



QMS.40

Loy Yang B Power Station Bushfire Mitigation Plan
2013/2014

GDF SUEZ

 MITSUI & CO., LTD.



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Emergency Contact Numbers for All Site Emergencies	From an internal phone dial 3333 From mobiles/ External phones dial (03) 5177 2111
Emergency Contact Position.	The Loy Yang B Power Station Shift Supervisor can be contacted 24 hours, 7 days a week throughout the year on (03) 5177 2110

Copies of the Bush fire Mitigation Plan	Copies of this plan are available electronically from LYBs Quality Management System. Hard copies may be requested in writing to the Electrical Safety Management Scheme Manger
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1. INTRODUCTION

IPM Operation & Maintenance Loy Yang Pty Ltd (The Company) is the operator of the Loy Yang B Power Station located on land 1.2 km east of AGL Loy Yang Power Station approximately 7 kilometres south west of the City of Traralgon. Access is via Bartons Lane from the Traralgon Creek Road or Minniedale Road from the Traralgon Gormandale Road.

Loy Yang B Power Station (LYB) has a nominal design capacity of 1000 MW in two power generating units of 500 MW each comprising steam turbine generators, brown Coal-fired boilers and associated auxiliary plant and buildings.

The Power Station site aerial photo details the boundaries of Loy Yang B Power Station and High voltage Overhead Lines. (Refer to Appendix C)

The Company maintains a high standard of risk management whilst achieving its primary role of electricity generation. It operates under certified standards for health and safety, environmental management and quality assurance.

Bushfires pose a risk to business assets, electricity production, health, safety, and environment which has led to a set of control measures to mitigate the risk of bushfire. Furthermore, a well-trained response team and fixed reticulated and mobile fire suppression systems provide the resources to control bushfires within the LYB site boundary.

This bushfire mitigation plan has been developed in accordance with Loy Yang B Electricity Safety Management (ESMS) and implemented to manage the risks to assets (including HV lines) and personnel from bushfire and wild fire from and onto the LYB site.

2. POLICY STATEMENT.

The Company is committed to managing the site to mitigate against the initiation and spread of fire and protect at-risk electrical lines in compliance with the Electricity Safety Act and associated Bushfire Mitigation Regulation. This will be achieved by the application of various techniques including:

- *periodic inspection,*
- *proactive operation and maintenance plans,*
- *monitoring of plant and surrounding environment,*
- *reporting of fires,*
- *quick response to the extinguishing of fires,*
- *provision of fire fighting systems, and*
- *assisting fire control agencies*



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3. OBJECTIVE.

The objective of the Bushfire Mitigation Plan is to make a provision for the mitigation of bushfires and wild fire from and onto the LYB site and risk minimisation for 'at-risk' electrical lines (HV lines).

LYBs Bushfire Mitigation Plan provides an integrated set of procedures and instructions to lead a controlled reduction in fire risk to and from all site assets, through systems of asset inspection and management, fuel reduction, ignition source containment and fire control.

The specific objectives of the Plan are:

- *To protect Loy Yang B Personnel, their contractors and the public engaged on the site*
- *To fully comply with the Electricity Safety (Bushfire Mitigation) Regulations*
- *To maintain a program of asset inspections consistent with the assessed level of risk*
- *To operate and maintain the plant and facilities with controls to minimise the risk of initiation and or spread of fire*
- *To manage vegetation fuel loads and asset clearances in a timely manner, for minimum fire risk, consistent with relevant standards and regulation*
- *Assess the performance of programs supporting this Plan and strive for continual improvement*

Whilst the effective application of this Plan does lead to reduced fire risk, the risk is still finite. Consequently there is a need to manage fire response and this is managed under the strategic framework of the site Loy Yang B Emergency Response Plan.

4. FIRE HAZARD RATING.

A Fire Hazard Rating assessment has been carried out by LYB authorized personnel and approved by the relevant management representatives.

The electrical assets covered in the Fire Hazard Rating assessment are as per the Loy Yang B Electricity Safety Management Scheme scope of work, plant and equipment.

The Loy Yang B fire rating is assigned by the CFA and DSE. The Fire Hazard Rating is reviewed no later than three years plus one month from the date of the previous inspection or when a major change is made to the scope of the plant and systems covered by the Loy Yang B Electricity Safety Management Scheme. The Head of Operations & Generation for LYB shall determine whether a major change has been made and advise the ESMS Manager to review the Rating and Risk Assessment.

The Bush Fire Mitigation Plan and Risk Assessment will be reviewed yearly to ensure currency and provide up to date data on the bushfire hazards and areas of risk for the site.



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5. SCOPE OF ELECTRICAL SYSTEMS

The scope of electrical systems covered in this Bushfire Mitigation Plan are those same assets and systems covered by the Loy Yang B Electricity Safety Management Scheme.

The scope of electrical systems, plant, equipment and aerial lines covered by the plan includes:

- *The Loy Yang B Brown Coal Power Station Site including the generating units, their interconnecting elements to the Power Grid and the infrastructure services within the site.*
- *500 KV Interconnection at the LYB Generator transformer and Switchyard.*
- *AGL Loy Yang A to Loy Yang B 11KV Station Board interconnection tie Overhead lines.*
- *LYB Power Station electrical machinery including generators, power supply distribution systems, motors, actuators and cabling.*
- *Workshops, Control Room and other Buildings.*

These systems are defined in the attached site plan. The site plan forms a part of this Bushfire Mitigation Plan. (Appendix c)

5.1 NON LOY YANG B HIGH VOLTAGE OVERHEAD LINES

On the Loy Yang B site, there are overhead lines owned and managed by SP Ausnet. The SP Ausnet overhead power lines are located on easements on the LYB site and are clearly marked on the site drawings. These lines are managed by SP Ausnet and the management of these lines are included in their Bushfire Mitigation Plan; hence they are not included in the Loy Yang B Bushfire Mitigation Plan.

6. PREVENTATIVE STRATEGIES

The preventative strategies to minimise the risk of the fire starting from on site by electric lines of other sources on the Loy Yang B site are as follows;

- *Completion and review of the LYB Fire Risk Assessment.*
- *Mitigation Strategies developed.*
- *Management of the LYB HV overhead lines.*
- *Manage the vegetation fuel reduction program prior and during the fire season*
- *Manage all hot works on the site*
- *Manage the specific requirements of hot works on days of total fire bans*
- *Maintain Fire fighting equipment and reticulated water fire suppression system on site.*
- *Maintain an Site Emergency Response procedures*



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- *Assist fire control agencies in the management and investigation of fires on site.*
- *Manage and maintain an effective communication system*
- *Use trained and competent personnel to implement the bushfire mitigation plan*
- *Manage Fire Protection systems and water sources to effectively extinguish fires. (Appendix B)*

6.1 Fire Risk Assessment

A fire risk assessment of the electrical systems, plant, equipment and aerial lines was conducted by persons who have extensive experience on this type of plant and or fire prevention detection, fighting and control. The Risk Assessment is located in the Risk management file on the LYB intranet.

The Fire Risk Assessment will be reviewed yearly and recorded as such, or when a change in plant or site conditions requires a review to be completed.

6.1.1 Scope.

The scope of the risk assessment covered the following:

- *Sources of fire ignition that could be caused by electrical energy, during normal operations, faults and maintenance activities, including external sources to site.*
- *Nature and extent of combustible material that could be ignited by such sources of ignition and the probability that ignition could occur.*
- *Influence of climatic and environmental conditions that are likely to occur during the declared fire danger period and days of total fire ban.*
- *Coverage and effectiveness of any fixed fire protection systems available.*
- *Emergency response capability, available on and off site.*
- *Probability of spread of fire to other plant items and/or off site areas.*
- *Consequences of a fire on-site, including personnel hazards, plant hazards and hazards to the upstream network.*
- *Identify risk mitigation strategies that will reduce the probability of occurrence of ignition from electrical assets, and/or the spread of fire appropriate to the identified risk. Such strategies include, preventative, contingent and recovery measures and processes, and includes the demands of declared fire danger periods and days of total fire ban.*

6.2 Mitigation Strategies.

Mitigation strategies developed are in line with design criteria of the Loy Yang B plant and equipment. Other measures outside of the design are included by the following: preventative measures, smoking control, housekeeping and maintenance, maintenance of fire protection equipment, aerial lines, hot work process



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control/cutting and welding, fire detection systems, fire fighting and suppression, installed protection and detection systems and emergency response.

6.2.1 Preventative measures

Procedures and Instructions have been developed to reduce the possibility of emergency situations arising, e.g. Emergency Management Manual, Power Station Procedures and Technical Instructions, Hazard Risk assessments for plant and work activities.

6.2.2 Smoking control

Smoking is prohibited on the LYB site with the exception of designated and defined "Smoking Areas". NO SMOKING signs delineate specific areas however in the main inside the boundary fence is a 'No Smoking' area.

6.2.3 Housekeeping & Maintenance

Preventative and predictive routine maintenance inspections are carried out on all designated plant including a monthly housekeeping inspection plan of the entire Loy Yang B site.

Outside consultants are used to conduct self-audits on safety procedures, operation methodologies and equipment maintenance.

6.3 Management of LYB Overhead Lines.

Preventative measures taken under the Plan, include equipment and aerial line inspections, plant inspections, provision of additional temporary fire prevention or fire control measures. Inspections of aerial lines and associated equipment are conducted by a person certified by Loy Yang B, and who have satisfactorily completed an approved Energy Safe Victoria training course, and who can demonstrate competency to carry out such inspections, to the satisfaction of Loy Yang B.

Inspections of all LYB aerial lines will be programmed yearly via the LYB Maintenance Management System (MMS), where routine work orders are sent to the responsible LYB person to conduct and complete the inspections in accordance with appropriate Electric Line Clearance practices, as out lined under the Electricity Safety Act and Regulations.

Access to the Loy Yang Power Site for inspection of the 500 KV, 220 KV & 11KV aerial lines are provided for in the Loy Yang Infrastructure Services Agreement with AGL Loy Yang A and SP Ausnet.

6.4 Management of LYB site Vegetation.

LYB routine inspections detail the annual management, review and implementation of fuel reduction works both approaching and during the fire season. LYB manages, reviews and implements actions of site vegetation on a regular basis to ensure site



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conditions are maintained to adequately protect the site against wildfire attack. This includes wild fire protection by hazard vegetation removal external to the LYB site.

Fire hazard removal works include slashing, mulching and pruning. These works are assessed prior to each fire season, when a program is established and enacted. Regular inspections during progress of works are conducted to maintain hazard reduction priorities.

Inspections of LYB site vegetation will be completed yearly prior to the High danger period via the LYB Maintenance Management System (MMS). Routine work orders are sent to the responsible LYB person to conduct and complete the inspections. All works will be completed to the appropriate Electric Line Clearance practices, as outlined under the Electricity Safety Act and Regulations.

Maintaining the clearance space required under Electric Line Clearance codes and regulations, will be carried out by appropriately authorized trained and qualified persons. Contractors engaged in overhead line maintenance, installation, line clearance (both linesmen and vegetation control companies) must be licensed, trained and competent for the task. Contractors will be monitored and audited.

6.5 LYB Site Hot Works.

Loy Yang B Access to Plant procedures requires a Permit for any work being undertaken on the LYB site, with special requirements and precautions taken where Hot Work is being undertaken. Risk Assessments for all Hot Works is required to ensure precautions are comprehensively detailed to enable safe work conditions at all times.

All Hot Works on the site are managed according to the LYB Hot Works specific procedures. LYP-0817 Fire Danger Period and Total Fire Ban Days, LYT-0112 Hot Works, LYT-0112a CFA Permit, provides a methodology to allow for the safe undertaking of Hot Works on the LYB Site.

The Shift Supervisor advises all site personnel of any restrictions that may apply; including the non-issue of Hot Works permits. Restrictions for the issuing of Hot Works permits on day of total fire ban and internal fire alerts are controlled through this procedure.

6.6 High Fire Danger and Total Fire Ban Days.

Loy Yang B has a standard Procedure in applying for CFA Permits and Internal Permits to assess, approve and allow any Hot Works to be carried out. During Days of Total Fire Ban Only essential works will be undertaken under specific fire controls, and where possible, hot works are rescheduled or avoided.

LYB Hot Works specific procedures LYP-0817 Fire Danger Period and Total Fire Ban Days, LYT-0112 Hot Works, LYT-0112a CFA Permit defines the process for obtaining a total fire ban exemption for essential works.

The CFA notify LYB by facsimile of the declaration of a Total Fire Ban. (TFB)

Recipients of All Access permits must reassess all hot works on days of TFB and if work is still necessary the existing Access permit is cancelled and a specific Access Permit issued for the hot work.



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Warning notices are displayed at the Main Entrance gate to Loy Yang B to inform all personnel of the TFD.

All Hot Work applications are assessed as to the criticality of the work to be performed outdoors before an Access permit is issued.

All approved Hot Work site areas are inspected to ensure compliance with the CFA permits for use of open flames, welding, cutting and grinding during declared Fire danger Periods.

Notification is then given to the CFA regarding hot work being performed on days of Total Fire Ban.

6.7 Maintenance of Fire Fighting Equipment.

Regular maintenance routines have been established to ensure the servicing and maintenance of all Emergency Equipment is in accordance with AS1851 Maintenance of Fire Protection Equipment.

All LYB Fire Fighting equipment is inspected on a regular basis. Routine inspections and testing of equipment is conducted and completed at predetermined frequencies. Routines are automatically produced and sent via LYB Maintenance Management System (MMS), where routine work orders are sent to the responsible LYB persons to conduct and complete the inspections in accordance with appropriate codes of practice, regulations or manufacturers requirements.

6.8 Site Emergency Response.

An Emergency Management Manual has been developed to ensure a coordinated response to emergency control at LYB. Regardless of the nature of the emergency (Evacuation, Fire, Serious injury, Bomb threat, chemicals, spills, etc) or the source of emergency.

The Manual aims to provide a means that enables appropriate assistance to be sought from outside emergency services (Police, Fire Brigade, State Emergency Service and Ambulance) if required.

Specifically by ensuring a smooth transfer of control from the Loy Yang B Emergency Commander to the Combat Agency's Emergency Controller, the Manual aims to,

- *Limit the effect of the emergency on personnel, plant and the general environment.*
- *Ensure the satisfactory communication of all vital information as soon as possible.*
- *Facilitate a resumption of normal operations when appropriate.*
- *Provide a basis for training personnel in the handling of emergency situations, and a system of emergency procedure review.*

In declaring an emergency the Plant Manager or Shift Supervisor will assume the role of Loy Yang B Emergency Commander and shall;

- *Mobilise resources and commence efforts to overcome the emergency,*



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- *Appoint a Deputy Emergency Commander to control the event at the scene,*
- *Coordinate any evacuation and recording of personnel,*
- *Coordinate initial notification of emergency services and O & M Manager*
- *Advise other Managers of the nature and extent of resources likely to be required*
- *Endeavour to make plant safe e.g. Energy supplies, controlled areas,*
- *Work in conjunction with any outside agency, who takes control of an incident on Loy Yang B's behalf.*

The Manual effectively assigns responsibilities to personnel at all levels of the LYB workforce.

7 TRAINING.

All personnel are trained to perform the tasks detailed within this plan. The training of personnel is managed and recorded by LYB Training Coordinators. All personnel carrying out work on site are fully site inducted. The induction process states the minimum requirements for carrying out work on site, the need to report fires and provide fire fighting assistance within their capabilities.

LYB have trained a large majority of our workforce in rescue and firefighting techniques as well as first aid. In the event of an incident requiring emergency response these people come together and an appropriate first response team is selected to respond, under the command of the LYB Emergency Commander.

Any outbreak of fire requires the prompt response of well-trained and adequately equipped fire fighters with experienced leaders, effectively coordinated regardless of location or the asset threatened.

Loy Yang B employees undertake non-discretionary fire training as minimum on the commencement of employment and refreshed every 2 years. (Training consists of Fire appreciation, hose and foam techniques, extinguisher skills).

A higher level of training is provided to all Operational personnel every year. (Training consists of Fire appreciation, hose and foam techniques, extinguisher skills, use of breathing apparatus, rescue techniques and dangerous goods.)

Advance Fire and Emergency Response training is offered to Emergency Response Team Personnel (ERT) and includes: advance fire techniques, (high pressure natural gas, diesel, LPG,) emergency response, emergency management and rescue techniques.

All LYB personnel and Contractors involved in the inspection and assessment of LYB owned aerial lines and associated equipment will be trained and have satisfactorily completed an approved Energy Safe Victoria training course. Only persons certified by LYB and can demonstrate competency to carry out such inspections, to the satisfaction of LYB.



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8 EXTERNAL AGENCIES

The Emergency Response Plan defines the function and responsibilities of the incident management team and the interface with emergency services and external agencies. The plan provides for a guide to liaise and report to external agencies. LYB provides assistance to fire control authorities, as required, including the investigation of fires on site.

LYB Power Station has access to fire fighting & support services under a Mutual Aid agreement through the Central Gippsland Essential Industry's Group. This would enable activation of fire response assets from AGL Loy Yang A, Hazelwood, Energy Australian Yallourn, AGL Loy Yang Infrastructure Services, AGL Loy Yang Emergency Services, SPI Ausnet and GPU GasNet, etc.

9 INVESTIGATIONS.

An investigation will be initiated in the event of a fire involving LYB assets including HV electrical lines. The investigation will use the site's investigation procedure LYP0801 to identify the cause of the fire and the actions required to minimise further occurrences of the incident. All fires originating from LYB owned HV overhead Aerial Lines will be reported to Energy Safe Victoria via the Electrical Safety Management Scheme.

10 COMMUNICATION OF THE PLAN

The Head of Operations and Generation Loy Yang B Power Station, carries out promulgation and make available for viewing of the Energy Safe Victoria's (ESV) accepted LYB Bushfire Mitigation Plan on the GDFSUEZ internet site.

11 MONITORING AND AUDITING

The bushfire mitigation plan will be monitored and audited on an annual basis. The audit will be initiated in May of every year by a work order in the site's computerised maintenance management system (Maximo). The audit will include;

- *Monitor and audit the implementation of the bushfire mitigation plan*
- *Identify any deficiencies in the plan or the implementation*
- *Monitor and audit the effectiveness of inspections under the plan*
- *Improve on the plan and the plan's implementation*
- *Ensure all necessary training for the performance of the plan has been carried out*
- *Monitor and audit the competence of persons assigned to carry out the inspections*

The audit will address the issues identified in clause 5(n) of the Electricity Safety (Bushfire Mitigation) Regulation. Any deficiencies found within the monitoring and auditing process will trigger an action, which will be remedied by establishing improvements to the plan. The revised bushfire mitigation plan will then sent to Energy Safe Victoria.



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12 CONTINGENCY MEASURES

Contingency measures and procedures to manage periods of low, medium and high fire danger including total fire bans. Such contingencies may include changes to operating and maintenance practices, staffing levels and the provision of additional external services. Including Emergency response processes.

REFERENCES

1. LYBs Emergency Management Plan/Manual – [QMS.12.V1 – Managing Emergencies](#)
2. Loy Yang B Maintenance Management System (MMS)
 - *MMS Routine Inspection LYB-07*
 - *MMS Routine Inspection LYB-24*
 - *MMS Routine Inspection LYB-61*
 - *MMS Routine Inspection LYB-150*
 - *MMS Routine Inspection LYB-311*
 - *MMS Routine Inspection LYB-154*
 - *MMS Routine Inspection LYB-287*
 - *MMS Routine Inspection LYB-2CYE_01*
 - *MMS Routine Inspection LYB-SSG_01*
 - *MMS Routine Inspection LYB-SSG_02*
 - *MMS Routine Inspection LYB-SSG_03*
 - *MMS Routine Inspection LYB-SSGA_04*
 - *MMS Routine Inspection LYB-SSGA_05*
 - *MMS Routine Inspection LYB-SSGA_09*
 - *MMS Routine Inspection LYB-SSGA_10*
 - *MMS Routine Inspection LYB-SSGA_11*
 - *MMS Routine Inspection LYB-SSG_01*
 - *MMS Routine Inspection LYB-SU_06*
 - *MMS Routine Inspection LYB-SUS_01*
3. Loy Yang B Plant Maintenance and Operation Manuals
4. Loy Yang B ESMS Manual
5. Loy Yang B Procedures & Instructions
 - [LYP0120 - Access to Plant](#)
 - [LYT0121 - Permit Access](#)
 - [LYP0801 - Accident Incident Reporting](#)
 - [LYP0806 - Fire Prevention](#)
 - [LYP0817 - Fire Danger Period & Total Fire Ban Days](#)
 - [LYT0112 - Hot Work](#)
 - [LYT0112-01 - Hot Work Risk Assessment](#)



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APPENDIX A – Risk Assessment Considerations

Fire emergencies may occur in any part of the site as a result of internal or external actions or events. There are a variety of areas within the site that would be sensitive to a fire emergency. These areas have been identified as part of this assessment. The aim is in the prevention and spread of fire to other parts of the plant. All areas of concerned have fixed or portable fire fighting equipment available to them.

1 Loy Yang B 500 KV Switchyard and Transformers

The Loy Yang B 20/500kV Generator, 20/11kV Unit, 11/3.3kV Unit and excitation transformers, (Units 1 and 2) present a fire risk due to the oil in the transformers and high voltages present. Fixed water deluge systems are used to protect these areas.

2 Electrical High and Low Voltage Switch, Control equipment rooms and cable chambers

Very Early Smoke Detection Apparatus (VESDA) Smoke detectors units and Heat sensing detectors are located throughout all Switch and Control equipment rooms, alarming to the Fire Indicator Panel (FIP) in the Control Room. Fire fighting equipment includes Manual fixed water deluge systems, hydrants, extinguishers and foam making systems and equipment.

3 Brown Coal distribution system (Rising Conveyor and Storage)

Two identical Conveyor lines designed to deliver brown coal of 2800 tonne/hr each supplies the stations sixteen brown coal storage silos having a total capacity of 6400 tonnes. (400 tonne per silo). Hot work procedures apply at **all** times. Fixed water deluge systems are used for protection. Other Fire fighting equipment includes Hydrants, hoses and foam making systems and equipment.

4 Hydrogen Storage Areas

The Hydrogen required for generator cooling is housed adjacent to Unit 1 Cooling Tower. The main storage consists of 1 x 2600 cubic metre BOC trailer. The hydrogen storage area is open to atmosphere. A fixed water deluge system is used for protection. Hot work procedures apply at **all** times.

5 Natural Gas Pipeline and Distribution Supply

Loy Yang B Natural gas supply pipeline commences at Barrs Road, Gas compound at Flynn. The high-pressure pipeline enters both LYB on the North/East on the LYB ring road. The high-pressure gas is reduced and heated through the gas reception area. (Water Bath Heaters and Pressure Reduction Valve compound.) Appropriate remote control and manual shut off isolation valves and gas leakage detection devices are installed and tested regularly. Hot work procedures apply at all times. Fire fighting equipment includes Hydrants, hoses and extinguishers.



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6 Oxygen Storage

Located in storage enclosure outside of Turbine basement West side of station. Fire fighting equipment includes Hydrants, hoses and extinguishers.

7 Loy Yang B Flammable Liquid Store

Loy Yang B flammable liquid store is on the South West corner of the Unit 1 Turbine House. 200 and 20 litre drums of flammable liquids and oils are stored in the bunded area of the building. Heat detection and alarm equipment is installed in this area.

Fire fighting equipment includes Hydrants, hoses and foam making systems and equipment.

8 Loy Yang B Chemical Plant

Located in a storage enclosure at the Western end of the Turbine house basement. Fire fighting equipment includes Hydrants, hoses and extinguishers, and Containment barriers.

9 Warehouse Flammable Liquid Store

Loy Yang B Warehouse flammable liquid store is located on the South West corner of the Loy Yang B Warehouse/Training facility/area. 200 and 20 litre drums of flammable liquids and oils are stored in a bunded building which has its own triple interceptor. Heat detection and alarm equipment is installed in this area. Fire fighting equipment includes Hydrants, hoses and foam making systems and extinguishers.

10 Return Water and Ash Disposal Pipelines

Loy Yang B Return water supply and Ash disposal pipelines enters the LYB site from the adjacent Loy Yang Ash Pond Dam. The Ash disposal pipelines commence at LYB Ash handling area on the Western end of the Boiler house runs in concrete plumes to the ash inlet area of the Ash Pond. The Return Water pipeline commences at the Loy Yang Outfall pumping station to the LYB Ash handling area on the Western end of the Boiler house. Inspections of the pipelines are completed weekly and have remote control and manual shut off isolation valves. Hot work procedures apply at all times. Fire fighting equipment includes; LYB Fire Truck, Portable Fire Equipment, Extinguishers, Knapsacks, Hydrants, hoses and foam making systems.

11 Workshops

Smoke and Heat detectors

Fire fighting equipment includes Hydrants, hoses and extinguishers.

12 LYB Unit Control Room (UCR)

Very Early Smoke Detection Apparatus (VESDA) Smoke detectors units are located throughout the control room, alarming onto the Fire indicator panel. Fire fighting equipment includes a manual CO2 flood/deluge system below Control room floor. Below floor area is



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Compartmentalisation into 9 Zones and has an installed positive pressure emergency ventilation system.

Risk Assessment Documentation.

Risk assessment documentation is held in the stations computer network QA Risk assessments.



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APPENDIX B – Fire Protection Systems

1 Fire detection and Alarm Systems.

Fire Detection and alarm systems are installed to protect plant and equipment at LYB. The range of equipment includes heat sensing wire, thermal sensing devices and smoke detection.

There are a multitude of fire alarms, all connected to the **Fire Indicator Boards (FIBs)** located in the Unit Control Rooms – the Unit Control Rooms are themselves supervised by smoke detectors.

All activated fire alarms are personally investigated, prior to alerting the CFA.

Several Very Early Smoke Detection Alarm (VESDA) systems have been located in high-risk areas around the site. Risk assessments indicated the following areas, Unit Control Room, Station Cable Chambers, Computer/VAX room, Station Coal Bunker Transfer and storage and the Station Simulator facility.

2 Water Supplies

Low Quality Water (LQW) and High Quality Water (HQW) supplies are fed from the Loy Yang A Power Station.

2.1 Low Quality Water (LQW)

The LQW water is pumped from the Latrobe River at Yallourn and transferred via a closed, single pipeline to a high-level storage reservoir (earth fill wall) (6,000 mega-litre capacity) – the annual allocation is 20 Giga litres. This reservoir provides a 30 day buffer supply for the cooling tower make-up water as well as general power station requirements at Loy Yang A & Loy Yang B power stations.

The LQW is fed to the two power stations via two pipelines (100% redundancy provided), which are completely buried and physically separated by five to eight metres.

LQW can be fed directly to the Fire and General Services (F&GS) Pumps or it can be sourced directly from the cooling tower basins, each basin has a capacity of 12 ML.

There are five F&GS pumps:

- #1 Lead Pump (Electric) - Nominal rating 80-175l/sec @ 106m.
- #2 Lead Pump (Electric) - Nominal rating 80-175l/sec @ 106m
- #3 Lead Pump (Electric) - Nominal rating 80l/sec @ 106m
- Main Pump (Electric) - Nominal rating 75-300l/sec @ 146m
- Main Diesel Pump - Nominal rating 300l/sec @ 146m.



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One of the two lead pumps run continuously with all other pumps set to auto start as the system pressures and flow dictates.

The fire and general service water (F&GS) is delivered to the power station at 1.8Mpa and supplies areas above the eighth floor.

The F&GS water also passes through a pressure reducing station, which reduces the pressure to 1Mpa. This supplies areas below the eighth floor.

- *Automatic sprinkler systems,*
- *Automatic deluge systems,*
- *Fire hydrants and hose reels, and*
- *Washing down purposes.*

There is an alternative emergency F&GS supply, fed to the rising coal conveyors area from the Loy Yang mine.

2.2 High Quality Water System

HQW is derived from the Moondarra Reservoir, which is fed from the Tyers River. Gippsland Water provide supply of HQW to a storage reservoir near the Loy Yang complex and then via gravity to the inlet of a primary treatment plant operated by Loy Yang Power.

Treated HQW water for the LYA & LYB power stations is stored in two 15 mega-litre concrete lined tanks.

The two tanks are situated in an elevated position – the water is gravity fed to the battery limits of both LYA & LYB power stations.

3 Water Mains, Hydrants And Hose Reels

The 64mm hydrants, and small bore 19mm live hose reels are fed from either, the fire and general service (F&GS) reticulation system via several ring mains, or by the HQW reticulation system, all of which have sufficient isolating valves to ensure that at least 75% of the service is active at all times. In general, those ground level water hydrants and hose reels external to the power station structure are supplied by HQW and those at elevated levels and within the power station structure are supplied from the F&GS System.

An average distance of 60 metres physically separates the hydrant and hose reel outlets. Foam solution and application equipment is on hand and can be manually connected.



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4 Fire Sprinkler Systems

4.1 Control Centre Building

A wet type, automatic sprinkler system (apart from the Unit Control Room, protects the entire multi-storied Control Centre Building. The design is in accordance with AS 2118 sprinkler code.

4.2 Cable Chambers

The cable chambers are protected by a manually operated sprinkler system.

4.3 Automatic Deluge Protection (Coal Conveyors)

The rising coal conveyors are protected by automatic deluge systems in the following areas:

- *Above the coal belt*
- *In between the coal belt, and return belt, and*
- *Below the return belt.*

The system is divided into zones – each zone is 30 metres long.

There are various zones and activation is via a small pipe pressurized with F&GS water, equipped with conventional (68 C rating) sprinkler heads – there are heat deflectors, or shields above each head; the heads are situated above the rising coal conveyor.

The systems are designed to either the AS 2118 sprinkler code or National Fire Protection Association (NFPA) Codes from the USA.

4.4 Automatic Deluge Systems (Turbine Lubricating Oil System)

The turbine lubricating oil system is protected by automatic deluge systems similar to those described above.

The oil storage tank/pumping facility is protected by a multi-jet control (MJC) automatic deluge system. The room is of non-combustible construction with a concrete spillage control compound (bund). Any spillage flows to an oil separation facility prior to water subsequently flowing to settling ponds.

4.5 Automatic Deluge Systems (Unit & Generator Transformer)

Both the unit transformers and generator transformers are protected by automatic, twin pipe deluge systems designed to AS 2118 sprinkler, or NFPA code.

The large spillage control compound for the generator transformers is also covered by the deluge system. Any spillage flows to an oil separation facility prior to water subsequently flowing to settling ponds.



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A reinforced concrete explosion wall separates the two transformers; the Unit transformer is fire/explosion isolated from the Turbine/Generator house by a reinforced concrete wall.

5 Watchman Services

LYB operates 24 hours, 7 days a week throughout the year and has LYB employees on site at all times.

6 Fire Extinguishers & Other Protection.

6.1 Automatic carbon dioxide gas flooding systems.

Automatic carbon dioxide gas flooding systems are installed in the following areas:

- *System data rooms (these rooms are annexed off the Unit Control Room)*
- *False floor space of the Unit Control Room (including zones 1, 2 and 3), and*
- *In the acoustic enclosure for the fire and general service (F&GS) diesel pump and emergency diesel generators.*

6.2 Fire Extinguishers.

LYB ensures adequate numbers and types of extinguishers are located and easily identified throughout the Station. Fire extinguishers are maintained and managed on site by fire protection contractors. Condition of equipment is reported to LYB and repair replacement determined.

6.3 LYB Fire Truck

Fire truck appliance located on the LYB site. LYB trained staffed operate the LYB owned appliance, and remain skilled in the operation of all equipment on the appliance through ongoing training. This allows access to remote areas around the site where no water supplies are available and to assist other agencies as required.

The Fire Truck appliance is an ex CFA, 1986 Hino CT175, 4x4 tanker, compatible with CFA equipment. The tanker has 3000 litres onboard tank capacity with a Petrol driven pump delivering 600lites/min. The appliance has A & B class foam making capability from 20litre drums stored onboard.

All fire fighting equipment on board includes an assortment of Hoses and Branches.

Onboard radios are installed and maintained to communicate with LYB/LYA & CFA. A support equipment trailer has also been set up to support emergency requirements.

Monthly Routine inspections is completed on the appliance and all equipment.



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6.4 Public Fire Brigade

The Traralgon Country Fire Authority (CFA) fully staffed fire station is situated approx 15kms away – the normal response time is approx 10 – 12 minutes.

The Duty Officer and several appliances will attend the power station if the fire is serious; up to 14 appliances can attend including units from Dandenong (100kms away).



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APPENDIX C – Loy Yang B Boundary & Transmission Lines

Map not available