



CS ENERGY PROCEDURE FOR
PETROELUM & GAS SAFETY MANAGEMENT
CS-OHS-2

Responsible Officer: Health & Safety Manager

Approved : GM Operations

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1. Purpose

This procedure details the systems, methods, requirements and responsibilities to perform activities involving petroleum and gas that are safe and effective. The procedure is also to maintain knowledge and competencies associated with the safe operation of “operating plant” and activities related to “gas work”.

2. Scope

This procedure applies to all employees and contractors performing work at CS Energy workplaces. It covers all types of work performed by or for CS Energy for the operation, maintenance, construction, repair, modification, overhauls and design of operating plant, fuel systems, gas systems, gas devices and pipelines.

3. Safety Management Plan

3.1 Health & Safety Management system and Policy

CS Energy operates a corporate health & safety management system, which is based on minimising the risk of causing harm to all people at our sites. It is focussed on: -

- Risk management
- Personal responsibility, and
- Compliance to legislative requirements

The CS Energy Health & Safety Manual is based on Australia Standard AS4804 Occupational Health and Safety Management Systems - General guidelines or principles, systems and supporting techniques. The Policy is reviewed every year.

3.2 Organisational Chart and Safety Responsibilities

The organisational structure, to support the safety responsibilities for persons included in this procedure, is attached in Appendix 1.

The responsibilities for gas and petroleum safety management are outlined below:

3.2.1 Chief Executive

The Chief Executive is responsible for the business aspects of CS Energy and reports directly to the Board. He/she has authority for and is accountable to ensure systems, processes and operating plant are sufficient to ensure the health & safety of all employees at the workplace.

As "Executive Safety Manager" these general obligations are to ensure that:

- standard operating procedures, emergency response procedures and any other information is available for the safe operation of the plant
- all necessary first aid, safety and other like equipment that is appropriate for the likely hazards of the plant is provided
- everyone working at site on petrol and gas operating plant is trained to use equipment relevant to their duties and performs these duties and responsibilities in accordance with the safety management plan for the plant
- training records are kept as soon as practicable after the training happens
- training records in relation to the plant are kept at the plant for a period of 5 years after the training was completed and are available to an inspector
- An annual safety report is lodged with the Petroleum and Gas Inspectorate.

3.2.2 General Manager Operations

The General Manager Operations is responsible for the operations associated with CS Energy sites and reports to the Chief Executive. He/she has authority for and is accountable to approve activities, budgets, business plans, resources and procedures utilised at CS Energy power stations.

The General Manager Operations must ensure:

- health & safety management systems are developed, implemented and maintained
- risk management plans are developed for major risks throughout the organisation
- any high-risk incidents are reported, investigated and control measures implemented
- training is conducted for operators and workers on the safety systems developed and records are maintained
- competent persons are engaged to implement procedures and operate plant
- information and advice is provided to the Chief Executive on health and safety issues.

3.2.3 Site Managers

Site Managers are responsible for the site management aspects of operational plant and report to the General Manager Operations. He/she has authority for and is accountable to ensure systems, process and operating plant are utilised to ensure the health & safety of all employees at the site and power station workplace.

As “site safety manager” these obligations are to ensure that:

- Each person who enters the site to perform work is given an appropriate induction to ensure compliance with the safety management plan
- Each person on site complies with the procedures, emergency response procedures and other measures necessary for the safety of the site and persons
- Each person working on site performs their functions safely and follows procedures for the plant
- First aid, safety and other like equipment appropriate for the likely hazards of site is available for use and adequately maintained
- Site personnel as trained in first aid, emergency and safety procedures
- Operators of the plant have the necessary competencies.

Where the Site Manager is not on site these obligations and responsibilities are to be instituted by the Acting Site Manager. The Senior Shift Operator/Shift Coordinator is also to institute these obligations and responsibilities on shift where the Site Manager is not on site.

3.2.4 Engineers and Consultants

Site engineers and consultants are responsible for the design and operational issues associated with petroleum and gas plant. He/she has authority for and is accountable to ensure:

- The design, procurement, modification, repair or replacement of plant or equipment meets the specifications and safety requirements applicable to that type of plant or equipment.
- All reasonable steps are taken to ensure the plant or equipment meets relevant Codes, Regulations and Australian Standards, addresses the level of risk associated with the plant to an acceptable level.
- If they become aware of a defect or hazard associated with the plant or equipment take reasonable steps to inform the Site Manager of the nature

of the defect or hazard and its significance, and any controls or modifications developed to eliminate or correct the defect or hazard.

3.2.5 Installation/Commissioning/Operators/Overhaul Contractors

CS Energy workers and/or contractors and their employees must not install, operate, modify, overhaul or commission operating plant or equipment at any CS Energy site unless the installation:

- Complies with the specification and risk analysis levels identified for the operating plant or equipment by the designer
- A risk management analysis is conducted to manage the risk to an acceptable level and is within the safety limits of the plant or equipment for the stage of work (installation, commissioning, operation and overhaul).
- The risks associated with modifications, maintenance, repair and replacement do not increase overall risk level of the plant, process, work procedures associated with the work
- Certify the plant or equipment meets safety requirements prior to making the plant operational
- Notify CS Energy Site Management of any safety risk they become aware of, and not operate the plant or equipment until the risk is addressed.

3.2.6 Health & Safety Manager and Site Advisers

The Health & Safety Manager and Site Health & Safety Advisers are responsible to and accountable for:

- Providing advice and recommendations on appropriate inductions, safe work procedures, training and record keeping requirements associated with this procedure.
- Ensuring suitable equipment for first aid and emergency equipment is used and checked,
- The site and corporate systems are implemented, reviewed and amended to comply with the Petroleum and Gas (Production and Safety) Act, Regulation, Codes and Australian Standards.
- Control access to an incident or accident and prevent tampering with the site, plant or equipment involved.
- Maintain a copy of the safety management plan, in a conspicuous location and make it available for inspection.
- Report and defects, hazards or competency issues to the Site Manager
- Record and review any non-conformance and subsequent corrective actions, remedies to the operating plant equipment or safe work procedures.

3.2.7 Supervisors, Workers and Others

Each person at a CS Energy workplace must (to the extent of their duties and responsibilities):

- Take all necessary and reasonable action to ensure no person or property at the workplace is exposed to more than an acceptable level of risk.
- Comply with the safety procedures and other obligations under this safety management plan

- Operate, maintain, inspect, commission, design, install, modify and overhaul the plant and equipment to an acceptable level or risk in the manner it was designed.
- Comply with instructions given by CS Energy representatives or their supervisor for the safety and health of persons or for the safe use of the plant or equipment.
- Not wilfully or recklessly do any act or make any omission that adversely affects the safety of any one or the safe use of the operating plant.
- Immediately report any hazards, incidents, environmental factors or inactions, to their supervisor and/or to CS Energy site management that may adversely affect safety on site.

3.3 Risk Management Process

Risk is managed using the Corporate Risk Management Policy and procedure. The risk process is to involve an assessment and management process to reduce the risk to an acceptable level. An acceptable level of risk is:

For a risk to a person or property to be at an “acceptable level” the activities must be carried out so that the level of risk for the activities:

- (a) is within acceptable safety limits, having regard to each relevant safety requirement; and
- (b) is as low as is reasonably practicable.

To decide whether the level of risk is within acceptable safety limits and as low as reasonably practicable, the CS Energy risk management process is to address:

- (a) the likelihood of injury or illness to a person, or of property damage, from the risk; and
- (b) the probable severity of the injury, illness or damage; and
- (c) whether or not the risk is avoidable by reasonable means.

Formal site risk assessments have been conducted on CS Energy sites for installation, commissioning and operation. Any modification or operational change that may affect the original risk analysis must be checked to ensure the level of risk is not increased. Task specific risk assessments are to be done in accordance with the requirements of CS Energy procedure for Job Safety and Environmental Analysis. Plant risk is addressed via developed maintenance plans, condition monitoring, plant/asset strategies and Risk Plans (ROMS).

Changes to plant and equipment is covered by Project Management and Capital Expenditure procedures (new plant and replacement) and the plant modification process. Risk plans are identified for each site as part of an annual review process to manage medium, high and significant risks. Actions, milestones and approvals are outlined in the specific risk plan and improvements requests. These plans and actions are to be logged into and reported within the computer database Risk Opportunity Management System (ROMS).

Access to plant is managed via the CS Energy permit to work system where energy sources are identified, isolated, tagged and locked out.

3.4 Skills Assessment and Supervision

CS Energy has established training modules for gas awareness, gas operations, and appliance/operating plant. This training is to be conducted by recognised petroleum and gas industry training consultant/s and include site-specific competencies.

Access to work on plant is to be restricted by authorisations issued by the relevant Site Manager based on the competency of the workers involved. The authorisation is to relate to:

- the requirements of the CS Energy PTW Manual
- observation or regular testing of persons conducting work
- isolation and or operation of plant
- work on gas systems, repair and or replacement of like for like components.

Site-specific HSE inductions are to be concluded for workers to outline the precautions associated with access to the plant and gas safety requirements. Visitor inductions are to be conducted prior to entry on site and identify issues for site access. Visitors are to be accompanied on site by an inducted person.

Training records are to be recorded in the Human Resources Training and Events Management catalogue. Skills assessments and work experience requirements are to be assessed and outlined in the Skills Capability Matrix for each site.

Managers, superintendents and supervisors/team leaders are responsible for monitoring the ongoing competence of their staff and are to make arrangements for retraining as necessary. Re-training is compulsory for safety related modules eg: confined space, gas safety, electrical safety, site HSE inductions, permit to work officer and officer in charge of works. Currency of statutory training is to be managed using the site SAP Training and Events Management database.

3.5 Safety Standards and Standards Operating Procedures

Site Operating procedures for the gas operating plant and fuel/petroleum systems are to support this procedure and be utilised in plant operator training systems and procedures. Specific job safety and environment analysis procedures (JSEAs) are to be developed for any maintenance, inspection and isolation work on petroleum and gas installations.

Isolation sheets are to be in line with the CS Energy Permit to Work manual. Records of the procedures and JSEAs are maintained on site in accordance with the site document management system.

Site managers are authorised to approve site-specific safe work procedures (eg Swanbank E Station Gas Yard Access Policy & Gas Works Policy Revision 1.02, 20 February 2005).

3.6 Control Systems

CS Energy Power Station sites have in place, established plant control systems (often referred to as the ICMS – Integrated Control and Monitoring Systems). These control systems are designed, implemented and maintained to provide plant safety. They are programmable systems with duplication of key components to provide fault tolerance.

The Plant Control System provides:

- Automated fail-safe controls for plant protection. Gas valves and gas fuel control systems are fail-safe
- Fuel gas pressure and temperature controls
- Boiler temperature and pressure control
- Gas Turbine temperature and fuel control

- Chemical sampling and analysis system for the monitoring and control of water (for some sites this is automatic, as part of the Plant Control System, for some sites it is manual)
- Condition (vibration) monitoring for petroleum and gas plant assets (alarm and trip)
- Plant operation and status reporting for the plant operators
- Alarm systems with alarms prioritised
- Automatic gas leak detection, including gas leak detectors over potential leak sources
- A separate fire protection system (controls and alarms) is provided independent of the plant control system.

3.7 Machinery and Equipment Relating to Plant Safety

Each site has in place machinery or equipment that affect the safety of the gas plant. These items of equipment and supporting systems include:

- Gas detectors
- Earthing systems
- Emergency evacuation sirens
- Forced cooling of the GT rotor operation
- Purging capability on pipes and plant
- Auxiliary power systems and uninterrupted power supply (UPS)
- Allocated spares and scheduled overhaul specialised lifting equipment
- Fuel gas sampling and monitoring controls
- External environmental monitoring systems for discharges and emissions with bunding and containment controls.
- Noise tests
- Monitor and control of steam – H P and LP systems
- All valves and control systems are designed to fail safe with a system of steam safety valves
- Combined emergency stop and control valves

Power Station maintenance and inspection schedules are to ensure these items are effectively maintained.

3.8 Emergency Management

The plant installed at CS Energy Callide B, Swanbank B & E and Mica Creek Power Stations has emergency systems installed to address the risks associated with fires, gas leaks, chemical leaks and security threats.

Equipment utilised to support plant systems include:

- Fire hose reels and fire extinguishers located in strategic positions, haz mat boxes and site hazardous substances
- Foam fire extinguisher systems, first aid rooms and equipment.
- Inergen or CO₂ Gas Fire Suppression system for the GT enclosures, switch rooms and computer rooms

- Emergency evacuation signs and lighting systems.
- Emergency response team and fire fighting equipment and rescue vehicle.
- Relationships with local emergency services and rescue/recovery providers.
- Security fences, security gates, card access readers and security cameras.

These facilities are supported by:

- trained first aid officers
- Trained ERT members (Swanbank E Station)
- Chernalert database for material safety data sheets
- Corporate and site crisis control rooms
- Corporate Incident Management and Crisis Control procedures including business recovery, hazardous substances and dangerous goods, haz mat boxes.
- Scheduled training and crisis exercise scenarios
- Security procedures also address controls for critical infrastructure threats.
- Security guards stationed at gat access points.

Sites are to ensure plant and equipment for emergency response are effectively maintained and resources are allocated to maintain currency for ERT members and Security providers.

3.9 Communications Systems

Communications systems on site are to be explained at all site inductions with signage installed to effectively identify emergency communication phone/call points on site.

The following communications systems are to be used to support emergencies:

- Site emergency phones, hazmat boxes, hazardous substances/dangerous goods signage and labelling
- Site phones and evacuation sirens
- Mobile phone calls to security on the control room senior operator
- Site HSE inductions
- ERT & fire warden roles and training
- Media communication and critical incident protocols are established with industry stakeholders
- Two-way radios are also used for site and emergency communication.
- Communication is also available via video and teleconferencing from sites to Brisbane Office.
- Internal email communication and network communication is also provided.
- Satellite phones linked to sites, the Brisbane Office and NEMCO.

3.9.1 Implementing, Monitoring and Reviewing Safety Policies

Implementation of the CS Energy Health & Safety Management System rests with the responsibilities of managers, supervisors and workers. Any site or corporate procedures are to be developed with input from site technical representatives. Draft procedures and

consultation is to occur with the relevant project teams and the site health & safety committees. The Health and Safety Manager is accountable to implement the consultative processes and develop implementation plans with site management team members.

Monitoring and review is to occur as a function of:

- Site/workplace health & safety inspections and audits
- Monitoring of the ROMS risk plans and improvement requests
- Site health & safety committee meetings
- Operations and Projects Divisional Management meetings
- Incident analysis and monthly reporting
- Incident/hazard notifications
- Management system audits by external auditors
- Corporate Management review of accidents and incidents at Committee of Management Meetings and Board Risk Committee meetings.

Safety Report - the Chief Executive (Executive Safety Manager) is to ensure an annual safety report is prepared and lodged with the Petroleum and Gas Safety Inspectorate. The safety report is to be lodged with the Department of Natural Resources and Mines before 1st September each year.

The report is to contain details on:

1. contact details of the operator, executive safety manager, site safety managers and other competent persons.
2. the nature and extent of activities carried out
3. significant safety risks
4. compliance/non compliance of any activities with the safety management plan
5. details of any non-compliances and remediation steps taken.

3.9.2 Key Performance Indicators

Health & Safety Performance Indicators (KPIs) are incorporated into CS Energy's Corporate and Site Business Plans. Targets are to be allocated as part of the annual business planning process and documented in the Business Plans.

Performance measures are to include the following:

- Compliance with corporate and site safety procedures and processes as identified during audits.
- Compliance with statutory training requirements
- Lost time injury and total case reportable frequency rates
- Incident frequency rates and close out time frames.
- Preparation and compliance to JSEA, 5-point safety inspections and safety contacts between workers and their supervisors.
- Close out of safety actions in the SAP maintenance and work order system, audit reports and inspections.
- Reporting of hazards, near misses, incidents, plant damage and injuries.

- Audits of contractor OHS Management systems.
- A review of the requirements outlined in this procedure and the Legislative requirements.
- An annual safety report will be prepared and approved by the Executive Safety Manager and lodged with the Chief Inspector.

3.9.3 Incident Investigation

Petroleum and Gas incidents or accidents are to be managed in accordance with the Corporate Incident Management procedure and utilise the Incident Management Database to track and monitor agreed corrective actions, plant modifications or maintenance processes within specified timeframes.

Levels of authority are allocated for the investigation and review of recommendations and final approval of the investigation report and corrective actions.

The internal corporate notification network is to be used to ensure information is passed onto all relevant parties and recommendations are canvassed from a wide experience base.

Internal and external notification of incidents is to be conducted as outlined in the Incident Management procedure. Safety alerts/notices/safety learning's/bulletins are to be circulated by the Health & Safety Manager.

“Prescribed Incidents” will be reported and recorded in accordance with CS Energy’s Incident Management procedure

The Chief Executive will report immediately to the Chief Inspector incidents (as detailed below) by telephone and in writing as soon as practicable.

Incidents involving:

- the death of a person;
- injury to a person requiring medical treatment off site;
- emergencies including alarm activation;
- a fire at the operating plant, an uncontrolled oil or gas leak attended by emergency services, an incident with the potential to cause a general gas shortage
- damage to property, which increases the risk of damage to plant or equipment or injury to persons an incident where the Workplace Health & Safety Act does not apply, and potential incidents that could have caused death, injury to a person or damage to plant and equipment.

3.10 Record and Document Management

CS Energy corporate documents are controlled documents and are managed by the Health & Safety Manager. Site Management are to maintain site-specific document management systems.

Sites document management systems are to address:

- design change/modifications procedures and AFC drawings, product specifications
- contract documentation is to be in accordance with the procurement standard contracts
- ROMS documentation is addressed in the Risk Management procedure.

- Certification, authorisations, approvals are filed in site document management systems.
- Plant strategies, O&M Manuals, manufacturers information, training manuals are managed in site systems.
- Training records are filed with HR personnel files and recorded in the SAP Training and Event Management Database and Skills Matrix for each site.
- P&IDs, plant drawings, KKS numbering systems are documented in the site systems.
- Inspection records, audit reports, work orders, isolation sheets are logged into the SAP database.

3.11 Workplace Health and Safety Act and Major Hazard Facility

Section 3(1) of the WH&S Act does not exempt plant at CS Energy Power Station sites. All installations are addressed by CS Energy's Health & Safety procedures and management systems. The Electrical Safety and Dangerous Goods Safety Management Legislation also applies to CS Energy workplaces. Specific procedures, training and competency requirements are developed to ensure compliance with each relevant section of the legislation.

4. Definitions

“Acceptable Level” of Risk- for a risk to a person or property to be at an “acceptable level” the activities must be carried out so that the level of risk for the activities –

- (a) is within acceptable safety limits, having regard to each relevant safety requirements; and
- (b) is as low as is reasonably practicable.

To decide whether the level of risk is within acceptable safety limits and as low as reasonably practicable, regard must be made to –

- (a) the likelihood of injury or illness to a person, or of property damage, from the risk; and
- (b) the probable severity of the injury, illness or damage.

Appropriately qualified - for the performance of a function or exercise of a power, includes having the qualifications, experience and competence to perform the function or exercise the power.

Dangerous Situation - a situation relating to petroleum or fuel gas in which an inspector reasonably believes an imminent risk of material harm to persons or property is likely if action is not taken to avoid, eliminate or minimise the risk.

Designers, importers, manufacturers and suppliers - is a person that designs, imports, manufacturers, modifies or supplies plant or equipment for use at a particular operating plant.

Executive Officer - of a corporation, means a person who is concerned with, or take part in, its management, whether or not the person is a director or the person's position is given the name of executive officer.

Executive Safety Manager - of an operating plant is if the operator is a corporation – the senior managing officer of the corporation.

Gas Device (Type A) - is a device, or system or devices, used, or designed or intended for use for the production of heat, light or power, the design of which has been certified as complying with safety requirements applying to that type of device.

Gas Device (Type B) - is a device used, or designed or intended for use in the production of heat, light or power that has not been certified.

Gas work - gas work is the work of installing, removing, altering, repairing, servicing, testing or certifying the gas system of a gas device.

Hazard - means a thing or situation with potential to cause harm to any of the following:

- (a) a person, including, for example, financial losses or increased liabilities;
- (b) property;
- (c) the environment.

Immediately - means without delay after the incident occurs, other than a delay caused by action taken to:

- (a) save the life of, or prevent further injury to, a person; or
- (b) contain damage to property.

Incident means an event that

- (a) involves or involves a level of risk of, death of, or injury to, a person or damage to property that is not at an acceptable level; and
- (b) happens –
 - (i) at an operating plant, for any reason; or
 - (ii) at another place because of the presence or perceived likely presence, of petroleum or fuel gas or a prescribed storage gas.

Installers - is a person that installs plant or equipment at an operating plant.

Operating Plant - is a place, or a part of a place, at which a following activity is carried out, but only to the extent of the carrying out of the activity. Another activity is prescribed under a regulation and associated with the delivery, storage, transport, treatment or use of petroleum or fuel gas.

Petroleum Product - means any of the following –

- (a) processed natural gas.

Report - means a written report.

Senior Managing Officer - of a corporation, means the person in Australia who is the most senior officer (however called) of the corporation in Australia responsible for managing the corporation.

Safety Management Plan - a “safety management plan” for an operating plant, is the plan made under Section 674 of the P&G (P&S) Act 2004, as in force from time to time.

Site Safety Manager - means a site safety manager appointed by CS Energy as an appropriately qualified person for the site.

Standard operating procedures - for an operating plant, is a documented way of working, or an arrangement of facilities, at the plant to achieve an acceptable level of risk.

5. Reference Documentation

CS Energy procedure for Incident Management – CS-IM-1

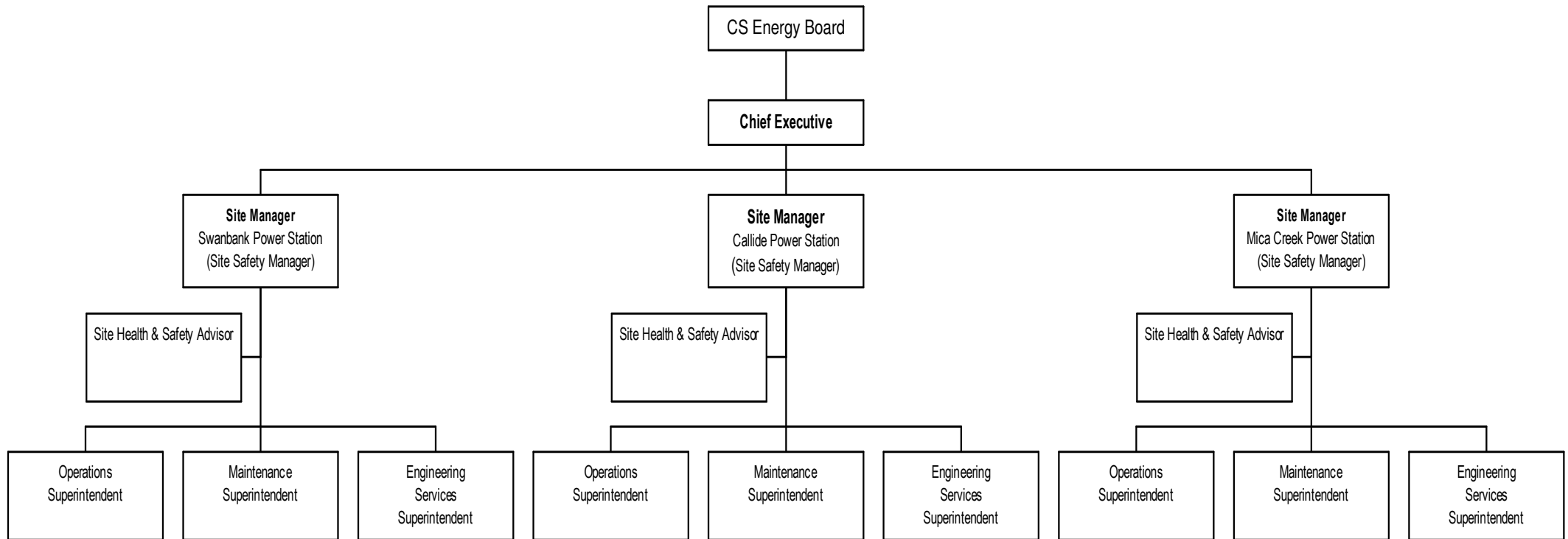
CS Energy procedure for Crisis Management Plan CS-IM-2
CS Energy procedure for HS&E Inductions CS-OHS-28
CS Energy procedure for Visitor Access CS-OHS-17
Cs Energy procedure for Plant Identification CS-PID-1
CS Energy procedure for Power Station Plant Modifications CS-MOD-1
CS OHS Manual
CS Corporate PTW Manual

6. Attachments

Appendix 1 – CS Energy Gas Safety Management Organisational Chart – Corporate

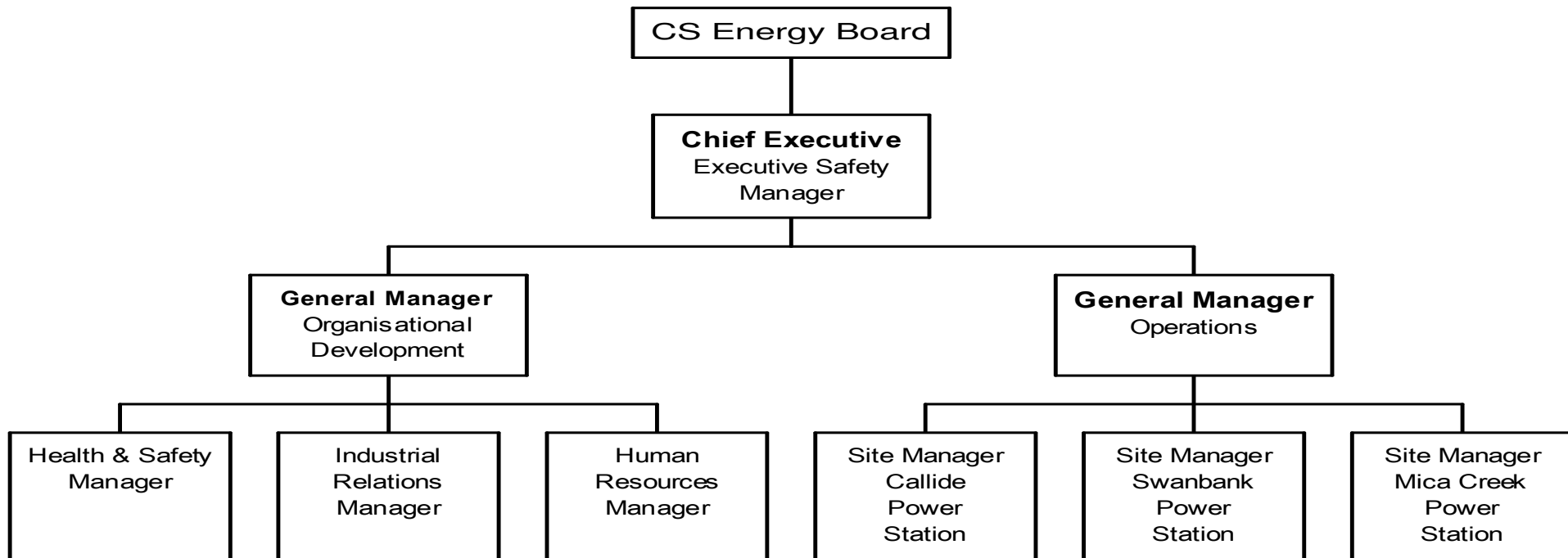
Appendix 1

Gas Safety Management Organisation Chart - Power station Sites



Appendix 2

Gas Safety Management Organisation Chart - Corporate



Gas Safety Management Organisation Chart - Corporate

