRE HYDRANT SPECIFICATIONS (cont')

QUELL Hydrant Landing Valves

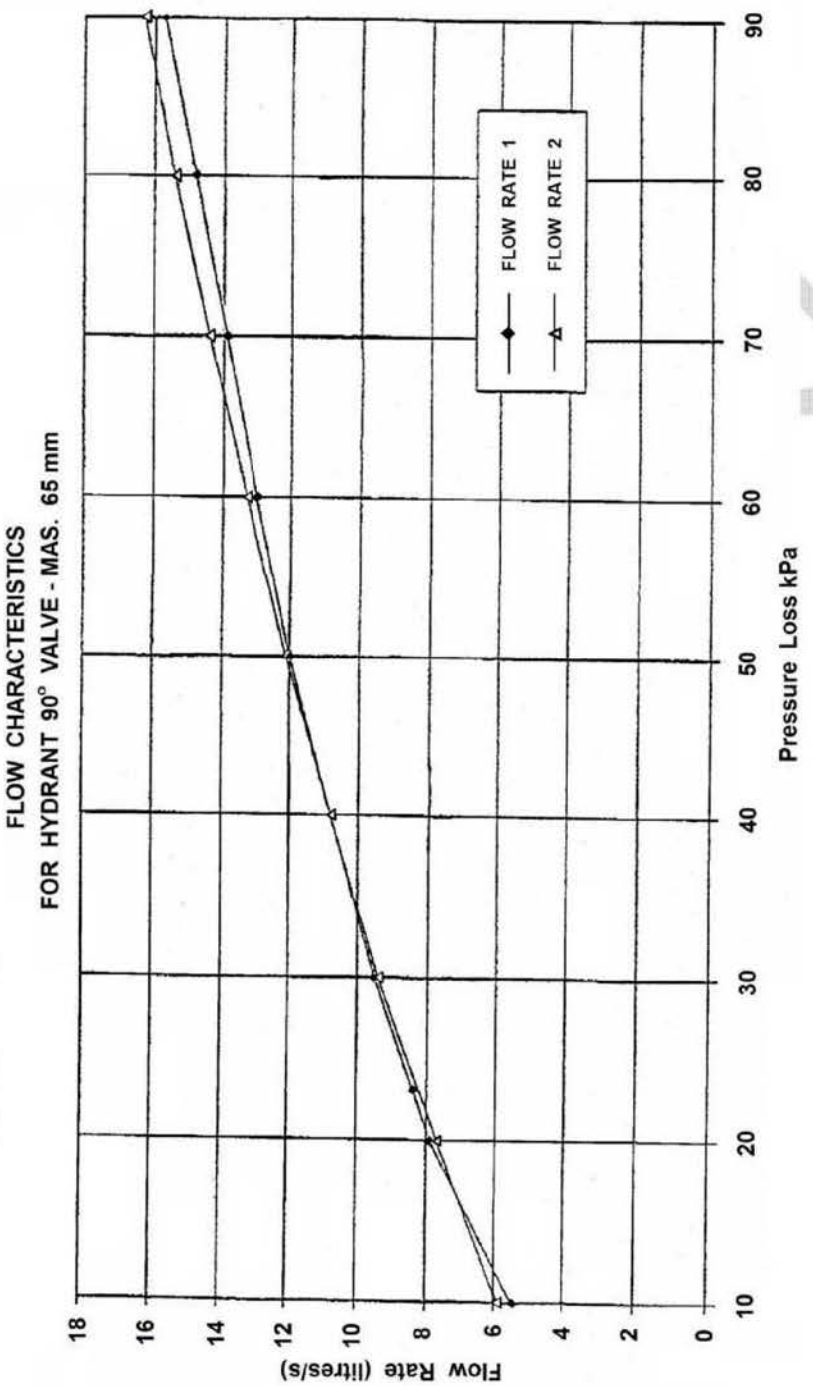
- Compact design
- Dezincification resistance
- Cast Iron with Bronze trim or Full Bronze (Not for use in IPR Hazelwood Mine)
- Variety of Inlets available including Roll Groove and Flange
- Spare parts available for each style
- Accessories – Blank caps, reducers and adapters
- Fully Approved – Australian Standards Watermark Specification No. 12
- Fully Patented- No. 638177

CFA Landing Valve Oblique

PART No.	DESCRIPTION	INLET	OUTLET	MATERIAL
110367	Valve – Hydrant	65 mm BSP Male	65 mm CFA – Thread	Cast Iron
110374	Valve – Hydrant	65 mm BSP Female	65 mm CFA – Thread	Cast Iron
110383	Valve – Hydrant	65 mm Roll Grooved	65 mm CFA – Thread	Cast Iron
110392	Valve – Hydrant	65 mm Shouldered	65 mm CFA – Thread	Cast Iron
110340 1	Valve – Hydrant	65 mm BSP Male	65 mm CFA – Thread	Gun Metal



ATTACHMENT 2 FIRE HYDRANT SPECIFICATIONS (cont')



ATTACHMENT 3 ANNUAL RAINFALL DATA

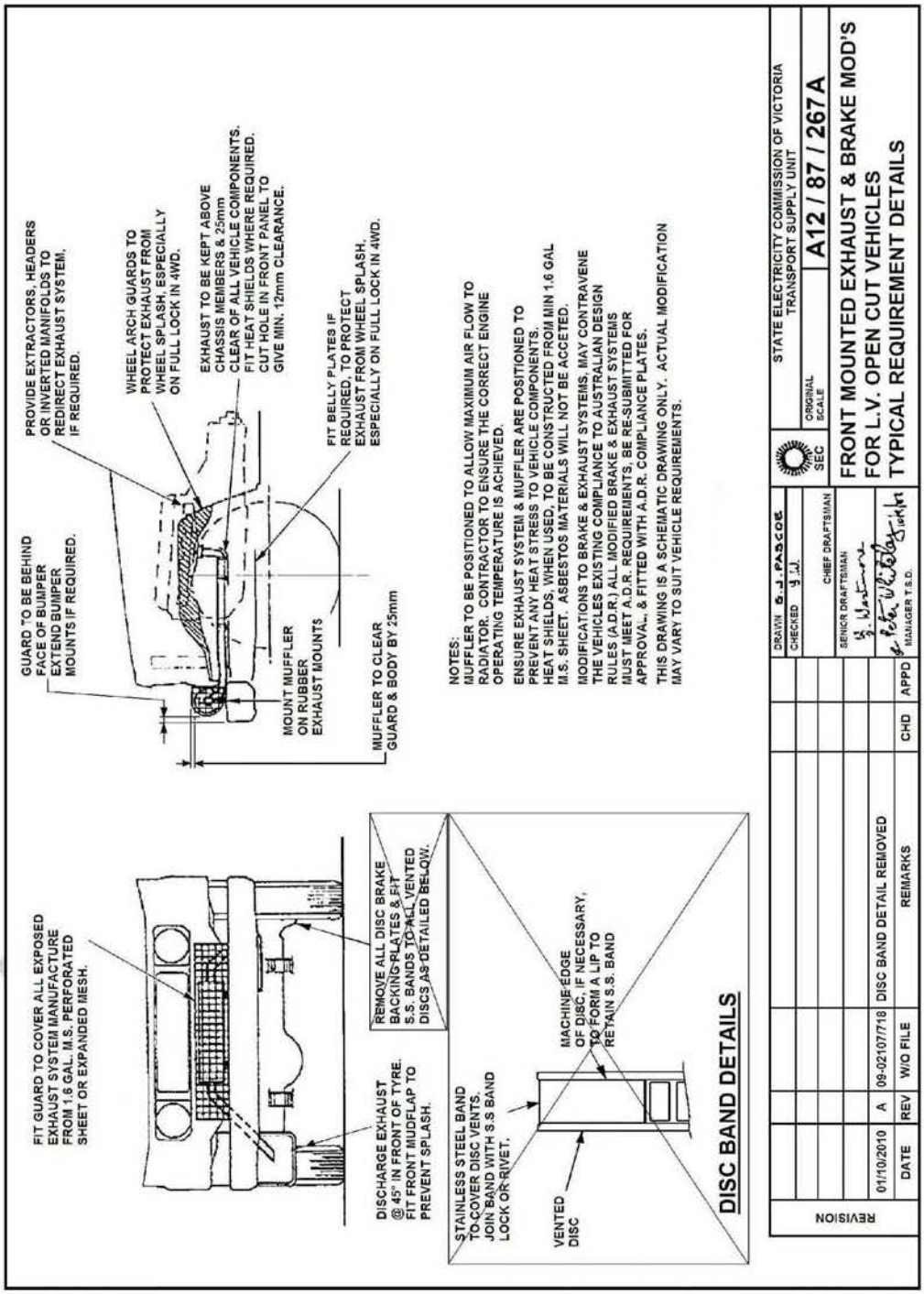
MORWELL (LATROBE VALLEY AIRPORT) METEOROLOGICAL STATION
MONTHLY RAINFALL TOTALS - MM
Based on 0900 daily readings

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year Total
1980	43.0	9.0	36.0	39.0	40.0	71.0	58.0	59.0	81.0	48.0	58.0	111.0	**653.0**
1981	56.0	13.0	79.0	17.0	74.0	69.0	73.0	102.0	30.0	60.0	45.0	23.0	**641.0**
1982	43.0	7.0	82.0	43.0	60.0	36.0	21.0	20.0	62.0	25.0	12.0	26.0	**437.0**
1983	45.0	5.0	73.0	57.0	141.0	66.0	55.0	39.0	136.0	72.0	78.0	33.0	**800.0**
1984	53.1	23.6	57.4	97.7	19.0	42.0	61.6	96.4	93.6	39.8	65.0	82.8	**732.0**
1985	21.0	23.4	60.2	96.6	69.2	57.6	87.4	74.2	59.4	48.0	113.0	203.2	**913.2**
1986	54.8	37.8	8.8	59.0	96.4	63.6	99.0	35.6	70.2	124.4	26.8	96.2	**772.6**
1987	49.0	43.0	72.2	36.6	36.4	76.4	72.0	38.2	70.8	55.0	64.0	81.0	**694.6**
1988	34.4	10.6	35.4	53.6	138.0	40.4	70.0	34.4	63.2	80.8	121.8	102.0	**784.6**
1989	43.6	27.2	125.0	53.2	58.6	80.4	96.0	64.0	91.8	175.2	26.8	46.4	**888.2**
1990	0.0	54.2	42.6	114.8	36.2	42.4	69.4	115.2	52.2	107.2	65.2	43.2	**742.6**
1991	200.0	7.0	26.2	30.0	33.8	151.2	103.6	96.6	122.0	39.6	41.2	75.8	**927.0**
1992	37.4	29.6	53.6	52.4	64.0	81.0	33.6	60.0	119.8	70.3	99.2	155.0	**859.1**
1993	58.2	63.3	68.1	10.2	19.5	76.0	104.0	46.4	162.8	122.8	101.8	64.2	**897.3**
1994	63.8	141.8	26.6	43.6	78.2	62.4	24.8	71.0	97.8	50.4	135.8	30.2	**826.4**
1995	77.4	32.0	37.4	82.8	74.0	96.0	102.0	59.4	62.4	107.4	121.0	65.2	**917.0**
1996	58.6	71.0	79.2	78.4	30.6	47.6	74.6	104.0	103.4	46.2	81.8	35.0	**810.4**
1997	35.0	14.0	45.0	18.8	54.0	57.4	68.0	54.4	50.0	64.6	81.6	18.8	**561.6**
1998	46.8	67.0	11.8	45.8	39.4	59.6	40.0	35.2	74.2	123.0	114.2	94.4	**751.4**
1999	65.0	45.6	64.8	21.0	60.6	37.8	33.0	54.2	43.0	79.6	33.8	48.6	**587.0**
2000	62.4	25.4	19.6	65.2	112.6	35.4	56.6	48.2	143.8	74.0	70.4	21.4	**735.0**
2001	37.4	34.4	59.4	132.6	11.4	64.2	37.4	108.2	40.8	129.8	122.8	59.6	**838.0**
2002	56.4	30.6	42.4	72.4	53.2	49.4	57.4	33.0	54.0	62.0	31.0	29.2	**571.0**
2003	25.8	18.0	58.0	49.4	26.2	59.8	81.4	55.8	82.6	79.0	45.2	42.6	**623.8**
2004	59.2	38.8	13.4	51.2	46.2	72.0	43.8	58.0	80.0	41.0	81.4	82.4	**667.4**
2005	42.6	89.2	20.2	23.2	17.2	27.4	74.6	73.8	62.0	43.6	42.2	54.4	**570.4**
2006	80.0	23.8	16.0	78.6	73.6	8.4	30.4	36.0	39.2	13.0	41.8	23.2	**464.0**
2007	37.4	55.8	57.4	33.6	42.4	78.0	81.8	43.8	64.2	38.0	85.0	78.8	**696.2**
2008	20.8	52.6	10.8	24.8	31.4	35.4	69.8	62.6	47.2	20.0	70.0	80.4	**525.8**
2009	2.8	10.2	30.8	60.0	20.0	21.2	53.8	77.8.	87.8	75.0	67.4	56.2	**563.0**
2010	26.0	69.6	86.6	63.6	60.4	59.8	30.6	66.8	52.8	92.6	86.8	75.6	**771.2**
2011	44.0	145.0	109.2	101.0	57.0	48.0	76.8	49.0	70.0	65.6	126.4	55.4	**947.4**
2012	46.2	97.2	120.2	57.8	96.8	109.2	26.6	97.2	86.4	54.4	33.8	74.2	**900.0**
2013	4.2	47.4	31.4	37.0	47.4	137.6	49.2						

AVE	47.5	46.2	49.7	58.2	53.5	64.0	63.6	63.8	77.5	72.6	75.8	68.1	**753.2**
MAX	200.0	145.0	125.0	132.6	141.0	151.2	104.0	115.2	162.8	175.2	135.8	203.2	**947.4**
MIN	0.0	5.0	8.8	10.2	11.4	8.4	21.0	20.0	30.0	13.0	12.0	18.8	**437.0**

Note: *Data to September 1989 daily read gauge. Data from October 1989 is pluviograph data*
Rainfall reading for October 1992 is not available from the Bureau of Meteorology, long term average used.

ATTACHMENT 4 VEHICLE MODIFIED EXHAUST SYSTEMS



ATTACHMENT 5 VEHICLE MODIFIED EXHAUST TEST PIT & TEST SPECIFICATIONS

Before any vehicle can travel on coal surface it must be fitted with an approved & tested modified exhaust system. Vehicle Exhaust tests are to be carried out using a standard coal slurry pit and supervised by the Hazelwood **Mine Production Superintendent** or **Supervisor**. All modified vehicles that have satisfactorily undergone the test are to have the results documented on the following check list and this record is to be kept at the Hazelwood Mine Fire Service Office.

SLURRY PIT DIMENSIONS – Length 100 metres
Width 20 metres
Depth approx 300 millimetres of sloppy coal slurry

Note: *The slurry pit can be specially constructed or a coal level utilised.*

Vehicle Modified Exhaust Testing & Inspection Check List

Vehicle Model: _____

Vehicle Description: _____

Vehicle Year: _____ Circle Result: PASS NOT-APPROVED Date: ___ / ____ / ____

Authorised Name & Signature (Mine Production Manager/Supervisor):

_____

Authorised Name & Signature (Mine Production Manager/Supervisor):

_____

Speed 1 – Travel through coal slurry at 15kph, then inspect motor cavity, fire wall, exhaust manifold, and exhaust pipe from motor through to exhaust pipe exit, adjacent to vehicle front wheel for coal splash and document.

Comments: _____
_____
_____

Speed 2 – Travel through at 20 kph and carry out inspections as per speed 1 above.

Comments: _____
_____
_____

Speed 3 – Reverse vehicle at approx 10 kph to 15 kph and at same time turning front wheels on and of full lock from left to right, inspect for coal splash around engine, exhaust manifold, and exhaust pipe.

Comments: _____
_____
_____

Speed 4 –Travel through slurry pit at 30kph, carry out inspections as per speed 1, 2& 3 above, document and ascertain from these tests whether vehicle exhaust modifications conform to the required standards of the Hazelwood Mine and are suitable for entry onto coal surface.

Comments: _____
_____
_____

Recommendations: _____
_____
_____
_____

ATTACHMENT 5 VEHICLE MODIFIED EXHAUST TEST PIT & TEST SPECIFICATIONS (cont')

Approved Vehicle Modified Exhaust Check List

Vehicle Model: _____

Item	Vehicle Registration	Vehicle Year	Checked By
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
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16.			
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18.			
19.			
20.			

ATTACHMENT 6 HIGH WATER STORAGE & CAPACITY CALCULATIONS

Approximate calculations for the conformation of Summer and Winter, Dirty Water Pond, operating levels.

It is recommended that a complete operating analysis and flood assessment be conducted every five years at a minimum to check the operating levels and dirty water storage capacities. At the same time a complete bottom of pond survey should also be completed.

The most recent flood analysis was in 2010 that showed that there is enough storage capacity to detain a 1 in 100 year rainfall event behind the groynes by closing the penstocks. By keeping the Dirty Water Pond as low as possible, this allows the mine to have enough buffer to react to a large rainfall event.

The figures set are as follows;

- Summer High level RL –64.3
- Summer Minimum Operating level RL –65.1
- Winter High level RL –65.1
- Winter Minimum Operating level RL –65.6

Summary table for Dirty Water Pond, RL's, Available capacities at each RL, and Volume over a vertical distance at each RL.

RL	Volume Between Levels	Difference in RL	Volume m^3
-66.6	15571	0.2	243956
-66.4	15972	0.2	259927
-66.2	16429	0.2	276356
-66.0	16910	0.2	293266
-65.8	17427	0.2	310693
-65.6	18065	0.2	328758
-65.4	18909	0.2	347666
-65.2	20260	0.2	367927
-65.1	10597	0.1	378524
-65.0	21493	0.2	389419
-64.8	22809	0.2	412228
-64.6	12157	0.2	436314
-64.4	12500	0.2	461166
-64.2	12779	0.2	486586
-64.0	13044	0.2	512549
-63.8	13229	0.2	538923
-63.6	13374	0.2	565603
-63.4	13496	0.2	592533
-63.2	13602	0.2	619685

These bottom of pond RL levels were measured in August 2008.

ATTACHMENT 6 HIGH WATER STORAGE & CAPACITY CALCULATIONS (cont')

Summary table of monthly rainfall data based upon 23 year data 1984 to 2007.

Rainfall (mm)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	Sep	OCT	NOV	DEC	Annual
Mean	54.2	39.9	45.9	58.4	53.8	60.3	66.1	63.1	80	79.3	75.1	67.6	740.9
Highest	200	145.0	125	132.6	138	151.2	104	115.2	162.8	175.2	135.8	203.2	927
Date	1991	2011	1989	2001	1988	1991	1993	1990	1993	1989	1994	1985	1991
Lowest	0	7	8.8	10.2	11.4	8.4	24.8	33	39.2	13	26.8	18.8	464
Date	1990	1991	1986	1993	2001	2006	1994	2002	2006	2006	1989	1997	2006

The Summer Fire season is defined as per the Season Specific Fire Preparedness and Mitigation Planning, and the off or winter season is the period outside this.

- **ATTACHMENT 7 FIRE HOSE PERCOLATION RATES & FORMULAS SPECIFICATION BACKGROUND OF HIGH PERCOLATING FIRE HOSE**

High Percolating (H.P.) fire hose is a specially designed hose to comply with High Percolating hose requirements as per the following specification, whilst at the same time exceeding the requirements of **Australian Standard AS 2792–1992 Fire Hose – Delivery Layflat**

H.P. fire hose was developed in conjunction with the "Morwell Fire Review Committee" following the major fire at Morwell in 1976.

This fire hose was developed to ensure that the Hazelwood Mine are well prepared should a fire of this magnitude be repeated in the future, in order to assist in the protection of both life and valuable assets.

H.P. fire hose has some unique construction features which set it apart from standard types of percolating hose and these feature are a result of many, many months of product development in order that:

(i) Consistent high percolating rates could be achieved.

(ii) A consistent percolation rate will be achieved from one production batch to another.

(iii) Rate of percolation will remain high, even after the hose has been in service for a period of time

Note: Any normal percolating hoses will dry up due to the combined effects of suspended solids In the water and coal particles clogging external weave of the fire hose.

We would respectfully draw to your attention the following:

Alternative fire hose may be offered, which would undoubtedly be normal percolating hose with minor alterations to the lining, or "pin pricked linings to give initial high percolation rates.

Development in the past has proven beyond doubt that these types of products will not be suitable for the intended application due to lack of percolation and indeed, in many cases no percolation at all after initial use.

ATTACHMENT 7 FIRE HOSE PERCOLATION RATES & FORMULAS (cont')

SPECIFICATION FOR INTERNATIONAL POWER/GDF SUEZ - HAZELWOOD HIGH PERCOLATING HOSE H/P 1–95

Scope:

Following the major fires at the Morwell Open Cut in 1976, it was deemed necessary to have a hose capable of percolating at higher rates to ensure:

i. Adequate water supplies for fire fighting purposes.

ii. A high degree of self protection for the hose and surrounding areas in the event of a fire.

iii. A high degree of dust suppression.

This product was developed over a period of time in conjunction with SECV Engineers, solely as a purpose built product.

CONSTRUCTION:

1. Jacket

The fire hose jacket is to be constructed of poly vinyl alcohol staple warp yarn with filament polyester weft, all materials are to be of virgin quality and free from knots, lumps, twists and any irregularities.

2. Lining

Lining is to be of a pre–vulcanised natural latex compound, applied in such a manner as to give an even consistent percolation rate as per the Specification requirement, along the complete hose length.

3. Dimensions:

Nominal Bore:	38mm, 64mm, 89mm
Bore Tolerance to be:	–0mm to + 1.5mm.
Nominal length:	to be 30 metres.
Working pressure:	1400 kPa
Maximum Burst Pressure:	3500 kPa
Dimensional Stability	as per **AS 2792-1992 Fire Hose – Delivery Layflat**

ATTACHMENT 7 FIRE HOSE PERCOLATION RATES & FORMULAS (cont')

4. Percolation Rate:

All hoses shall percolate at the following rate:

- 5 l/min/m2 minimum to
- 10 l/min/m2 maximum
- at 700 kPa in accordance with **AS 2792-1992 Fire Hose – Delivery Layflat** Appendix J

The above rate equates to the flowing results when tested in a NATA Registered Laboratory utilising a 4 metre collection tray.

Diameter	Percolation Rate
38mm N.B.	12 – 24 litres/per 5 mins
64mm N.B.	20 – 40 litres/per 5 mins
89mm N.B.	28 – 56 litres/per 5 mins

Marking:

All marking to be in accordance with the requirements of **AS 2792-1992 Fire Hose – Delivery Layflat**

Certification:

All products supplied against this High Percolating (H.P.) Hose Specification are to be manufactured by a supplier who is quality endorsed to **AS/NZS ISO 9001-2000 Quality Management Systems - Requirements**.

Batch testing is to be conducted with each delivery and a NATA endorsed (stamped) certificate supplied from the original manufacturer.

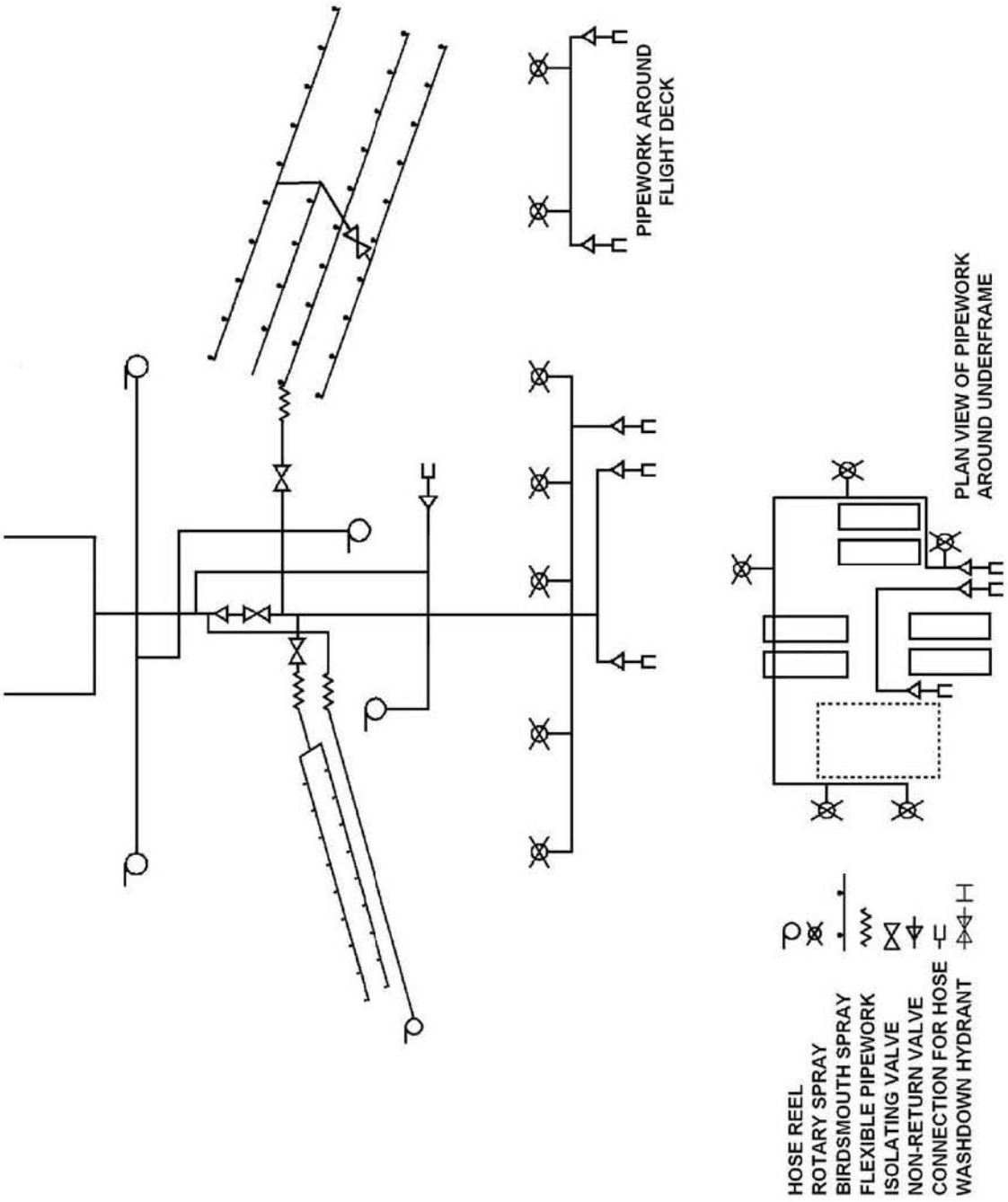
Conformance of product to this Specification is to be verified by a NATA endorsed (stamped) Test Certificate.

ATTACHMENT 8 FIREMAN TEST QUESTIONS & ANSWERS

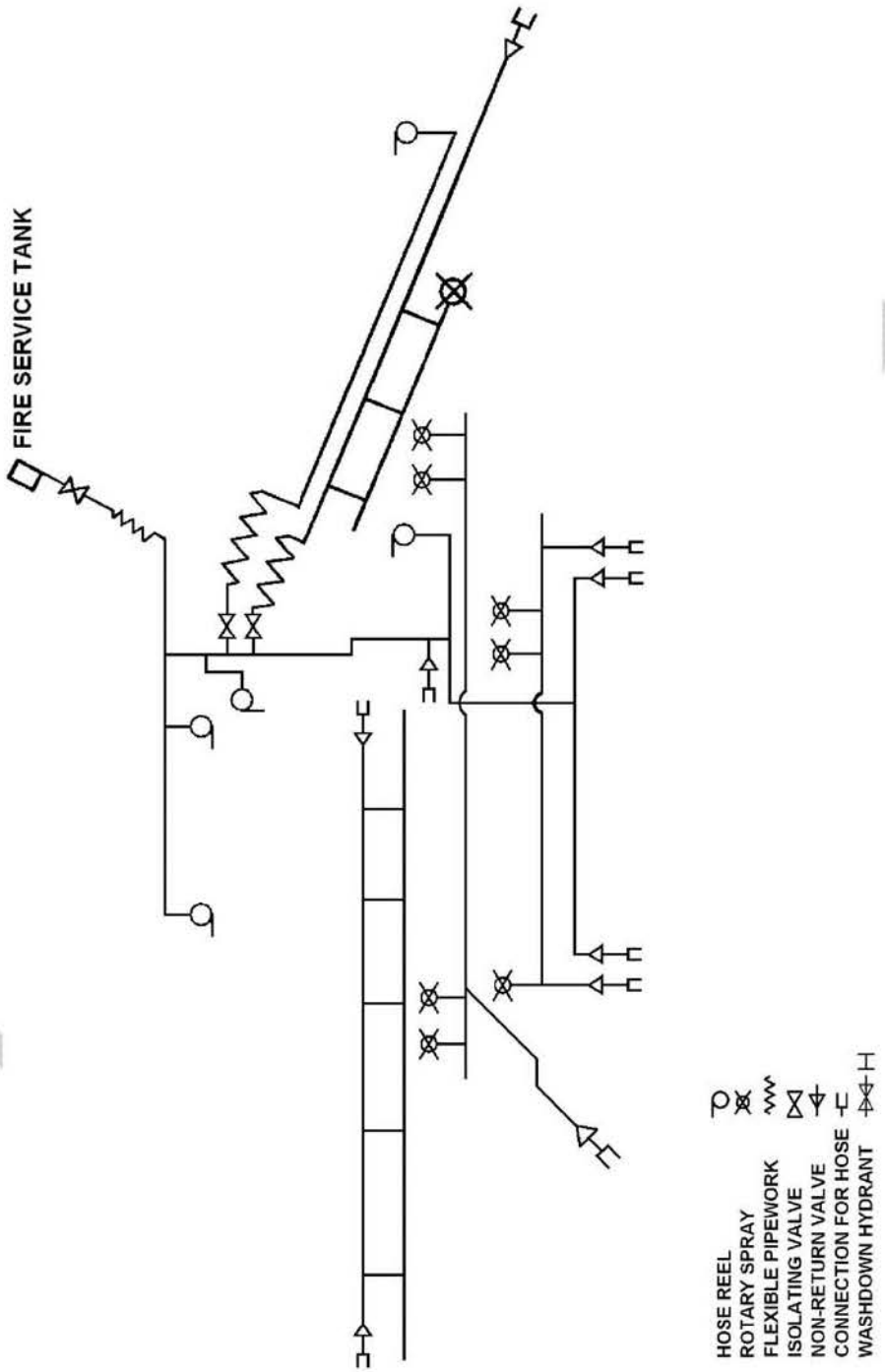
The assessment is a separate document in Paradigm Id No. 46917

ATTACHMENT 9 MACHINE FIRE HOSE HOOKUP DIAGRAMS

DREDGER D9

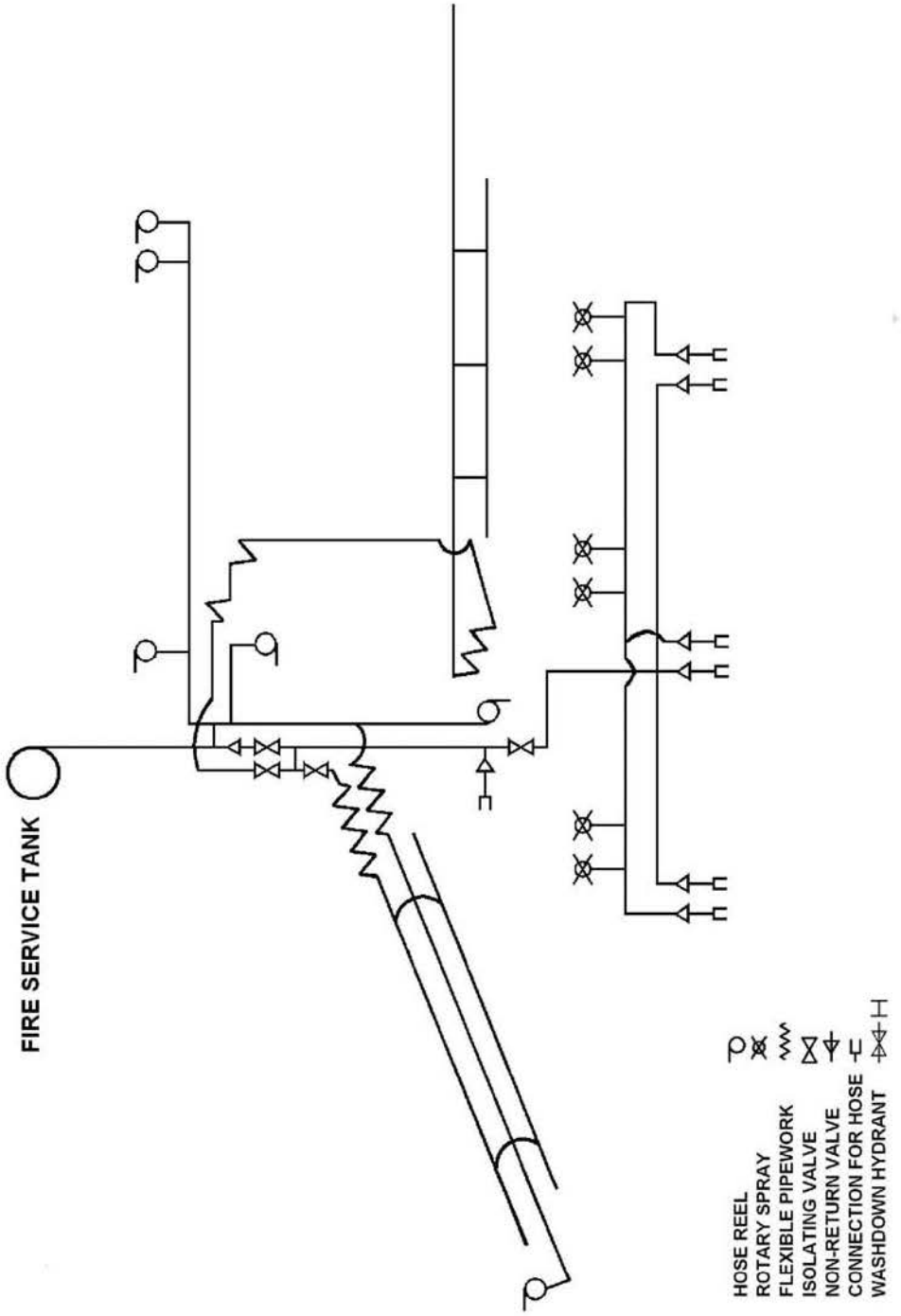


ATTACHMENT 9 MACHINE FIRE HOSE HOOKUP DIAGRAMS (cont')



DREDGER D10

ATTACHMENT 9 MACHINE FIRE HOSE HOOKUP DIAGRAMS (cont')



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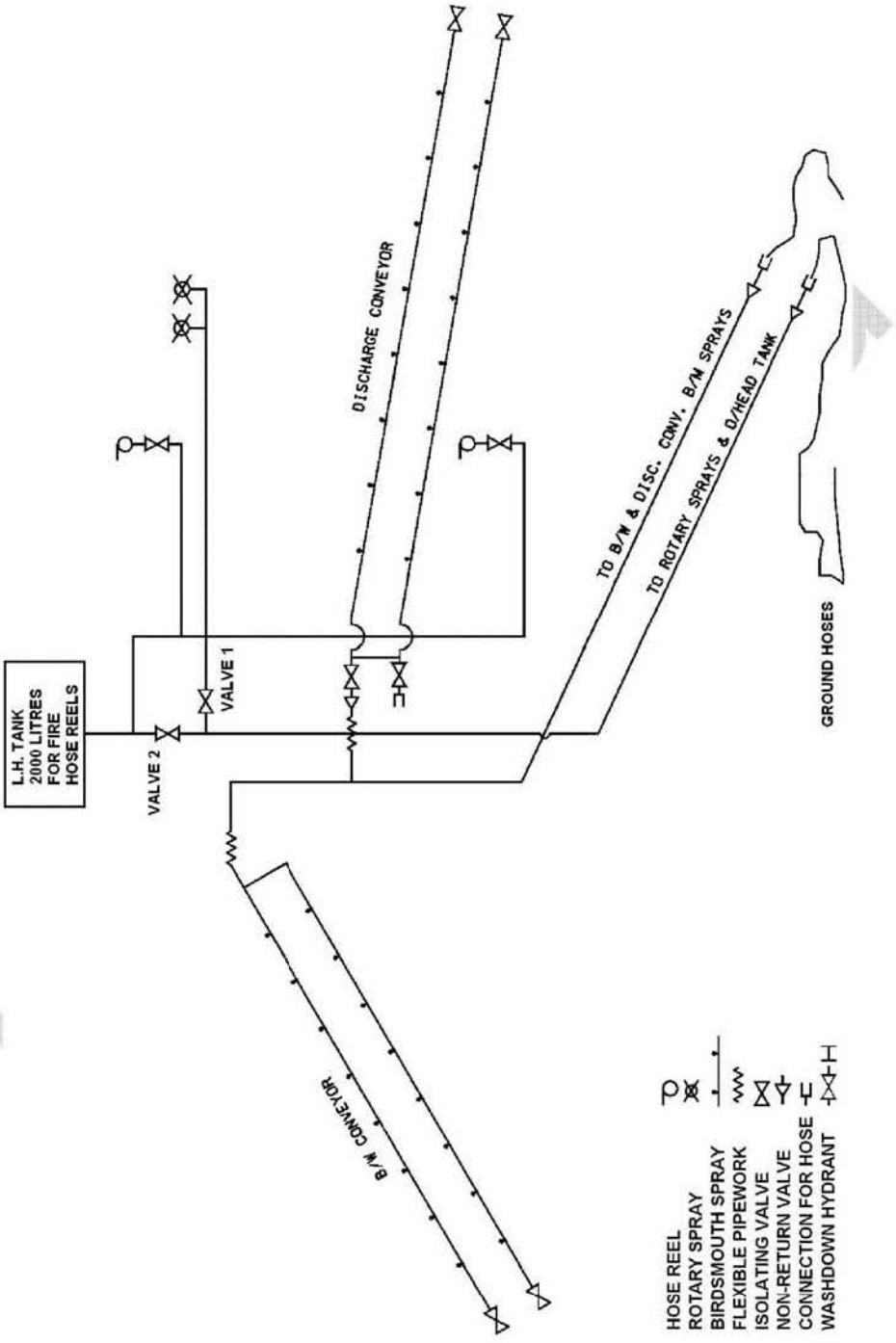
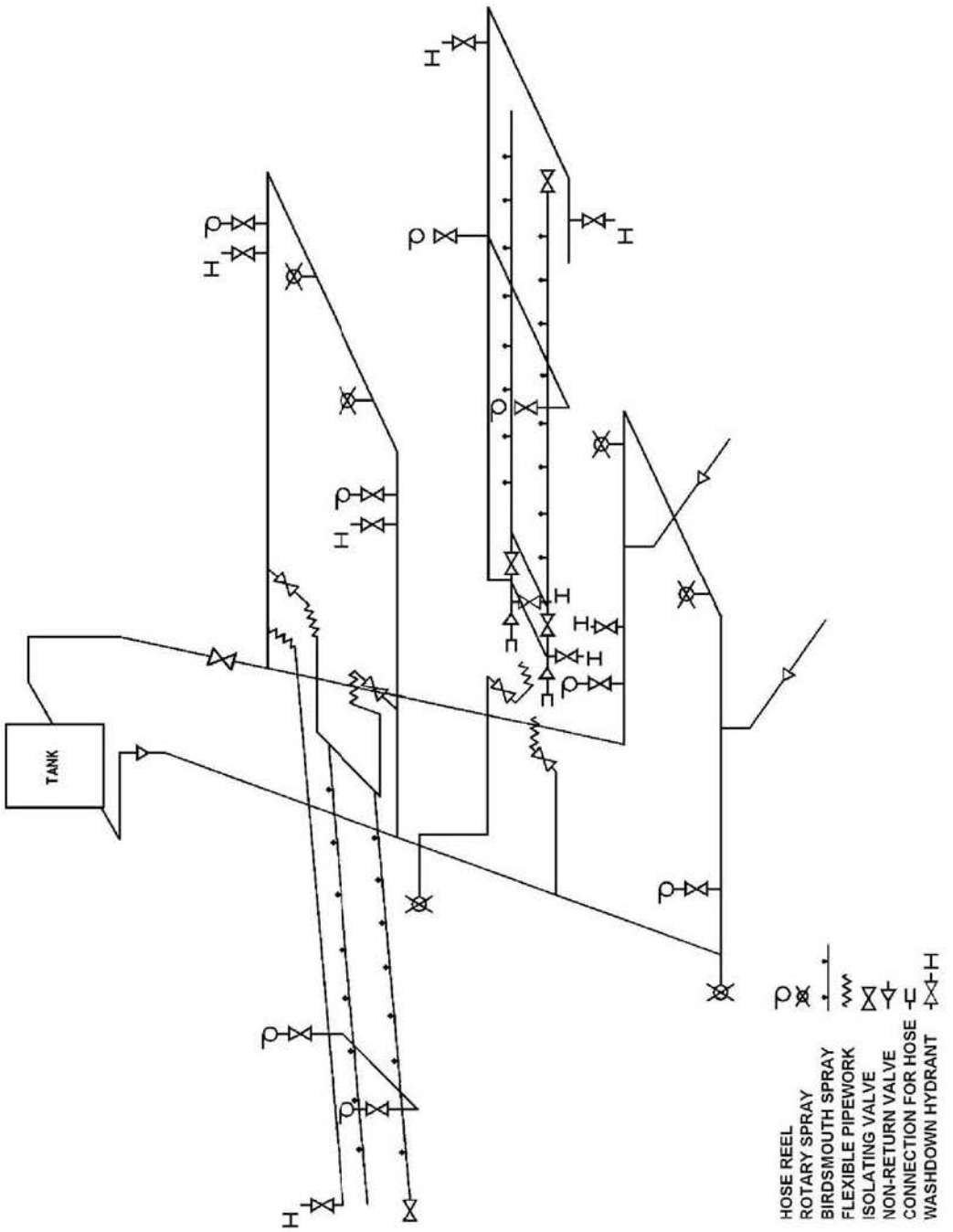
ATTACHMENT 9 MACHINE FIRE HOSE HOOKUP DIAGRAMS (cont')



DREDGER D24

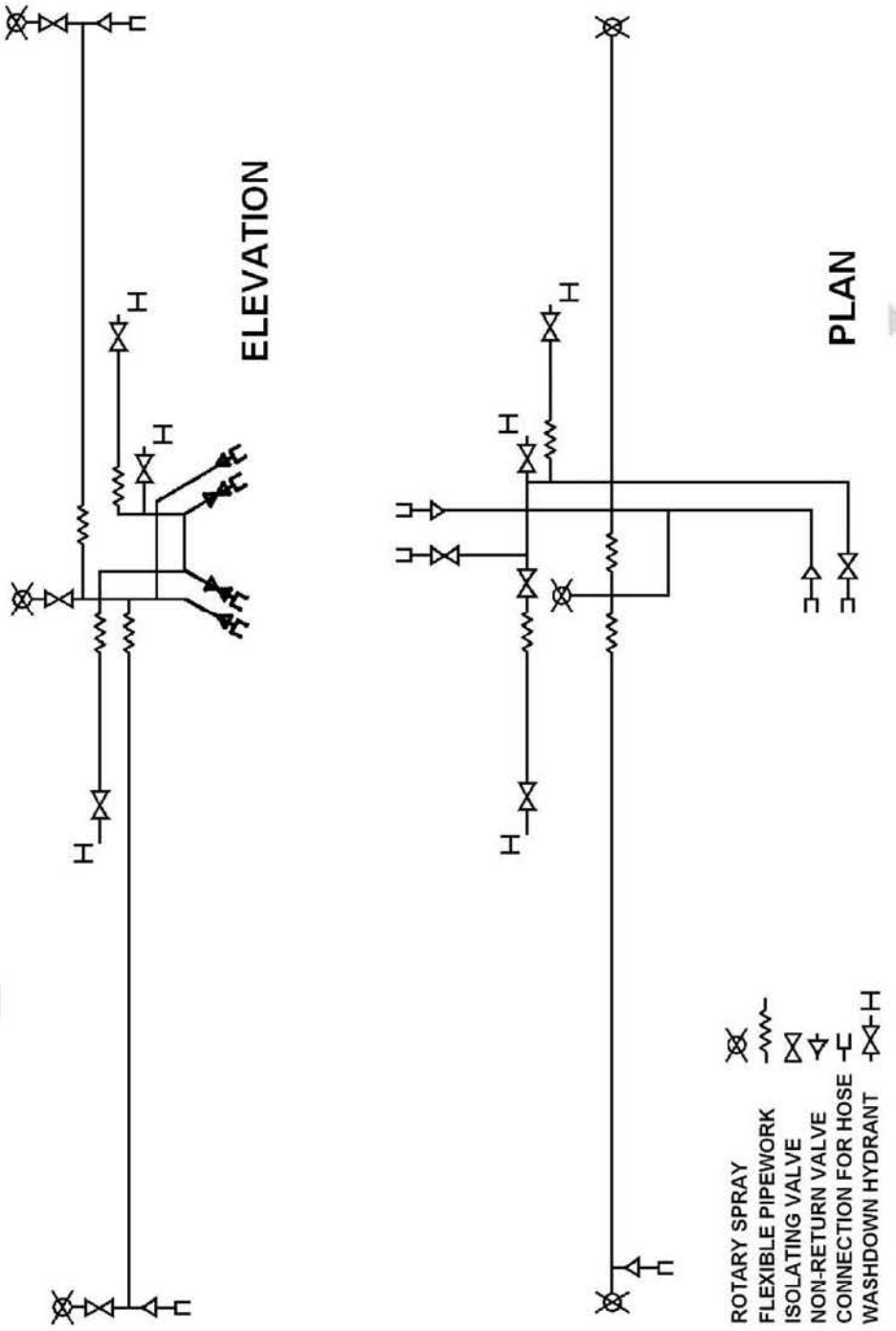
ATTACHMENT 9 MACHINE FIRE HOSE HOOKUP DIAGRAMS (cont')

DREDGER D25



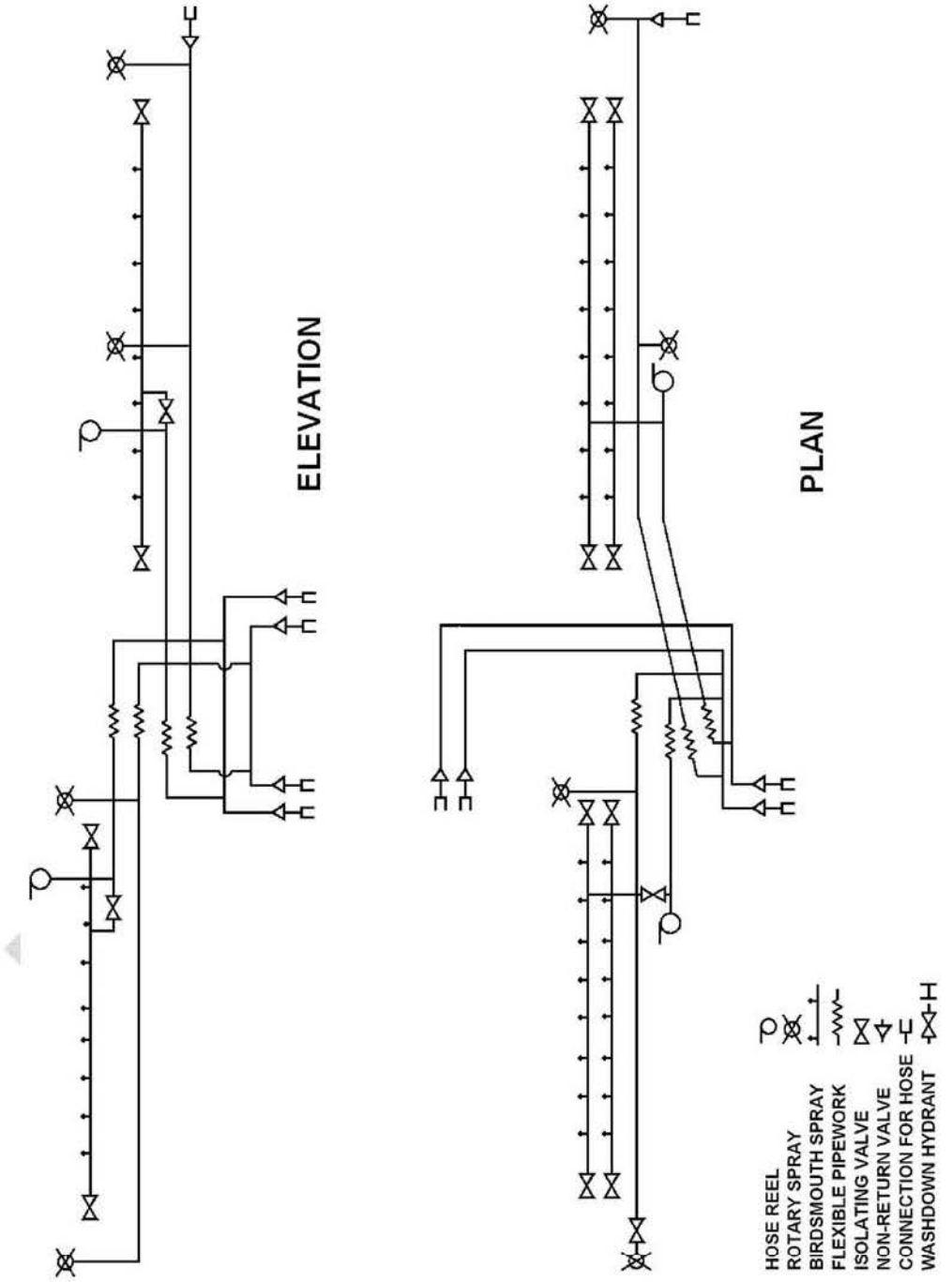
ATTACHMENT 9 MACHINE FIRE HOSE HOOKUP DIAGRAMS (cont')

MOBILE SLEW S94



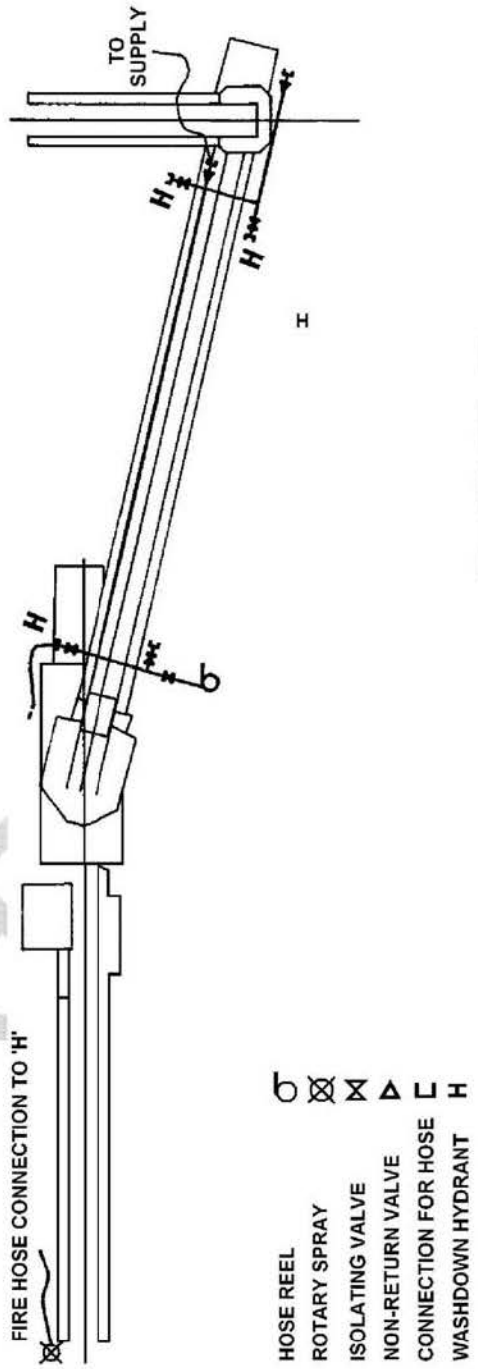
ATTACHMENT 9 MACHINE FIRE HOSE HOOKUP DIAGRAMS (cont')

MOBILE SLEW S96



ATTACHMENT 9 MACHINE FIRE HOSE HOOKUP DIAGRAMS (cont')

TRIPPER STACKER TS2



ATTACHMENT 10 EXTRACT FROM THE FIRE RATIONALISATION POLICY

EXTRACT FROM THE INTERNATIONAL POWER/GDF SUEZ HAZELWOOD FIRE EQUIPMENT RATIONALISATION POLICY

VEHICLE AND PLANT FIRE SUPPRESSION PACKS

Vehicles that enter the Hazelwood Mine are to be equipped with the following fire fighting equipment –

- 2-off 30 metres x 38 millimetre percolating fire hose fitted with 64 millimetre CFA couplings.
- 1-off Hose Director fitted with a 16 millimetre nozzle.
- 1-off 16 litre minimum, fully charged knapsack spray.

Mobile Plant –

- 1-off 6 metres x 19 millimetre wash down fire hose fitted with 64 millimetre CFA couplings.
- 1 off9 litres fully charged foam extinguisher.