



# **ENVIRONMENTAL MANAGEMENT SYSTEM MANUAL**

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ISO14001:2004 Certified

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## **1. USE OF THIS MANUAL**

This manual has been created to serve the following purposes:

- To give a summary of CS Energy's Environmental Management System (EMS) for employees, contractors and other stakeholders; and
- To provide a "road-map" to CS Energy's environmental management documentation.

### **1.1 What is an EMS?**

An Environmental Management System is a series of management processes that focus on identifying, managing and reporting environmental issues to do with our operations. All the key EMS documents are available online via the CS Energy Intranet.

### **1.2 How do the EMS documents fit together?**

There are two types of documents and a database which belongs specifically to the EMS:

- EMS Manual - general overview of what the EMS is and how it works.
- EMS Procedures - documents that explain the specific requirements of the EMS such as setting policy, goals and targets or identifying environmental issues. The Procedures are listed in the Appendix ([Section 12.2](#)) of this Manual. These procedures are maintained at a corporate-level and provide guidance for the development of site-specific environmental procedures.
- Environmental Issues Register (EIR) - a database which contains environmental issues relevant to the site, environmental incidents and additional management information.

The remaining documents are specific supporting documents which belong to the Quality or Business Management System such as Planning documents, Standard Operating Procedures and other documents.

### **1.3 Approval of this Manual**

Responsible Officer: Portfolio Environment Manager.

Approval: The EMS Manual and subsequent reviews will be approved by the General Manager Portfolio Services.

## 2. ISO 14001 REFERENCES

ISO14001 Environmental Management System Requirements	CS Energy Environmental Management System Manual Reference
4.2 Environmental Policy	<a href="#">5.1 CS Energy's Environment Policy</a>
4.3 Planning 4.3.1 Environmental aspects  4.3.2 Legal and other requirements  4.3.3 Objectives, targets and programme(s)	<a href="#">6.1 How are environmental issues identified?</a> <a href="#">6.2 How are our environmental issues managed?</a>  <a href="#">6.1 How are environmental issues identified?</a>  <a href="#">5.2 Our Environmental goals and targets</a> <a href="#">6.2 How are our environmental issues managed?</a>
4.4 Implementation and Operation 4.4.1 Resources, roles, responsibility and authority  4.4.2 Competence, training and awareness  4.4.3 Communication  4.4.4 Documentation  4.4.5 Control of documents  4.4.6 Operational control  4.4.7 Emergency preparedness and response	<a href="#">12.2 EMS procedures</a> <a href="#">12.3 Summary of Responsibilities in Procedures</a>  <a href="#">7.0 Communication and Training</a>  <a href="#">7.0 Communication and Training</a>  <a href="#">1.0 Use of this Manual</a>  <a href="#">10.1 Quality Assurance / Business Management System</a>  <a href="#">6.2 How are our environmental issues managed?</a> <a href="#">8.2 How do we manage environmental incidents?</a>  <a href="#">8.0 Managing Environmental Incidents</a> <a href="#">10.2 Health &amp; Safety Management System</a>
4.5 Checking 4.5.1 Monitoring and measurement  4.5.2 Evaluation of compliance  4.5.3 Nonconformity, corrective action and preventive action  4.5.4 Control of records	<a href="#">9.1 Monitoring Environmental Performance</a>  <a href="#">9.3 Environmental Audits</a>  <a href="#">10.1 Quality Assurance / Business Management System</a>  <a href="#">10.1 Quality Assurance / Business</a>

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4.5.5 Internal audit	<a href="#">Management System</a> <a href="#">9.3 Environmental Audits</a>
4.6 Management review	<a href="#">9.0 Evaluating CS Energy's Environmental Performance</a> <a href="#">10.1 Quality Assurance / Business Management System</a>

### 3. BUSINESS DESCRIPTION

#### 3.1 Scope of EMS

This EMS has been developed to ensure environmental issues and potential impacts are identified and managed throughout CS Energy and its operations. The EMS will also identify areas within CS Energy's operations for continual improvement.

All CS Energy sites are to operate in accordance with the EMS. Corporate office and the Callide, Swanbank and Mica Creek Power Stations are currently certified under ISO14001:2004. Certification currently does not extend to Kogan Creek Power Station, although it is intended to be obtained in 2010.

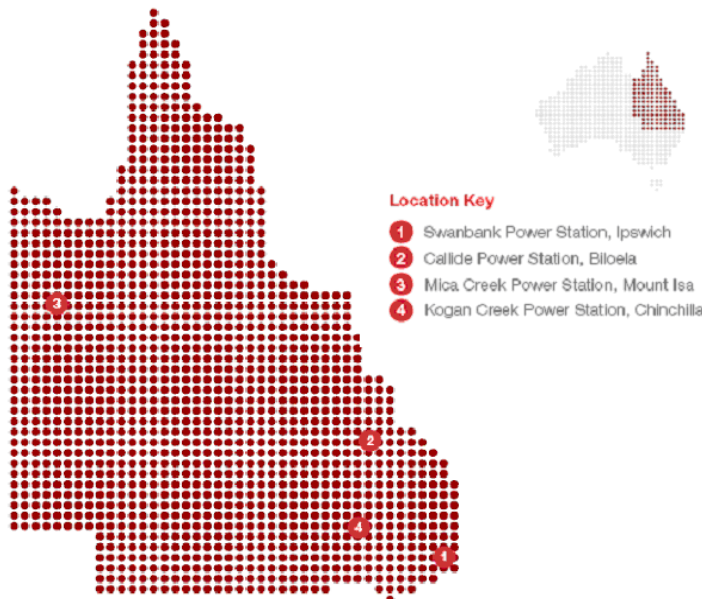
#### 3.2 Business Outline

CS Energy is a government owned corporation that owns and operates power stations at four sites in Queensland. CS Energy aims to strengthen its business through innovation and quality of service. The company was formed on 1 July 1997 following the Queensland Government's reform of the Queensland electricity industry through the disaggregation of AUSTA Electric. About 650 people work for CS Energy in a wide variety of technical, professional, trade and administrative positions.

CS Energy aims to develop long-term relationships with valued business partners. CS Energy sees innovation as the key to its continued success in Queensland as it embraces the intense competition of the National Electricity Market.

#### 3.3 Operational Power Station Sites and Brisbane Office

As at 30 June 2009, CS Energy operates a total installed capacity of about 3,660 megawatts (MW) at four power station sites. For the purpose of this EMS, the Corporate office in Brisbane is considered a fifth site.



## ENVIRONMENTAL MANAGEMENT SYSTEM

**Callide Power Station** is located in central Queensland, near Biloela. Two 350 MW coal-fired units at the Callide B station have been fully operational since 1989. The original 120 MW Callide A station, also coal-fired, has been refurbished and is currently undergoing conversion for an oxy-fuel firing project. The Callide Power Plant (Callide C) (see below) comprising two 420 MW advanced-cycle coal-fired units was commissioned during 2001.

**Mica Creek Power Station** supplies power to the mining operations of Xstrata in Mount Isa, Mount Isa proper and surrounding mines and districts. The station has a capacity of 325 MW (from 4 gas fired steam turbines - Units A1 to A4, three combined cycle gas turbines utilising waste heat boilers – Units A6, A7 & C1 and a gas fired turbine – Unit B1).

**Swanbank Power Station**, near Ipswich, consists of the coal-fired 500 MW capacity B Station, and the Swanbank E combined-cycle gas turbine (385 MW) which commenced commercial operation in 2002.

**Kogan Creek Power Station** near Chinchilla consists of a single 750MW coal-fired unit. The station was handed over to CS Energy in December 2007.

**Corporate Office** supports the power stations and manages the corporate functions for CS Energy.

### 3.4 Callide Power Plant

CS Energy has formed a joint-venture with IG Power (Callide) Pty Ltd in the ownership of two new generating units on the existing Callide site - referred to as the Callide Power Plant. CS Energy is the operator-maintainer of these units under a contract with the joint-venture partners.

Under Schedule 8F2 of the "Callide Power Project Operation and Maintenance Agreement" the Operator (CS Energy as the O&M Contractor), in consultation with the Manager (Callide Power Management), is required to establish and thereafter maintain during the Term of the Contract an Environmental Management Plan (EMP) for the Facility.

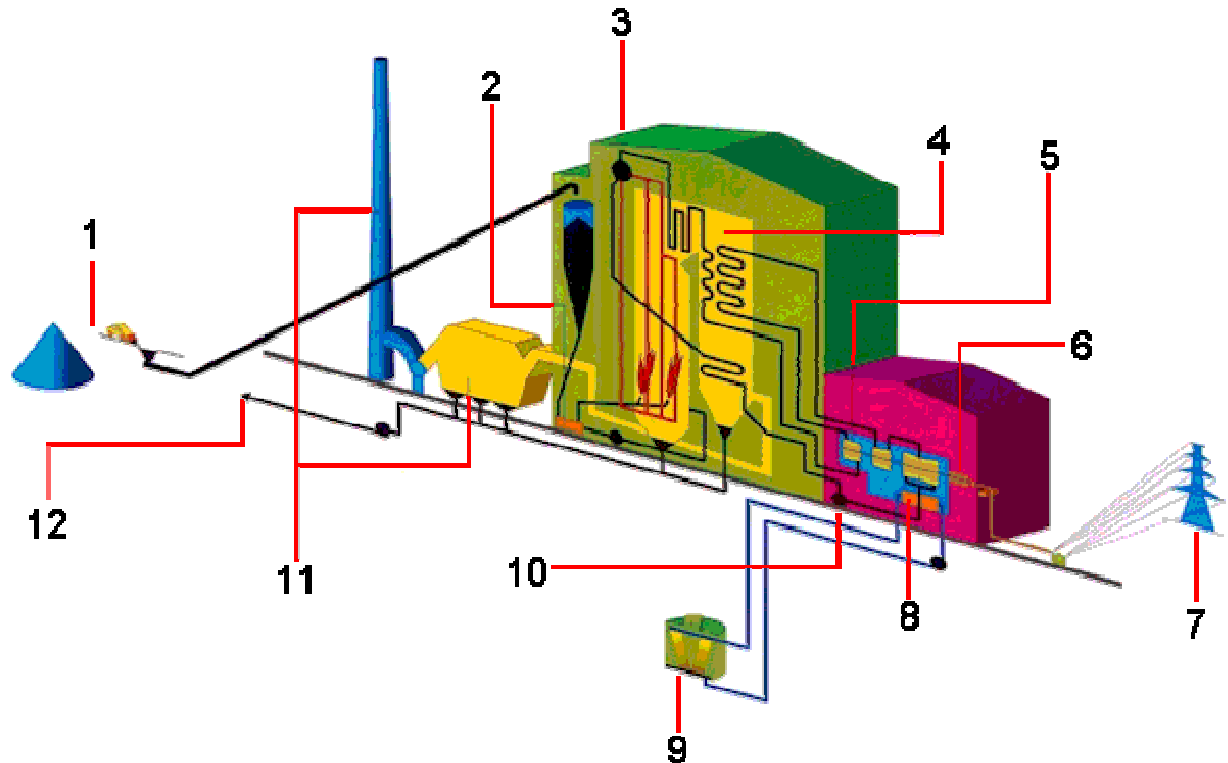
CS Energy has prepared an "Environmental Management Implementation Plan" (EMIP) to address specific environmental management issues related to its obligations for the Callide Power Plant. The EMIP, together with the CS Energy Environmental Management System, forms the EMP required contractually for the facility.

### 3.5 CS Energy and the Environment

As can be seen from the diagrams and descriptions below, a power station has many activities which interact with the environment. Some of these interactions include pumping water to and from dams and selling fly ash for cement manufacture. Each of the inputs and outputs needs to be monitored and managed closely to make CS Energy a "responsible" electricity producer. The development and use of an Environmental Management System plays a key role in achieving this aim.

**Steam turbine power generation**

Steam turbine power generation uses the heat from fuel combustion to heat water to steam. This steam is used to drive a turbine, converting heat energy to mechanical energy (in the form of rotation). The rotational energy of the turbine is then converted to electricity via a generator.

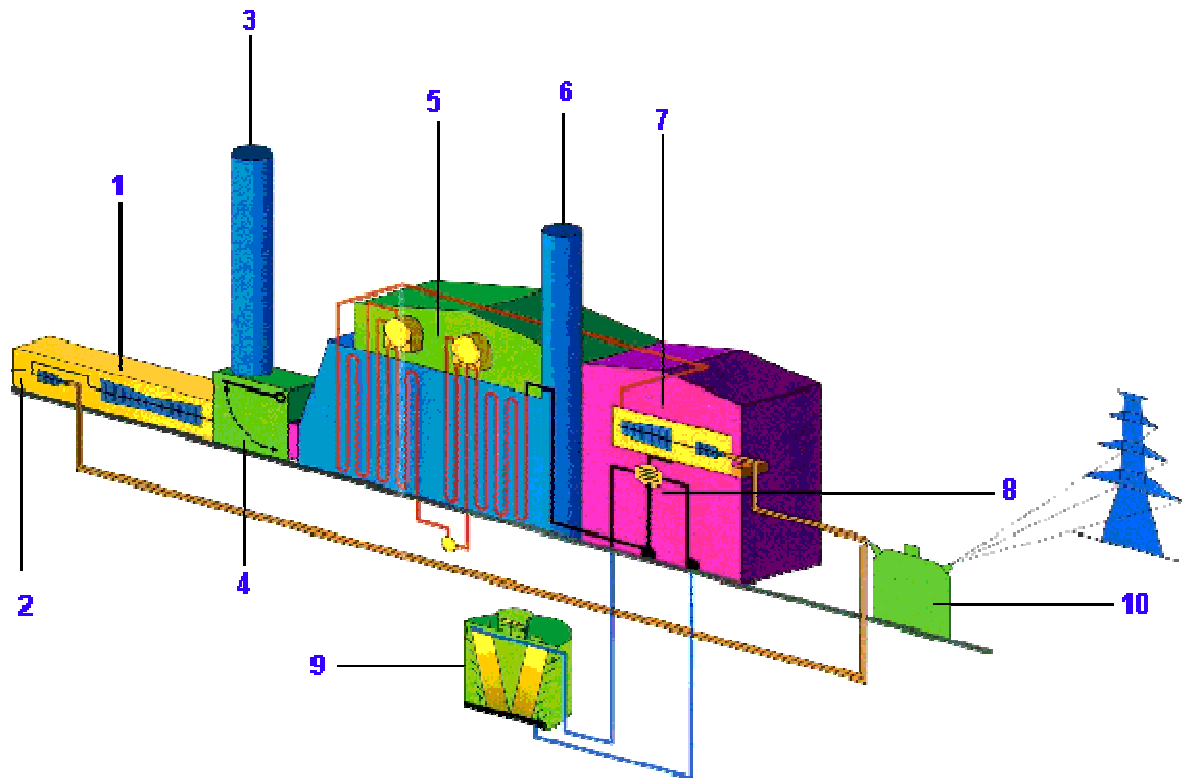


1. Providing Fuel. For Swanbank B, coal from mines in Southern Queensland is delivered by train and truck. For Callide, coal is delivered by conveyor belt to B Station and Callide Power Plant, and by truck to A Station from the B Station stockpile. It is then stockpiled or transported by conveyor belt to the boiler.
2. Igniting the Fuel. Coal is ground into a fine powder by pulverisers before being blown into the boilers where it is ignited.
3. Heating Water. The fire in the boiler heats the water producing steam.
4. Super Heating Steam. The steam is superheated to a high temperature before being fed under high pressure conditions, to the turbine.
5. Driving the Turbine. The super-heated steam causes the turbine and generator shaft to turn rapidly.
6. Generating Energy. The rotating generator shaft contains a large electro-magnet which produces electricity as it turns inside the generator.
7. Energising. Electricity is delivered to customers through a network of high voltage transmission lines. This is known as the transmission grid.
8. Condensing the Steam. The steam is condensed into water after the turbine has used all its available energy.
9. Cooling Off. The water used to cool the steam in the condenser is cooled by being pumped through the cooling tower.
10. Repeating the Cycle. Water from the condenser is pumped back to the boiler for reuse.
11. Cleaning Gases. Precipitators and/or fabric filters ensure that ash, dust and grit are removed from the heated boiler flue gas before it is released from the chimney.
12. Releasing and Recycling. The ash, dust, and grit remaining after the coal is ignited are either sold for reuse or stored on site.

### Gas Turbine Generation

Gas turbine generation operates in a similar manner to the steam turbines except that combustion gases (from gas or fuel oil) are used to turn the turbine instead of steam generated by a boiler.

The heat contained within the exhaust gases may be used to provide all, or a portion of the heat source for a boiler which produces steam for a steam turbine generator. The exhaust gases from multiple gas turbines may drive a single steam turbine. This is termed "Combined Cycle" generation.



1. Providing Fuel. Fuel oil or Natural Gas is burned in a combustion gas turbine. For Mica Creek Power Station, gas is piped from South West Queensland, and for Swanbank E station, gas is delivered via the Roma-Brisbane pipeline.
2. Energising (a). The gas turbine drives a generator to produce electricity.
3. Using a Simple Cycle. When required, the plant can operate in open or simple cycle mode. Hot exhaust gases can pass directly into the bypass stack.
4. Diverting Exhaust. The diverter valve prevents release of hot exhaust from the bypass stack.
5. Using Combined Cycle. In combined cycle mode, hot exhaust passes through a heat recovery boiler where the remaining energy produces steam.
6. Releasing Exhaust. Cooled exhaust gases are emitted via the main chimney stack.
7. Driving the Turbine. The steam turbine drives a turbine by converting the energy in the steam to rotational mechanical power. The turbine drives a generator to produce electricity.
8. Completing the Cycle. The spent steam is condensed back to water and then pumped back to the heat recovery boiler to complete the cycle.
9. Cooling Off. The water used to cool the steam in the condenser is pumped through a cooling tower before returning to the condenser.
10. Energising (b). Electricity from both the gas turbine generator and the steam turbine generator is fed to a transformer which increases the voltage before transmission to customers.

## 4. ENVIRONMENTAL MANAGEMENT

### 4.1 Why do we need environmental management?

From the latter half of the 1990s, we have seen an increased appreciation of the need for environmental awareness and action at personal, corporate, national and international levels.

Increased public interest in the environment and concern about industry's impact on it has led to a significant expansion of environmental legislation.

Given the many demands on available resources, it is important that a company's efforts are prioritised and optimised. An effective environmental management system facilitates understanding of the impact of a company's activities and the achievement of environmental objectives.

### 4.2 The ISO14001 standard

There are five core elements to an EMS as required by ISO 14001:

#### 4.2.1 *Environmental Policy*

ISO 14001 requires CS Energy to have an Environmental Policy. This policy must:

- Be appropriate to the nature, scale and environmental impacts of CS Energy and its activities;
- Be fully supported by senior management;
- Outline the environmental intentions and principles of the company;
- Provide a framework for setting and reviewing environmental objectives and targets;
- Be communicated to all persons working for and on behalf of CS Energy and be available to the public;
- Commit the corporation to comply with legal and other environmental requirements that may affect the organisation; and
- Commit the corporation to pollution prevention and continual improvement.

The policy should contain statements that relate to the size and impact of the activities undertaken by the organisation.

#### 4.2.2 *Planning*

The company will establish and document its environmental impacts and know all environmental requirements. These will become the primary areas of consideration when establishing the environmental goals and targets. The goals will be real and achievable. The environmental program will outline specific targets with designated responsibilities and identified time frames to achieve these objectives. A number of targets may be set to achieve an environmental goal.

#### 4.2.3 *Implementation and Operation*

The EMS establishes procedures, work instructions and controls to ensure that implementation of policy and achievement of goals and targets can become a reality. Resources to maintain and implement the EMS must be made available by Management.

#### 4.2.4 *Checking*

The Environmental Management System requires a planned comprehensive audit of the EMS to ensure that it is effective in operation, is meeting specified goals and the system continues

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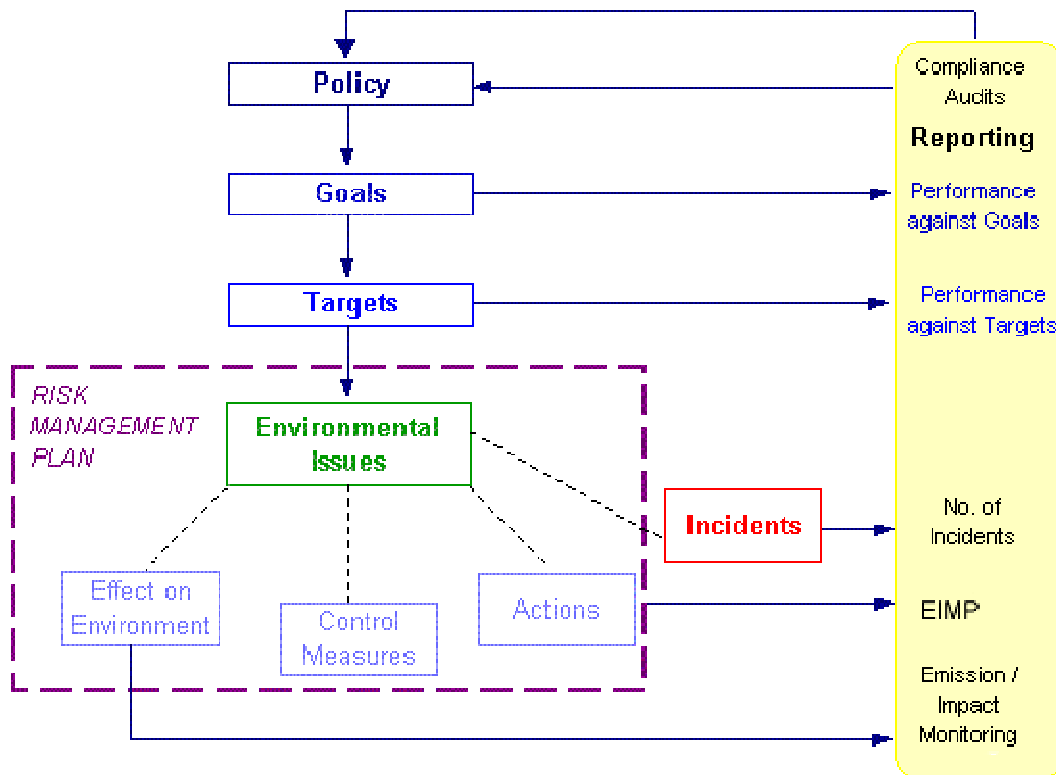
to perform in accordance with relevant regulations and standards. Procedures for identifying and addressing nonconformities are required including corrective and preventive actions.

### **4.2.5 Management Review**

In addition to audit there is a requirement for Management Review of the system to ensure that it is suitable (for the organisation and the goals) and effective in operation. Management Review is used as the basis for ensuring the EMS is adequate and recommending changes to the EMS in line with the organisation's commitment to continual improvement.

## 5. CS ENERGY'S APPROACH TO ENVIRONMENTAL MANAGEMENT

The framework through which CS Energy implements environmental management can be depicted as:



\*\* Note EIMP: Environmental Issue Management Plan

The cyclical nature of CS Energy's environmental management system is depicted in the diagram. Rather than a strictly downwardly managed system, CS Energy's system has a number of inputs at various levels which feed into and around the system. In this way CS Energy's environmental performance undergoes continual improvement.

CS Energy's environmental goals are summarised within its environmental policy. Specific targets are used to implement the goals and policy.

In line with ISO14001, CS Energy has an Environmental Issues identification procedure which is used to identify and perform risk assessment of all facets of CS Energy's business which may have an impact on the environment. How we manage our issues is detailed in the next section of the Manual.

Our monitoring, auditing and reporting systems are used to evaluate our environmental performance. All of this information is reviewed and where appropriate our policy and goals will be modified.

## **5.1 Environment Policy**

An Environment Policy is a statement made by an organisation detailing its intentions and principles in relation to environmental performance. The policy provides a framework for the organisation to set environmental objectives and targets, and gives direction for environmental actions. CS Energy has developed an Environment Policy so that its position on environmental management is visible to its employees and the community.

The CS Energy Environment Policy has been developed in accordance with the requirements of ISO14001 and other relevant statutory requirements. The Policy has been developed to be consistent with the Corporate Business Plan and has been endorsed and supported by senior management including the Chief Executive, and approved by the Board of Directors. After approval has been obtained, the policy is in force and should be reflected in procedures and work practices.

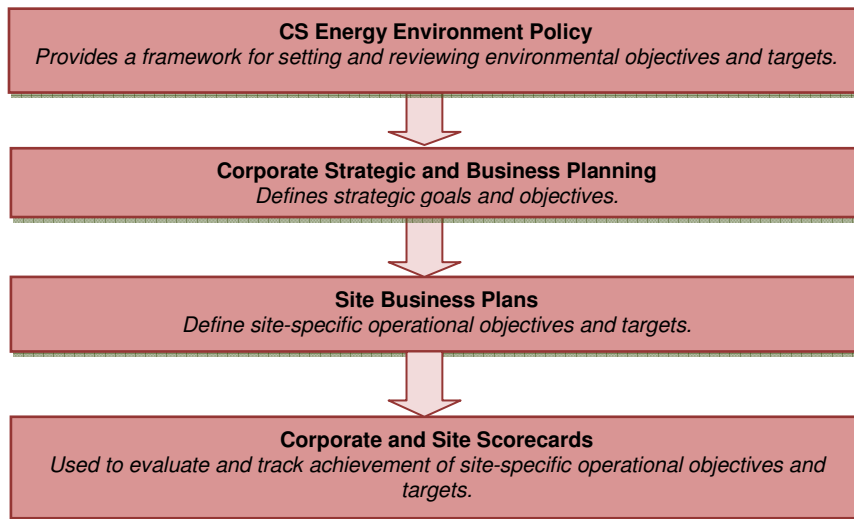
All aspects of the corporation are affected by the Environment Policy. All sites are required to implement the policy in procedures and corporate documents. Senior management and staff are also expected to consider the policy as a guiding document for their responsibilities at work.

It is the responsibility of the General Manager Portfolio Services to review the Environment Policy as required as part of the corporate management review process (conducted annually). As part of this review, the policy's effectiveness and relevance is assessed. The environmental team together with the site managers and general managers review the policy for changes and recommend the revised policy through the Chief Executive for approval by the Board.

## **5.2 Environmental Goals and Targets**

Environmental goals and targets are reviewed annually as part of the Business Planning Cycle which involves the development of both Corporate and site business plans. The Corporate Business Plan provides the framework upon which site business plans are based. The direction and nature of objectives and targets within the Corporate Business Plan is guided by CS Energy's Environmental Policy. The achievement of targets is monitored and reported through corporate and site scorecards. The figure below provides a summary of this process. Refer to Sections 3.2 and 3.3 of CS-EMSP-2 (Developing Environmental Planning) for further information.

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### Overview of CS Energy's process for formulating environmental goals and targets.

CS Energy has five goals under the current Strategic Plan (2009-2014). Each of these goals is listed below with particular environmental strategies outlined where applicable:

1. To be recognised as having people with commitment and skills to deliver business outcomes.
2. To be acknowledged as a safe and efficient operator of commercial scale, reliable generation plant.
  - a. Reduce carbon emission intensity below the National Electricity Market average by developing and implementing an efficiency improvement and carbon emission reduction plan for each site.
3. To have a secure and diverse mix of competitive fuel and water resources.
  - a. Develop diverse and cost competitive gas supplies using a variety of arrangements with business partners.
  - b. Develop and implement an acquisition strategy for renewable fuel resources.
  - c. Maximise water efficiency and secure long term competitively priced water resources.
4. To be a leader in commercialising low emission technology plant, including having a renewable generation capacity of 200 MW by 2013 and identifying opportunities to deliver at least another 300 MW of renewable generation by 2020.
  - a. Carry out feasibility assessment of all main renewable technology options in Queensland and implement viable technologies.
  - b. Develop business proposition for Kogan Creek B including low emissions options.
  - c. Progress renewable projects such as geothermal and solar thermal.
  - d. Develop combined cycle gas turbine plant.
  - e. Secure carbon dioxide transport arrangements and access to sequestration sites.
5. To be acknowledged as a financially viable and socially responsible company.
  - a. Achieve outstanding environmental performance through obtaining ISO 14001 environmental accreditation for Kogan Creek Power Station and maintain ISO 14001 at all other sites.
  - b. Reduce carbon footprint for CS Energy's operations through developing and implementing a Carbon Management Plan, including investment in biosequestration to offset up to 10% of the portfolio.

## 6. MANAGING ENVIRONMENTAL ISSUES

It is important that CS Energy identifies and assesses all aspects of its activities that impact on the environment. A detailed list of issues is then developed and ranked according to importance. CS Energy's efforts may then be optimised towards investigating prioritised issues. By identifying potential issues through a risk management approach, CS Energy aims to proactively prevent environmental incidents, including recurrence of issues, rather than react to them.

The relationship between environmental issues and impacts is one of cause and effect. The cause-effect approach taken by CS Energy is designed to operate in conjunction with environmental training programs, Environmental Management Plans and the EMS framework. Refer to Section 5 - CS Energy's Approach to Environmental Management for an explanation of how the issue identification process fits in with CS Energy's overall EMS.

### 6.1 How are environmental issues identified?

CS Energy has an Environmental Issue Identification Procedure (CS-EMSP-1). Key plant / technical personnel identify environmental issues and impacts associated with their particular areas of plant (recorded in EIR - see below). The information is obtained on an ongoing basis by the Site Environmental Coordinator through meetings with individual workgroups, site inspections, internal and external audits, facilitated risk workshops and incident investigation.

Environmental Impact Assessments identify environmental issues and controls related to new projects.

CS Energy's Environmental Legal Compliance Manual ensures awareness of all legislative and site environmental approval requirements. These are taken into account during the issues assessment process.

Issues identified include both those associated with the day-to-day performance of our business activities as well as those issues which might potentially arise under abnormal operating conditions such as plant failure.

The Environmental Issues Register (EIR) is used to record all environmental issues and incidents and essentially is the engine room for the EMS. Each Station site and the Brisbane Office has its own specific data, with all site specific activities and locations (e.g. pieces of plant) listed. All issues are tied back to an activity or location, each issue then has actions set against it which are assigned to a specific station group/team or person for action. Incidents are associated with an existing or new issue. For further information about the EIR please contact your Site Environmental Coordinator.

#### 6.1.1 *Environmental Issues Register (EIR)*

The EIR is a tool used to proactively manage environmental issues across CS Energy Ltd. The EIR acts as the engine room for CS Energy's EMS and complies with the requirements of ISO14001 elements 4.3.1 Environmental Aspects, 4.3.3 Objectives, Targets and Programme(s) and 4.4.6 Operational Control.

The EIR contains up-to-date lists of all site activities, ISO14001 system elements and general business processes.

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The EIR is used for the following:

- Issue and nonconformity logging: To log issues that may have been produced from an audit, issue identification process, daily inspection or other process. Issues are entered into the system and assigned to a team and person. Actions can then be assigned to the issue and all actions are given due dates and responsible staff for carrying out the action. The overall issue is also required to be risk assessed taking into consideration legal, financial, environmental exposure, stakeholder impacts, EMS effects, H&S effect and total business cost.
- Incidents / Exceptions: Incidents and exceptions can be logged into the EIR and like issues can be associated with site activities and assigned actions. Incidents can be linked to issues or and issue can be developed post logging a new issue.
- Reporting: All data logged into the EIR can be interrogated and reported on to monitor performance. As dates are set for all issues and action to be completed by a report on overdue actions can be printed to see what needs to be done for example, or a risk profile report can be printed showing the breakdown of risk of all current issues.

### **EIR vs Incident Management System:**

The incident management system is a H&S based system and allows for post-event health and safety incident data to be logged into a secure electronic location. The major difference between the IMS and the EIR is that the EIR can log issues, link incidents to issues and can also assign actions allowing a proactive approach to issue management. The design of the IMS is skewed toward OHS legislative requirements such as injury data.

### **EIR vs ROMS:**

The Risk Opportunity Management System is an Intranet based system for logging risks across CS Energy. It does not record a high level of detail about issues, but instead allows for the issues to be logged into a system which is administrated at a corporate level and followed up using QA processes.

The EIR is much more comprehensive than the ROMS system in dealing with environmental issues. However, high or significant risk assessed issues developed in the EIR should be logged into the ROMS system. Essentially the ROMS system has replaced the CAR system and should be used for all issues requiring top management focus on high risk issues and non-conformances.

### **EIR vs SAP:**

SAP is a business wide accounting, HR and maintenance system. SAP is not currently capable of going to the level of detail of the EIR. Actions logged into the EIR can also be logged as notifications in SAP with the notification number recorded in the EIR. This is slightly cumbersome and it would be of strategic long term advantage for the EIR to be rebuilt into SAP to allow full functionality of the maintenance and notification system to streamline work orders and be able to track jobs as they are completed automatically.

### **Complaint Recording:**

Complaints of a detrimental nature that relate to environmental matters such as noise, dust or odour can be logged into the EIR as Category 3 incidents (Refer Procedure CS-IM-1 Incident Management for definition) and assigned appropriate actions or linked to an issue.

A user manual has been developed for the EIR.

Once issues have been identified, CS Energy utilises an environmental risk assessment process to determine their significance. A qualitative approach to risk assessment has been adopted. Risk is a function of the consequences of an issue/event and the likelihood of the event occurring. Risk ratings are assigned to each issue. These ratings give no quantification of the actual value of the risk, but rather a relative indication of the level of risk

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associated with the issue compared with other issues. An example list of issues is contained in the Appendix (Section 12.1).

The issues identification and assessment process is reviewed within a timeframe determined by the significance of issues identified. The output of the Issue identification and assessment review is utilised by the corporate business planning process and in the development of risk plans.

We classify each of the environmental issues into one of five categories based on their risk rating, the controls in place, the CS Energy Environment Policy, goals and targets and legal obligations.

### **Low Risk Issues**

All issues nominated by the identification procedure which have a low impact on the environment and are not related to environmental policy, goals or targets.

### **Moderate Risk Issues**

Issues rated as moderate are issues that need to be monitored but due to their nature (contaminants involved, potential frequency of event occurring) are not capable of causing serious environmental harm.

### **Significant Risk Issues**

These are issues which have a potential to cause a significant impact on the environment. We need to ensure that operational controls are in place to address these issues. If existing controls are deemed insufficient these issues will be denoted as a priority issue.

### **High Risk Issues**

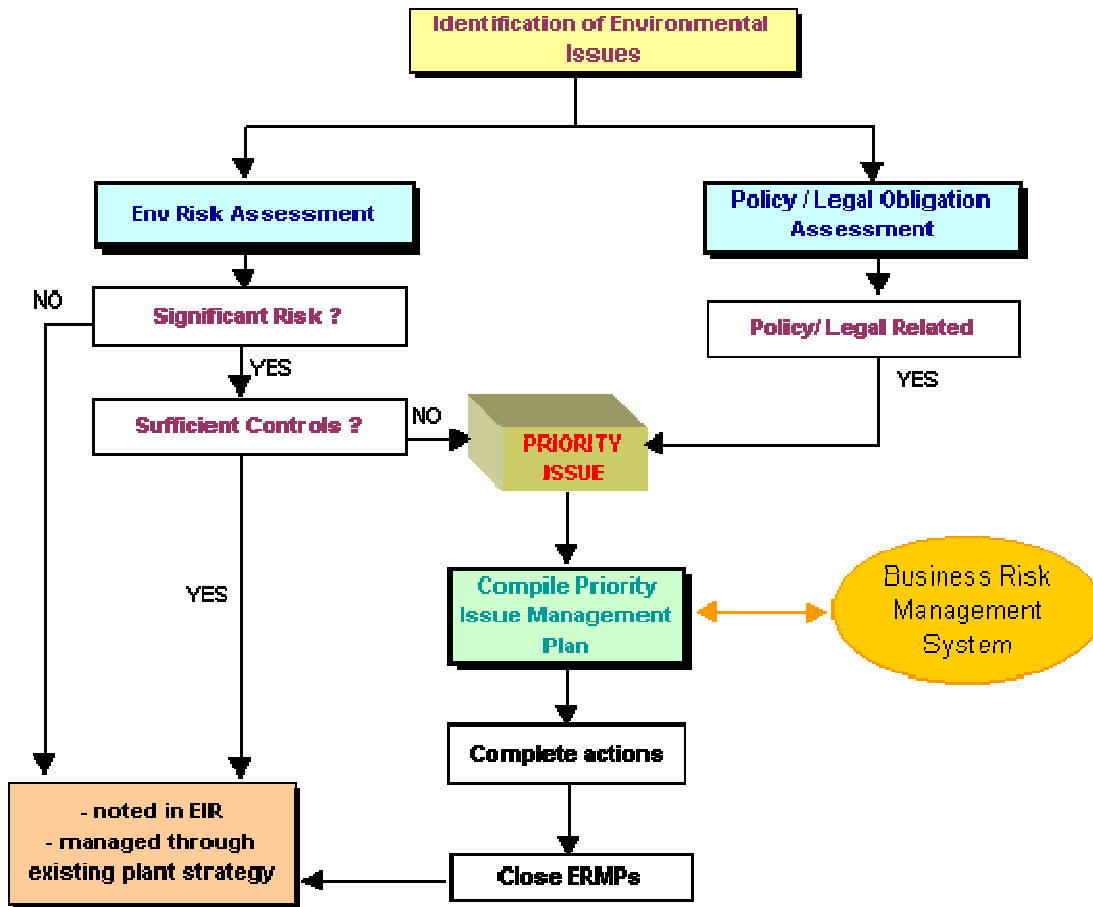
Issues rated as high require immediate attention, have potential to cause serious environmental harm and relate to uncontrolled activities or environmental approval breaches.

### **Priority Issues**

These are the issues which we have decided are a priority to act upon. The decision is based on:

- Our legal obligations and liabilities (current and future);
- Environmental policy, goals and targets;
- Environmental Issue Risk Assessment; and
- Whether the issues are currently being managed to our best ability or meeting our operating standards.

6.1.2 Overview of Environmental Issues Identification and Management



6.2 How are our environmental issues managed?

After the environmental issues have been identified they are managed via different means. How this is done is detailed in Procedure CS-EMSP-2- Planning. In general it consists of:

- **Establishing Policy, Goals & Targets**

The List of Significant Environmental Issues will be considered when reviewing Corporate policy and goals and site-specific goals. These will be amended as required. See Sections 5.1 and 5.2 of this Manual for details of the Environment Policy and goals.

- **Establishing Environmental Issue Management Plans**

Environmental Issue Management Plans contain information about the nominated priority issue. The information will include relevant actions being taken and operational controls currently in place to mitigate impacts. Operational Controls may include training, procedures, monitoring etc. These plans detail ongoing management/control of issues as well as any planned improvements.

Examples of environmental issue management plans include:

- Risk Plan in the Risk Opportunity Management System (ROMS);
- Transitional Environmental Program under EP Act;
- SAP Notification;

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- EIR - Environmental Issue Management Plan reports;
- Environmental Management Plan e.g. Waste, Stormwater; and
- Carbon intensity reduction plan.

## **7. COMMUNICATION AND TRAINING**

Internal communication or communication within the company is important for employees to know about the current environmental issues and the company's position with respect to their management. This helps employees to be positive about the company's environmental performance while at work and in the community.

All employees have an environmental contribution to make whether they have an operational, maintenance, planning or support function. Internal communications include: training programs, newsletters, notice boards, staff briefings and toolbox talks.

CS Energy maintains external communication to encourage public understanding and acceptance of the organisation's efforts to improve its environmental performance. External parties may include shareholders, regulators, local government, adjacent community, environmental groups, customers, community groups and the media.

CS Energy does not externally communicate information in relation to all identified significant environmental issues. It does, however, release specific information to the public predominantly in the Annual Report and community consultation forums, and to a lesser extent through the Corporate website, National Pollutant Inventory website, newsletters, factsheets and media releases.

CS Energy pursues community involvement in many areas of its operations and sponsors many local community events and programs. At some sites, community reference groups have been established where local community issues and concerns can be addressed.

Should complaints be received they are managed through Procedure CS-EMSP-3 Environmental Communication and Training Process, which details the mechanism for responding to external complaints or comments.

Training is an essential element in ensuring safe and environmentally acceptable operations, compliance with company and legal requirements, and the correct response to emergencies. Training covers the areas of environmental awareness, compliance issues and environmental issue management. Induction sessions are conducted for new staff and contractors. A Health Safety and Environment Induction Handbook has also been developed for employees.

## 8. MANAGING ENVIRONMENTAL INCIDENTS

### 8.1 What is an Environmental Incident?

*An Environmental Incident is an event which causes or has the potential to cause environmental nuisance or environmental harm OR an external complaint relating to an environmental incident OR environmental issue.*

CS Energy staff are trained through inductions and other awareness training to recognise environmental incidents that:

- Cause or have the potential to cause an exceedance of environmental approval conditions;
- Result in the receipt of an external complaint;
- Cause or have the potential to cause an environmental nuisance (e.g. noise or odours which annoy neighbours);
- Cause or have the potential to cause the release of contaminants (e.g. oil, chemicals, coal) to the environment as the result of abnormal operations (e.g. plant failure); or
- Cause or have the potential to cause damage to the environment (e.g. land or stormwater contamination, fish kills etc.).

CS Energy employees and contractors have a duty to take appropriate action to prevent and control incidents.

All incidents are reported to the Site Environmental Coordinator for assessment and investigation.

### 8.2 How Do We Manage Environmental Incidents?

The incident management system is made up of a series of procedures, manuals, training and technical expert references to ensure that staff are best able to assess and manage environmental incidents. The system focuses on:

- Recognition and assessment of incidents;
- Immediate response to incidents (clean up etc.); and
- Follow up response/actions (reporting, investigation and corrective or preventive actions).

CS Energy's Incident Management System (refer Procedures CS-IM-1 Incident Management and CS-IM-2 Crisis Management) requires reporting of all environmental incidents. This allows us to determine what occurred and then put in place actions to minimise or prevent a recurrence and so improve our future environmental performance. This information also provides valuable information for the formal review processes of the Environmental Management System.

Action cards summarise response actions for crisis response personnel.

The majority of environmental incidents are minor in nature. These are reported monthly. Immediate response to these incidents will generally be within the scope of staff knowledge. In the case of more major environmental incidents, an incident report (Form S1819) is sent to the incident notification group which includes senior management. In situations where staff are uncertain of appropriate actions, they are able to contact environmental staff for specialist assistance.

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All incidents are recorded in the Environmental Issues Register (EIR), which is a database for recording environmental issues and incidents. Further information on the EIR is provided in Section 6.1, or alternatively please contact your Site Environmental Coordinator.

Incidents which cause or have the potential to cause harm to the environment may be reportable to the Queensland Department of Environment and Resource Management (DERM). Incidents are followed up with investigations and actions to prevent recurrence of a similar situation.

Response to emergency incidents is the role of the site rescue or response personnel. These teams consult with the environmental staff, if any emergency has the potential to impact on the environment.

Potential incidents and their likely required response are identified through the EIR in the form of significant environmental issue identification and control plan formulation in accordance with CS-EMSP-1 (Environmental Issue Identification) and CS-EMSP-2 (Developing Environmental Planning).

## 9. EVALUATING CS ENERGY'S ENVIRONMENTAL PERFORMANCE

Reviewing environmental management at CS Energy is achieved through a number of processes. The processes used by the Environmental Management System (EMS) include:

- Environmental Issues Review;
- Business Planning Process;
- Risk Management Process;
- Internal audits; and
- External audits.

The purpose and required outcomes of these processes are detailed in Procedure CS-EMSP-7 "Environmental Audit, Review & Performance Evaluation".

### 9.1 Monitoring Environmental Performance

The overall focus of these processes is to demonstrate how CS Energy's EMS assesses environmental performance. Where possible the information is gathered and handled in accordance with the Australian/NZ Standard ISO 14031: "Environmental Management - Environmental Performance Evaluation - Guidelines" (EPE).

CS Energy's EMS builds on the ISO14001 requirement to assess the effectiveness and suitability of policy, objectives and targets set by the organisation. It aims to measure overall environmental performance. CS Energy measures a number of parameters against KPIs to enable it to monitor:

- Management System Performance;
- Plant (operational) Performance; and
- Condition of the ambient environment.

Procedure CS-EMSP-7 details how CS Energy assesses its environmental performance.

Monitoring and measurement programs are set up in accordance with Procedure CS-EMSP-6 "Environmental Monitoring & Measurement". Monitoring programs are put in place that cover areas such as:

- Compliance with environmental approval requirements e.g. particulate emissions, discharge water quality;
- Compliance with internal policy e.g. coal stockpile dust suppression;
- Specific programs such as Generator; Efficiency Standards;
- Performance of CS Energy's EMS;
- Receiving Environment Monitoring;
- Benchmarking against the esaa Sustainable Practice Framework; and
- National Pollutant Inventory emission estimation.

These monitoring programs assist CS Energy in determining the overall environmental performance of its operations.

## 9.2 Environmental Reporting

Information gathered from the monitoring process is required for a number of internal and external reporting requirements such as:

- Weekly environmental reports - Site and Corporate;
- Environmental Approval compliance reporting;
- Monthly Power Station Site reports;
- Monthly reports to General Managers;
- Monthly and quarterly reports against Corporate goals and targets;
- Strategic reports to Board;
- EMS reviews; and
- External agreement progress and review reports.

CS Energy publishes information on its environmental performance in its Annual Report. In addition, internal reports are prepared to support the information in the Annual Report.

## 9.3 Environmental Audits

Changing regulatory requirements, market competition and community expectations dictate that environmental performance/compliance be assessed and reported. CS Energy uses environmental audits to assess the impacts and management of its operations to identify system and process improvements, including continual improvement and evaluation of compliance with legal requirements.

Audit findings are reported to management or appropriate staff through the review processes discussed in Procedure CS-EMSP - 7 "Environmental Audit, Review & Performance Evaluation".

Several types of audits may be undertaken by CS Energy (either by internal staff or by contracting external audit services). Auditors are independent of the unit being audited to ensure that results are impartial and objective.

Audits undertaken may include:

- Legal Compliance;
- Technical /Process e.g. Large Dangerous Goods Location hazards;
- Energy Use;
- Environmental Impacts;
- Due Diligence;
- Waste; and
- Environmental Management Systems.

Audits are scoped according to their main objective. For example an EMS audit has the primary objective of assessing the performance of the management system, not the plant. Therefore its scope focuses primarily on compliance with procedures and management of information. In contrast, a technical audit focuses on the impacts associated with design and operation of plant or equipment.

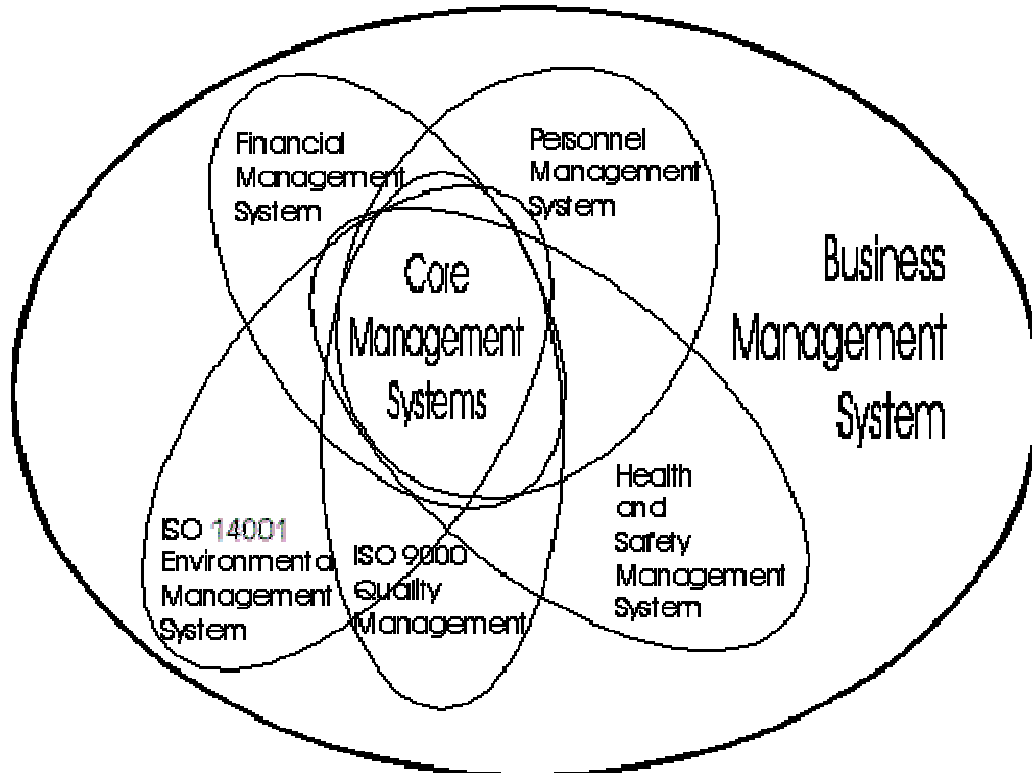
The audit objectives will determine the protocol to be used by the auditors and the qualifications required of the auditor or audit team.

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An EMS Audit Guide has been prepared to provide consistency in internal EMS auditing.

## 10. INTEGRATION WITH OTHER MANAGEMENT SYSTEMS

The range of typical management systems that may exist within an organisation are depicted below.



CS Energy's approach to integrating these 'typical' management systems is outlined in its Business Manual. CS Energy's EMS has not been developed to function independently of other aspects of the corporation's Business Management System. It relies on existing elements to perform a number of tasks.

### 10.1 Quality Assurance / Business Management System

CS Energy's Business Management System is described in "About CS Energy", which is available on the Corporate procedures page of the Intranet under "Vision and Direction".

The aim of the Business Management System is to ensure that the business creates and maintains policies procedures and guidelines to implement the system effectively. For CS Energy this includes but is not limited to the following:

#### **Internal audit function**

The Internal Audit schedule (Form S0013) is used by the EMS to check on the system performance.

#### **Corrective and Preventive Action**

The EMS uses the BMS's Risk Plans within the ROMS system for correcting deficiencies in the management system and for significant or high risk environmental issues from the Environmental Issues Register (EIR).

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All other corrective and preventive action is monitored or actioned via the EIR. The Corporation's Maintenance Order System (within the SAP system) is used to manage specific actions delegated to the workforce. Section 6 of this Manual further defines the use of the EIR and ROMS.

### **Management Review**

Management Review of the EMS is incorporated into three processes performed by the organisation (Procedure EMSP-7 "Environmental Audit, Review & Performance Evaluation"):

- **Business Management System - Corporate Business Plan Review**  
Policy, goals and targets are reviewed as a part of the annual business planning process. The Portfolio Environmental Managers, in consultation with the General Managers, review the current and future direction of corporate environmental strategies which includes policy, goals and targets. Site specific goals and targets are also identified in site Business Plans.
- **Environmental Management System - Audit Review**  
All EMS procedures are audited in accordance with the annual audit schedule to check that documentation reflects current practice.
- **Environmental Management System - Management Review**  
Results of the EMS Audits and Improvement Requests are reviewed by the site Environmental Coordinators and corporately by the Portfolio Environmental Managers. EMS review is a routine agenda item for site management review meetings. The site Environmental Coordinator is responsible for review of site EMS procedures.

### **Document Control & Records Management**

EMS information, documents or records are managed under specific systems according to their type.

The Environmental Issues Register is managed by Procedure EMSP-1 "Environmental Issue Identification", EMSP-4 "Environmental Incident Management" and EMSP-2 "Developing Environmental Planning".

The EMS Manual, procedures and specified documents are managed by Procedure CS-DOC-1 "Preparation and Revision of Documented Procedures".

## **10.2 Health & Safety Management System**

The EMS integrates with the Health & Safety system in the area of incident management. Where life is at risk the priority will be people. Therefore emergency response is operated under the Health & Safety Management system. However non-life threatening and environmental incidents are handled under the EMS.

## 11. REFERENCE DOCUMENTATION

Document	QA Doc No.	Location
<b>Chapter 3: Business Description</b>		
Business Manual "About CS Energy"	CS-Business Manual.doc	Intranet
<b>Chapter 4: Environmental Management</b>		
Australian Standard AS/NZS ISO 14001	Not registered	Standards Australia on-line
Environment Policy	N/A	K:\Corprocs1\CorporatePolicies
Internal Audits	CS-AUD-1	K:\Corprocs1\Governance
Control of Australian & International Standards, Acts, Regulations and Codes of Practice	CS-DOC-2	K:\Corprocs1\Governance\Document Management
Management Responsibilities	CS-MR-1	K:\Corprocs1\Governance
<b>Chapter 5: CS Energy's Approach to Environmental Management</b>		
Environment Policy	Registered	K:\Corprocs1\CorporatePolicies
Corporate Plan	Not registered	Confidential - through GMs
Statement of Corporate Intent	Not registered	Confidential - through GMs
EMS Procedure - Developing Environmental Planning	EMSP2.doc	K:\Corprocs1\Environment
Australian Standard AS/NZS ISO 14001	Not registered	Standards Australia on-line
<b>Chapter 6: Managing Environmental Issues</b>		
EMS Procedure - Environmental Issue Identification.	EMSP1.doc	K:\Corprocs1\Environment
EMS Procedure - Developing Environmental Planning.	EMSP2.doc	K:\Corprocs1\Environment
EMS Procedure - Environmental Legal Compliance	EMSP5.doc	K:\Corprocs1\Environment
Risk Management / Legal Compliance Policy	N/A	K:\Corprocs1\Governance
Incident Management	CS-IM-1	K:\Corprocs1\PlantManagement\ Incident Management
Environmental Legal Compliance Manual	N/A	Intranet – Environmental Management
Environmental Issues Register User Manual	EIR_Manual.doc	K:\Corprocs1\Environment
<b>Chapter 7: Communication and Training</b>		
EMS Procedure - Environmental Incident Management	EMSP4.doc	K:\Corprocs1\Environment
EMS Procedure - Environmental Communication & Training Process	EMSP3.doc	K:\Corprocs1\Environment
Health Safety and Environmental Induction Handbook	Printed booklet	N/a
<b>Chapter 8: Managing Environmental Incidents</b>		
EMS Procedure - Environmental Incident Management	EMSP4.doc	K:\Corprocs1\Environment
EMS Procedure - Environmental Communication & Training Process	EMSP3.doc	K:\Corprocs1\Environment
Incident Management	CS-IM-1	K:\Corprocs1\PlantManagement\ Incident Management
Crisis Management	CS-IM-2	K:\Corprocs1\PlantManagement\ Incident Management
<b>Chapter 9: Evaluating CS Energy's Environmental Performance</b>		
EMS Procedure - Environmental Monitoring & Measurement	EMSP6.doc	K:\Corprocs1\Environment
EMS Audit Guide	EMS_Audit Guide.doc	K:\Corprocs1\Environment
EMS Procedure - Environmental Audit, Review	EMSP7.doc	K:\Corprocs1\Environment

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& Performance Evaluation		
Risk Management / Legal Compliance Policy	N/A	K:\Corprocs1\Governance
AS/NZS 14031: "Environmental Management - Environmental Performance Evaluation Guidelines"	N/A	Standards Australia on-line
<b>Chapter 10: Integration with Other Management Systems</b>		
Business Manual - "About CS Energy"	CS-Business Manual.doc	Intranet
Health & Safety Manual	Issued	Issued in hard copy
Internal Audits	CS-AUD-1	K:\Corprocs1\Governance
Preparation and Revision of Documented Procedures	CS-DOC-1	K:\Corprocs1\Governance\Document Management
Forms Control	CS-DOC-5	K:\Corprocs1\Governance\Document Management
EMS Procedure - Environmental Issue Identification.	EMSP1.doc	K:\Corprocs1\Environment
EMS Procedure - Developing Environmental Planning.	EMSP2.doc	K:\Corprocs1\Environment
EMS Procedure - Environmental Incident Management	EMSP4.doc	K:\Corprocs1\Environment
EMS Procedure - Environmental Audit, Review & Performance Evaluation	EMSP7.doc	K:\Corprocs1\Environment
Internal Audit Schedule	S0013	k:\Templates

## 12. APPENDIX

### 12.1 Example Environmental Issues & Risk Assessment

Issues are read as:

**Waste Disposal** associated with **Ash dam**  
 (Cause) (Location/Activity)

#### Sample Environmental Issues List

**Cause of Environmental Issue**                      **Issue Description**                      **Env Risk Rating**

Location:              Ash dam

Containment	Containment of dry ash / cenospheres blowing from surface of ash dam	Moderate
Seepage/Leakage	Leakage associated with the ash dam wall	Low

Location:              Ash Hoppers (Boiler)

Failure (structural)	Hopper doors open dumping ash onto basement floor. Ash water can enter stormwater system.	Significant
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Location:              Ash Reclaim Pipelines

Failure	Discharge offsite (water contains high TDS). Inappropriate ash dam operational regime until line is fixed.	Moderate
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Location:              Ash Slurry pumps

Leakage	The leakage or release of hydraulic oil due to failures of fittings, pipework, hoses, seals and valves.	High
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### 12.2 EMS Procedures

The following is a list of Environmental Management System Procedures which detail what is required of a CS Energy operation and its associated management systems to manage their environmental impacts.

Each of these procedures provides guidance as to the minimum requirements for an EMS, links to specific documents or procedures, examples/templates where appropriate and details the responsibilities of CS Energy staff.

- EMSP0 - EMS Procedures: Table of Contents
- EMSP1 - Environmental Issue Identification
- EMSP2 - Developing Environmental Planning
- EMSP3 - Environmental Communication & Training Process
- EMSP4 - Environmental Incident Management
- EMSP5 - Environmental Legal Compliance
- EMSP6 - Environmental Monitoring & Measurement
- EMSP7 - Environmental Audit, Review and Performance Evaluation

EMSP8 - Guidelines for Health, Safety and Environment Plans

### **12.3 Summary of Responsibilities in Procedures**

The responsibilities of various CS Energy officers are detailed in BMS procedures and in individual role purpose statements. In addition the responsibilities arising from the EMS procedures are listed below.

#### **CS-EMSP-1 Environmental Issue Identification**

General Managers

Allocating resources for implementation of management plans

Risk Facilitators

Review identified issues in accordance with Corporate Risk Management Policy & Procedure.

Develop risk management plans within ROMS.

Portfolio Environmental Managers

Ensure that environmental risk assessment/management technique is in agreement with current company policy.

Site Environmental Coordinator

Ensure that a site register of environmental issues is maintained and updated in accordance with review requirements.

Provide technical advice relating to environmental issues

Employees and Contractors

Identifying the environmental issues within their plant area and implementing actions nominated

#### **CS-EMSP-2 Developing Environmental Planning**

CS Energy Board

Review and authorise CS Energy Environment Policy.

Chief Executive

Recommend Policy to Board.

General Managers

Development of policy, goals and targets

Initiate Policy review

Allocating resources for implementation of action/management plans

Approval of Issue Management Plans converted to Risk Management Plans

Risk Facilitators

Preparation of Risk Management Plans

Portfolio Environmental Managers

Facilitate development of policy, goals and targets consistent with the Environmental and Business Management System Processes.

Initiating review of this procedure and ensuring outputs are updated.

Site Environmental Coordinator

Ensure that a site register of environmental issues is maintained and updated in accordance with review requirements.

Provide technical advice relating to environmental issues

Provide support in the dissemination of environmental policy and goals.

Development of site goals and targets.

#### **CS-EMSP-3 Environmental Communication & Training Process**

General Managers

Develop external environmental communications plan establishing communication lines with the public on environmental issues and the release of environmental information to the public.

Portfolio Environmental Managers

Conduct a training needs analysis

Development of Corporate environmental reports

Initiating review of this procedure and ensuring outputs are updated.

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Make available and publicise CS Energy's Environment Policy

### Site Environmental Coordinator

Establish a community (external) complaints procedure.  
Develop suitable training plan & schedule.

### Employees and Contractors

Be active in communicating incidents, environmental issues and supplying feedback on the general environmental management philosophy of CS Energy operations.

## CS-EMSP-4 Environmental Incident Management

### General Managers

Approval, and allocation of resources for incident management and close-out.

### Line Managers

Manage activities under their control to comply with policies, procedures and environmental approval limits.

### Portfolio Environmental Managers

Updating of procedure in accordance with changes in policy.  
Implementing requirements of this procedure.  
Providing technical advice / liaison with government departments.

### Site Environmental Coordinator

Entering plans / actions into the Environmental Issues Register (EIR).  
Providing technical advice / liaison with government departments.  
Review of site incident management procedures as required and after incidents

### Power Station Operators

Operate plant within environmental approval limits.

### Employees and Contractors

Following site procedures including environmental procedures.  
General requirement to prevent environmental harm.  
Control and report incidents.

## CS-EMSP-5 Environmental Legal Compliance

### Portfolio Environmental Managers

Initiate contract for updating the Environmental Legal Compliance Manual  
Ensure that updated information is transferred to the Environmental Legal Compliance Manual  
Supply of additional reference material

### Site Environmental Coordinator

Maintain current copy of site approval on site.  
Maintain access to copies of legislation via the Internet.

## CS-EMSP-6 Environmental Monitoring & Measurement

### General Managers & Site Managers

Responsible for ensuring that resources are available for carrying out the environmental measurement programs

### Site Environmental Coordinator

Responsible for collating information and the preparation of protocols, measurement programs.  
Review of site monitoring and measurement programs

## CS-EMSP-7 Environmental Audit, Review & Performance Evaluation

### Line Managers

Implementation of the EMS in their areas of responsibility

### Portfolio Environmental Managers

Initiate appropriate review processes  
Coordinate the production of any Environmental Information and associated

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	data
	Development, implementation and maintenance of Corporate EMS
	Development and maintenance of EMS across all sites
	Review of Corporate EMS Manual and Procedures
Site Environmental Coordinator	
	Collection of specific performance data
	Review of site environmental Issues
	Site development, implementation and maintenance of the EMS
	Review of site environmental procedures
Employees and Contractors	
	Following site procedures including Environmental procedures in accordance with the site EMS
Internal Auditors	
	Conduct Internal Audits as per audit schedule
	Raise Improvement Requests

### **CS-EMSP-8 Guidelines for Health, Safety and Environment Plans**

Principal's Representative	
	Assess the hazards / risks associated with the work at the planning and scoping stage of the work / contract.
	Ensure the Health Safety and Environment Plan/s are approved prior to work commencing on site.
Contractor	
	Provide the Health, Safety and Environment Plan/s as requested by the Principal's Representative prior to work commencing on site

## 13. GLOSSARY

These terms are used in the Environmental Issues Register

Activity - is the term used to describe a process, location, piece of plant, goods, product, interested third party or community group which can interact with the environment.

Activity Group - the term used to describe a section of a station that groups several activities e.g. A Station, B Station etc.

Cause - is the term used to describe how an activity may interact with the environment to cause an impact be it positive or negative.  
example - ash dam (activity) breach (cause) or local community (activity) public opinion (cause).

Consequence - the outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain.

Contaminant - Chemical, material or resource involved in an environmental effect.  
Refer to Environmental Legal Compliance Manual

Continual improvement - process of enhancing the environmental management system to achieve improvements in overall environmental performance in line with the organisation's environmental policy.

Corrective Action - action to eliminate the cause of a detected nonconformity.

Environment - surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.

Environmental Effect - (impact) Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services. A single environmental issue may have a number of effects or impacts.

Environmental goal - overall environmental goal, arising from the environmental policy which is stated in the Corporate Business Plan. These are set by the organisation and may have a broad key performance indicator (KPI). Overall environmental goal, arising from the environmental policy which is stated in the Corporate Business Plan. These are set by the organisation and may have a broad key performance indicator (KPI).

Environmental harm - any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value. Environmental harm that is not trivial or insignificant, is further classified into "material environmental harm" and "serious environmental harm" by the Environmental Protection Act 1994.

Environmental incident - an event where contaminants are released to the environment or a complaint is received from the community.

Environmental issue - activity + cause  
An environmental issue is the combined term.

Note: -

A significant environmental issue is an environmental issue that has, or can have a significant environmental impact.

Priority environmental issues are those issues which are assessed for priority action based on environmental risk, corporate policy & legal obligations

Environmental issue description - detail ascribed to the environmental issue.

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Environmental Issue Management Plans - Plans developed to manage priority issues.

Environmental Management System (EMS) - the part of the overall management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy.

Internal EMS audit - a systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organisation's environmental management system conforms to the environmental management system audit criteria set by the organisation, and for communication of the results of this process to management.

Environmental performance - measurable results of the environmental management system, related to an organisation's control of its environmental aspects, based on its environmental policy, objectives and targets.

Environmental Policy - statement by the organisation of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets.

Environmental target - performance requirement containing sufficient detail to enable the setting of actions to achieve the target. Applicable to the management of significant issues, approval requirements or achievement of corporate environmental objectives.

Environmental value - a quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety; or another quality of the environment identified and declared to be an environmental value under an Environmental Protection Policy or Regulation.

Hazard - a source of potential harm or a situation with a potential to cause loss.

Likelihood - used as a qualitative description of probability and frequency.

Loss - any negative consequence, financial or otherwise.

Monitor - to check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change.

Nonconformity - non-fulfilment of a requirement of the EMS

Operational control - any mechanism which is required to manage a significant environmental aspect eg procedure, training module, consultation, engineering design, plan.

Priority - The decision to denote an identified Environmental Issue as priority (ie to be improved upon) is based on current environmental risk, controls in place, corporate policy and legal obligations.

Probability - the likelihood of a specific outcome, measured by the ratio of specific outcomes to the total number of possible outcomes. Probability is expressed as a number between 0 and 1, with 0 indicating an impossible outcome and 1 indicating an outcome is certain.

Protocol - guidance document which is used to ensure a consistent approach across an organisation

Environmental Risk - A function of environmental consequence and likelihood of an event/issue.

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Risk analysis - a systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences

Risk assessment - the process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria

Risk control - that part of risk management which involves the provision of policies, standards and procedures to eliminate, avoid or minimise adverse risks.

Risk identification - the process of determining what can happen, why and how.

Risk management - the systematic application of management policies, procedures and practices to the tasks of identifying, analysing, assessing, treating and monitoring risk

Risk reduction - a selective application of appropriate techniques and management principles to reduce either likelihood of an occurrence or its consequences, or both

Significance - The significance of an environmental issue is determined by assessing the associated environmental risk.

Transitional Environmental Program (TEP) - This refers specifically to management programs under the Environmental Protection Act 1994.

## 14. DOCUMENT HISTORY

Date	Revision Description	By	Approved
Jan 1999	Initial version	A. Hanly	G. Joy
May 2000	s. 3 – updated content. s. 5 – expanded Section 5.2. All other sections - minor editing/no changes.	R. Hartigan	B. Smith
Jul 2000	s. 5 – expanded Section 5.2. s. 10 – added EMS Management Review. s. 11 – added s. 11.4: Responsibilities. All other sections - minor editing/no changes.	R. Hartigan	B. Smith
Nov 2000	s. 5 – expanded Section 5.2. s. 7 – updated content. s. 8.2 – changes made. s. 10 – updated BMS Review. s. 11.3 – included new procedure. All other sections - minor editing/no changes.	R. Hartigan	B. Smith
Feb 2001	s. 11- EMSP-5 ERA. All sections – Document History.	R. Hartigan	B. Smith
Mar 2001	s. 6 – Added new issue definitions.	R. Hartigan	B. Smith
Dec 2001	s. 3 – updated power plant descriptions. s. 5 – edited 5.1 & updated 5.2. s. 8 – reference CS IM-1 and IM-2. All other sections - minor editing/no changes.	R. Hartigan	A. Aspinall
Nov 2002	s. 3 – updated power station descriptions. s. 5.2 – update. s. 9 – removal of reference to EMRO and Environmental Review. s. 10 – removal of reference to Incident Reporting Database. All sections – owner title & minor editing/no change.	R. Hartigan	A. Andersen
Aug 2003	s. 5 – Env Policy responsibility now GM Prod	R. Hartigan	A. Aspinall
Nov 2003	s. 1 – delete guide to online browser use. s. 2 – deleted outdated audit hints. s. 3 – updated power station descriptions. s. 5.2 – update. s. 6 – updated Issue Identification & EIMPs, deleted Env Action Plans, additional reference to EIR & User Manual. s. 9 – removal of reference to EPI & ECI, major editing, reference to EMS audit guide. s. 10 – added Internal Audit Schedule & ROMS references. s. 11 – deleted 11.2, updated 11.3 Responsibilities. s. 12 – definitions updated. All other sections - minor editing/no changes.	R. Hartigan	A. Aspinall
Mar 2005	s. 3 – installed plant & map updated. s. 5.2 – update.	R. Hartigan	R. Roduner
Jun 2005	s. 3 – CPP & ref to EIMP. s. 9.2 – Environmental reporting. s. 11.3 – Responsibilities updated to be consistent with changes to Procedures. All sections – owner title & minor editing/no change.	R. Hartigan	R. Roduner

## ENVIRONMENTAL MANAGEMENT SYSTEM

Date	Revision Description	By	Approved
Apr 2006	s. 1 – responsibility for approval. s. 2 - Alignment with ISO14001:2004. s. 3 – scope of EMS, reference to Brisbane office, amended scope of EMS to clarify application to Kogan Ck site re NCSI document review finding. s. 4 - Alignment with ISO14001:2004, updating reference documentation. s. 8 – reference section 6.1 on EIR. s. 10 – cross-referencing. s. 11.3 – Responsibilities updated to be consistent with changes to Procedures. s. 12 – updated glossary for alignment with ISO 14001:2004 additional terms. All other sections - minor editing/no changes.	R. Hartigan	R. Roduner
Nov 2008	s. 1 – approval of manual. s. 3 – amended Kogan Ck ‘Project’ references, JV details & map. s. 5 –target dates. s. 12 – removed table. All other sections - minor editing/no changes.	R. Hartigan	J. James
Jul 2009	Many of these changes are result of ISO14001 audit observations from past 2 years. s. 3.1 – Clarified that Kogan Ck currently not ISO 14001 certified although intended to be obtained in 2010. s. 5.2 – Major re-write & inclusion of flowchart & Corporate Business Plan goals. s. 7 – clarification of the release of environmental information. s. 8 - clarification of the management of potential environmental incidents. s. 9.1 – amendment of esaa code of environmental practice to sustainable practice framework. All sections - conversion of html format to Word doc.; document review information removed & condensed into one section; references to ‘licence’ or ‘authority’ changed to ‘approval’; references to site-specific documentation removed; minor editing.	R. Hartigan	G. Joy