



Clyde Bergemann Senior Thermal Pty Limited

Construction Environmental Management Plan

Client : Eraring Energy

Project

**Coal Combustion Product (CCP) Project
(Upgrade to Units 1 to 4 Fly Ash Collection and
Disposal Plant for Eraring Power Station
- Specification ER267)**

Authorised by Richard Hudson - Project Manager

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BACKGROUND

Introduction

This document constitutes the Construction Environment Management Plan (CEMP) for the Upgrade and Expansion of the Coal Combustion Product Management System at Eraring Power Station.

This CEMP has been prepared to fulfil the requirements of Condition 4.1 of the Minister's approval of the CCP project granted on 29th April, 2008.

The CCP project is divided into two distinct areas:-

- The design, construction, installation, operation and maintenance of the new fly ash collection, transfer, storage and pumping plant as set out under Contract ER267 under the control of Clyde Bergemann Senior Thermal (CBST)
- Flora and fauna management and land clearing for the placement of CCP in the storage facility will be undertaken by other contractors under the supervision of Eraring Energy personnel.

Project Description

Work associated with this project is identified within Eraring Power Station Specification ER-267 for the design, supply, install, operate and maintain fly ash collection, transfer, storage and dense phase pumping plant and associated items of equipment for Units 1-4 at Eraring Power Station. New fly ash slurry transfer lines are being installed to place fly ash in the existing ash dam area using new advanced pumping technology.

The project generally involves replacement of the existing fly ash collection air slides and ancillary equipment located underneath the existing fabric filters. New collection vessels will be installed directly underneath the fabric filters, modifying steelwork and platforms to suit the new equipment.

The fly ash will be pneumatically transported either via intermediate silos (one for coarse fly ash, the other for fine fly ash) or direct to the main storage silos. The fine fly ash is either transported to Fly Ash Australia for processing for use in the cement industry, or as with the coarse fly ash to the new main storage silos. If the material is unable to be reused it can be placed in the ash dam using the new high density fly ash slurry plant, pumping high concentration slurry to the ash dam via two pipelines.

A new compressor plant will be installed on the eastern side of Unit 3 which will include four compressors, air dryers, air receivers, connection for a temporary compressor and switchgear.

The route of the connecting pneumatic pipelines is mainly within the confines of the existing structure with additional new intermediate silos being installed between Units one and two.

A new pipe bridge is required to be installed between Units two and three to enable the pressurised fly ash to be transported in a level elevation across an existing access road. A new pipe bridge is also to be installed from Unit 4 to the fly ash storage and pumping plant where two main storage silos and one intermediate fine ash storage silo will be located.

A new high density fly ash slurry plant and control room will be constructed at the north end of the power generation area currently used for storage of the Principal's spare equipment.

This section of the construction and plant operation is planned to be separated from the main power generation area by a fence during construction and when completed.

New dual pipelines will be constructed from the high density slurry plant to facilitate the transport of high density fly ash slurry to the current CCP storage facility situated approximately three kilometres to the north of the power station. The route of these new pipelines generally follows the current open slurry canal route with some modification at the CCP storage facility end. These pipelines are outside of the main power generation area.

Commissioning of the installed plant will be undertaken in stages as new equipment is installed and where associated with plant operation will be undertaken in conjunction with Principal's requirements.

Clearing of vegetation at the CCP storage facility to allow placement of fly ash will be undertaken as set out in the Principal's "Flora and Fauna Management Plan" which is attached to this document. This work is not part of the Contract and will be performed by others.

Project Location

This project is to be installed at the Principal's Eraring Power Station.

Eraring Power Station is located adjacent to the Sydney Newcastle Expressway between Morisset and Toronto, near Dora Creek, approximately 150 km north of Sydney NSW.

The collection plants will be installed at each generating unit's existing fabric filter plant with intermediate silos installed between Units 1 and 2. The main storage silos and dense phase pumping plant will be installed at the northern end of the power station main site, north of Unit 4 in an existing storage area.

Construction Activities

The conditions of approval (CoA) for the CCP project require construction hours to be limited to 7am to 6pm Monday to Friday and 8am to 1 pm on Saturdays with no work on Sundays or public holidays (CoA 2.3). The following construction processes have been identified:-

Civil works including foundations and supports for the construction of

- Compressor house
- Main and intermediate storage silos
- High Density Slurry Plant control room and amenities
- High Density Slurry Plant equipment including pumps
- Modifications to and addition of access roadways in vicinity of the high density slurry plant
- Pipebridges
- Two High density slurry pipelines, supports and access roadways
- High density slurry plant area separation fence

Mechanical works includes the erection and installation of

- Compressor house including four compressors, air dryers, air receivers and pipework
- Two intermediate silos and fly ash collection vessels below existing fabric filters, including modification to existing handrails/structures to allow installation of new equipment.
- Fly ash collection pipelines from collection vessels, and associated structural steel
- Pipe bridges over an existing access road to support the collection pipe work
- High Density Slurry Plant control room and amenities
- High Density Slurry Plant equipment including two main storage silos, pumps, pugmills, conditioners and unloading equipment

Electrical works include the connection of power to the equipment and plant identified above for operation of the equipment.

- Connection of power to the control room and amenities
- Connection of power to utilities and support lighting for the High Density Slurry Plant operations and control functions
- Connection of power to the fly ash collection system to enable controls to be operated and monitored
- Modification to the existing 3.3kV switchboards
- Installation of power distribution/switchgear
- Control system including software
- Electronic data/control cabling and instrumentation for operation and monitoring of the plant.

The three construction processes identified above will likely consist of a construction crew totalling 60 employees. A peak of approximately 85 employees during construction of the compressor house and control room is likely. These numbers (including engineers, site managers, foreman and contracts administration) will be made up of approximately 45 people for civil works, 20 people for mechanical works and 20 people for electrical works.

Timing and Scheduling of works by CBST

The timing for the project is set out in the EA and was to cover a period of some 30 months covering the construction of the fly ash storage and pumping plant and then each unit connection with the last unit being connected during the major outage of spring 2010 with plant operational in early 2011.

Section 3.10.1 of the EA shows 39 weeks from possession of site until commissioning for construction of the dense phase pumping plant and storage silos. This period has been slightly extended under this contract to approximately 45 weeks due to long lead time items such as the high density slurry pumps.

Section 3.10.3 of the EA shows that unit connection of fly ash collection systems would occur from early 2009 until spring 2010. CBST has, through an improvement in construction techniques, brought forward this portion of the program such that all units will be connected by end of December 2009.

The overall construction program for works by CBST is 18 months commencing with site establishment. During this time clearing of land at the CCP storage facility will occur during October/November 2008 and again in October/November 2009. The final stage of clearing will occur in 2015 if required.

Construction and commission program generally as detailed below:

Civil works	Commence	14 July 2008	Complete	December 2008
Mechanical works	Commence	14 July 2008	Complete	November 2009
Electrical works	Commence	18 August 2008	Complete	November 2009

Commissioning will be progressive as equipment is installed, commencing February 2009.

The contract consists of five defined separable portions covering construction including:

Separable portion 1 – Plant design, Fly Ash Disposal Plant including dense phase slurry and batching plants, air compressor plant and buildings, controls and buildings and intermediate silos. Commences July 2008, complete May 2009.

Separable portion 2 – Fly ash collection system under the Unit 1 fabric filters, including ash vessels & interconnecting Pipework. Commences May 2009, complete June 2009.

Separable portion 3 – Fly ash collection system under the Unit 3 fabric filters, including ash vessels & interconnecting Pipework. Commences July 2009, complete September 2009.

Separable portion 4 – Fly ash collection system under the Unit 2 fabric filters, including ash vessels & interconnecting Pipework. Commences September 2009, complete November 2009.

Separable portion 5 – Fly ash collection system under the Unit 4 fabric filters, including ash vessels & interconnecting Pipework. Commences November 2009, complete December 2009.

Works To Be Carried Out By Others

Flora and fauna management and staged land clearing at the CCP storage facility will occur in conjunction with the works carried out by CBST. This work will be carried out under the supervision of Eraring Energy personnel.

The first stage of land clearing (approximately 7 hectares) will be carried out during October and November, 2008. The second stage of clearing (a further 7 hectares) will occur during October and November, 2009. The third stage of clearing (another 7 hectares) is anticipated to occur in 2015. However, this date could be delayed if reuse options of CCPs increases in the future.

Overall Works Program

A construction Program for the CCP project is below which includes work by CBST and timing for clearing works by others

Description	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Mobilise	■																	
Main plant - Civil works	■	■	■	■	■	■	■	■	■	■								
Main Plant - Erection works	■	■	■	■	■	■	■	■	■	■	■							
Main Plant - Electrical Works		■	■	■	■	■	■	■	■	■	■							
Control Building		■	■	■	■	■												
Slurry pipeline installation		■	■	■	■	■												
CCP Placement - Staged Clearing				■	■	■											■	■
Commissioning of Main plant								■	■	■	■	■						
Unit Collection plants - Unit 1											■	■	■					
Unit Collection plants - Unit 3													■	■	■	■		
Unit Collection plants - Unit 2															■	■	■	■
Unit Collection plants - Unit 4																	■	■

Purpose of this CEMP

- The CCP project was considered a major project under State Environmental Planning Policy (Major Projects) 2005 and is subject to the provisions of Part 3A of the EP&A Act.
- Concept approval was granted for the project on 14th December, 2006.
- Project Approval was granted for the project on 29th April, 2008.
- All government agency and stakeholder consultation with respect to the construction of the CCP management facility was undertaken during the preparation and finalisation of the EA and during the public exhibition period.
- At present there are no licenses relevant to the construction process.
- To identify the main components of the site specific construction environmental management plan to be implemented in association with construction activities and
- Provide a guide to the documentation which has a significant role in managing the environmental aspects of the project during the construction phase.

This CEMP is prepared as a supporting document for the Principal's submission for approval of the project to the approval authority (Department of Planning). This document demonstrates the organization's determination to undertake this project in a manner which meets all the environmental requirements in a controlled manner with a number of monitoring and measurements in place to ensure objectives are met.

Environmental Objectives

The objectives of this CEMP are to provide CBST and our subcontractors with an instrument to mitigate construction related environmental impacts. The objectives include:

- Provide a process for the implementation of all the mitigation measures and safeguards identified in the EA.
- Comply with the Principal's nominated licences or defined statutory requirements as advised and where applicable to various stages of the project.
- Site specific environmental aspects identified during construction as having significant impact will be fully discussed with the Principal and measurable controls to ensure compliance with nominated targets or objectives will be maintained.
- Setting the processes and responsibilities required for the implementation of the CEMP, including monitoring and review of the CEMP.

Environmental Management Policy

Clyde Bergemann Senior Thermal Pty Limited is a supplier of high quality product and services to the global power and mining industries.

Recognition of the organizations environment objective and performance targets forms part of the management and employee responsibilities within the organization.

Business objectives will consider the magnitude and risk of potential pollution output from the processes and environmental aspects in production and service process planning as essential part of the organizations management system.

Organizations policy is a commitment to continual improvement of processes and business operations to work within current and proposed environmental industry legislation.

The Organizations objectives, process controls and environmental aspect reduction performance will form part of an ongoing management review to develop process parameters which will continually strive to reduce potential for pollution of the environment.

Provision a working environment, which allows all employees to work with safety, and efficiency, and to foster amongst employees an attitude of personal responsibility for the achievement of organization environmental objectives.

All employees are encouraged to be diligent in processing work where potential effect on the environment exists and be aware of corrective, preventive action procedures to contain or prevent environmental pollution.

The Directors and Senior Management of Clyde Bergemann Senior Thermal Pty Limited supports the process of continual improvement in all operations within the organization.

The organizations environmental policy will be displayed in the entry foyer of the office and associated manufacturing, warehouse and applicable site facilities and available to any customer requiring a copy for their perusal.

Note Original signed copy in foyer of head office.

Tony Cervonaro

Managing Director

Tony Cervonaro

Clyde Bergemann Senior Thermal Pty Limited

16th May 2008

ENVIRONMENTAL MANAGEMENT RESPONSIBILITIES

Managing Director

The managing director is responsible for the operation of the organization and regular review of its performance in the construction and operation of plant.

Environmental responsibility

- Promote and provide leadership to develop and implement the organization's Environmental Management Systems at construction and operational sites under the organization's direct control.
- Participate and support other work areas where the organization provides construction services as part of its operation.
- Ensure the management and senior staff is adequately resourced to fully implement and maintain the organizations policies and established environmental management systems.

Project Manager

Reports to the Managing Director and is responsible for the construction activities and applicable plant operations undertaken on the Eraring Energy CCP project site. The responsibilities cover a wide range of disciplines and associated requirements. The management of environmental aspects identified on the site is part of the organizations responsibility to be a good member of the construction site workforces and nearby communities including consideration of operational parameters and associated controls.

Environmental reporting is an increasing requirement for large projects.

Project Manager Responsibilities for Environmental management of identified aspects on the Eraring Energy CCP site include:

- Implementation and management of requirements of this CEMP.
- Review operational requirements, plant design and plant commissioning activities to identify environmental aspects and significant impacts which require to be considered for the work to be undertaken.
- Review construction requirements and work activities to identify environmental aspects and significant impacts which require to be considered for the work to be undertaken.
- Promote and stimulate a high level of environmental awareness at all times with all personnel who participate in plant construction work.
- Ensure procedures are established and maintained for plant construction undertaken on the EE CCP site.

- Ensure non-construction workers who carry out associated engineering inspection, consulting, office administration and visitors to site are aware of the safe working requirements including nominated environmental aspects and controls.
- Ensure plant and equipment used on the site is able to perform in the designed manner and operates within the guidelines of the site approval and or agreed conditions to meet environmental requirements.
- Ensure an incident recording and follow up system is established and maintained for duration of the construction phase and operational period
- Ensure procedures are established for complaints management

Site Manager

Reports to the Project Manager.

Responsible for coordinating the actions associated with the construction work undertaken including employees, sub contractors, technical specialists and visitors.

Continually promote a high level of safety and environmental awareness with personnel who participate on the construction site or associated work place.

Duties include:

- Implementation and management of requirements of this CEMP
- Review construction requirements and activities to identify potential areas of environmental risk and preventive action to be initiated.
- Implement procedures and ensure all employees, contractors and associated workers undertaking construction work are aware of the existence of nominated procedures for environment aspects applicable to the Eraring Energy CCP project site.
- Ensure documented registers of personnel who carryout construction work on the Eraring Energy CCP site are established and maintained.
- Review safe working procedures for suitability and compliance with the Eraring Energy CCP site requirements and consider environmental aspects for their impact.
- Ensure non-construction workers who carryout associated engineering inspection, consulting, office administration and visitors to site are aware of the respective safe working requirements and applicable environmental aspects and controls.
- Ensure plant and equipment used on the site is able to perform in the designed manner and operates within the guidelines of the site approval and or agreed conditions including environmental controls.
- Trade suppliers such as concrete, structural materials and supplementary equipment operations require to be advised of their responsibility for following site instructions for safety and environmental management.
- Ensure complaints management procedures are adhered too.

Site Environmental Coordinator

Reports to the Project Manager/ Site Manager

Responsible for identification of environmental requirements for work procedures

Duties include:

- Implementation and management of requirements of this CEMP
- Lead by example and promote the sites environmental requirements at every opportunity.
- Participating in the planning and design stages of trade activities.
- Review work methods and ensure all conditions complied with.
- Participating in regular workplace inspections and ensure that any nominated improvements required from the inspection are initiated in the required time frame.
- Review the environmental performance of the construction work activities.
- Ensure nominated project environmental records are maintained & kept up to date.
- Communicate with the main sub-contractor representatives on environmental issues.

OH&S Coordinator

Reports to the Project Manager or nominated site manager

Responsible for establishing and maintaining the Occupational Health and Safety procedures and requirements specific to the Eraring Energy CCP site.

Duties include

- Lead by example & promote the site OH&S requirements at every opportunity.
- Insisting on correct and safe practices at all times.
- Monitoring compliance with safe work procedure.
- Prepare and conduct site construction safety inductions.
- Providing advice and assistance on OH&S to all employees.
- Participating in the planning and design stages of trade activities.
- Participating in regular workplace inspections and ensure that any improvements resulting from such an inspection are initiated within the required time frame.
- Ensure all records as required under the project OH&S Management plan are maintained
- Participate in safety meetings and other site based safety programs to provide support for consultation and discussion on a regular basis.
- Conduct accident/incident investigations.
- Coordinate rehabilitation for injured employees.
- Review safety reports and inspections.
- Communicating with the Site Manager and contractor representatives on matters relating to health and safety.

Project Administration Coordinator

Reports to the Project Manager and is responsible for the maintenance of nominated management systems and provide support for:

- Integrated Management System documentation which includes Quality, Safety, Environmental and associated documentation.
- Documentation and management of required documents of this CEMP
- Provide administration support for head office and site locations as required.
- Associated documentation of the organizations employee handling processes
- Provide support for training and development of personnel and increased environmental and OHS awareness and responsibilities
- Injured workers / worker rehabilitation programs

Document Manager

Reports to the Project Manager / Project Administration Coordinator

This role will be undertaken in conjunction with the project coordinator role depending on the stage of the project.

Responsibilities

Develop and update project documentation for the Eraring Energy CCP project

- Review projects requirements
- Provide documentation for the project as required
- Ensures project documentation is controlled where nominated for the project and assists in updating site related documentation.
- Manage records of site documentation as applicable to the Eraring Energy CCP site.

Site Supervisor / Foreman / Trade Specific Supervisors

Reports to the Project Manager / Site Manager

This position has similar responsibilities as the site manager and may deputise for the site manager in his absence.

The number of trade personnel on the site may direct what level of staffing is required of each trade and the site supervisory role may cover more than one trade.

Mechanical, Electrical, Civil supervision are the general trades defined.

Responsible for

Coordinating the actions associated with the construction work undertaken including employees, sub contractors, technical specialists and visitors.

Continually promote a high level of environmental and applicable safety awareness with personnel who participate on the construction site or associated work place.

Duties include:

- Implementation and management of requirements of this CEMP
- Review construction requirements and activities to identify potential areas of environmental risk and preventive action to be initiated.
- Implement procedures and ensure all employees, contractors and associated workers undertaking construction work are aware of the existence of nominated procedures for environment aspects applicable to the Eraring Energy CCP site.
- Ensure documented registers of personnel who carry out construction work on the Eraring Energy CCP site are established and maintained.
- Review safe working procedures for suitability & compliance with the Eraring Energy CCP site requirements and consider environmental aspects for their impact.
- Ensure non-construction workers who carry out associated engineering inspection, consulting, office administration and visitors to site are aware of the respective safe working requirements and applicable environmental aspects and controls.
- Ensure plant and equipment used on the site is able to perform in the designed manner and operates within the guidelines of the site approval and or agreed conditions including environmental controls.
- Trade suppliers such as concrete, structural materials and supplementary equipment operations require to be advised of their responsibility for following site instructions for safety and environmental management.

Technical Specialist / Consultants

Report to the Project Manager and or nominated personnel where appropriate to the project

- Provide specialist assistance as required.
- The resources of the technical specialist's role may be sourced from internal staff or external suppliers.

Quality Control Coordinator

Reports to the Project Manager / Site Manager

- Responsible for monitoring quality of construction outcomes
- Undertaking and or ensuring inspections and verification of the nominated levels of quality nominated in the project specifications are maintained

Subcontractors

The mechanical, electrical and civil works for the Eraring Energy CCP Project will be subcontracted to specialist companies. These subcontractors will report to the Project Manager / Site Manager

- The mechanical works has been subcontracted to Varley Power Services P/L, 21 School Drive Tomago, NSW 2310.
- The electrical works has been subcontracted to Downer EDI Engineering P/L, 7 Pennant Street Cardiff, NSW 2285.
- The civil works will be subcontracted to a company yet to be determined.

LEGAL AND REGULATORY REQUIREMENTS

The legal and regulatory requirements are applicable to the area within Eraring Power Station boundaries are covered by an Environment Protection Licence (No 1429) under the Protection of the Environment Operations Act 1997 and the project approval under Part 3A of the Environmental Planning and Assessment Act 1979.

Construction of this project will be undertaken within the limits defined by the existing licence and the conditions of approval granted by the Minister of Planning on 29 April 2008. The Project Approval is attached to this document (Appendix D).

Legislation applicable to the project are listed on pages 41 and 42.

Notification of Environmental Harm

If at any time significant harm to the environment is caused the Principal must be notified.

The Project Manager has responsibility for notification to the Principal and applicable authority where advised by the Principal.

Construction Responsibilities

Clyde Bergemann Senior Thermal Pty Limited, an Australian based company with Head Office in Smithfield Sydney, are contracted to design, supply, install, operate and maintain improved facilities for management of Fly Ash Units 1-4 for the power station as agreed for a period of twelve months from practical completion.

Work associated with this project is identified within Eraring Power Station Specification ER-267.

CBST is the principal contractor for the CCP project and has the overarching responsibility for all construction activities for the project.

Design Responsibilities

Design of the new plant and technologies is provided by another part of the global Clyde Bergemann Power Group, Clyde Bergemann Materials Handling Ltd (Doncaster UK) who will provide technical support and engineering support during the commissioning stages and operating phase.

Documentation Control

Document control is directed by the Project Manager through the Project Administration Coordinator and site documentation is managed by the Site Manager. Project management documentation is generated from CBST's integrated management system and will be applied to this site.

Table 1. Monitoring check list for approval of project documentation

CEMP item Description	Authority	Freq	Signed	Follow Action	Responsibility
Construction Environmental Management plan	Project Manager	Ref. page 44			Project Manager
Construction Schedules	Project Manager	Weekly			Project Manager
Site inductions (CEMS)	Site Manager	On-going			Site Manager
Meeting Schedules	Project Manager	On-going			Project Manager
CEMS Training Awareness Documents	Project/ Site Manager	On-going			Site Manager
Design Specifications	Operations Director CBD	As required			Engineering Manager CBD
Plant operating procedures	Operations Director CBD	On- going			Engineering Manager CBD
Work Method Statements	Site Manager/ Sub Contractor	Prior to commencement of work			Site Manager
Work Instructions	Site Manager	Prior to commencement of work			Site Manager
Project schedules including CEMS	Project Manager	Monthly			Project Manager
Structural Drawings	Operations Director CBD	Prior to commencement of work			Engineering Manager CBD
Aspect Risk Register	Project Manager	Prior to Commencement of work			Project Manager
Review & updates/ changes to Aspect Risk Register	Project/ Site Manager	6 monthly or as required			Project Manager
Environmental Control Monitoring Reports	Site Manager	6 monthly or as required			Environmental Coordinator
Environmental performance Reports	Site Environmental Coordinator	As required			Environmental Coordinator
Specialist Consultants Reports	Project Manager	As required			Project Manager

Environmental Related Documentation

Clyde Bergemann Senior Thermal Pty Limited has an established integrated management system incorporating design and supply, construction and installation, plant operations processes supported by administration and financial management systems.

The Environmental Management System forms part of the integrated management system (ISO14001:2004). This integrated management system is certificated to ISO 14001:2004, ISO 9001:2000, BS OHSAS 18001:2007, ASNZS 4801:2001

Documentation associated with Global operations support from Clyde Bergemann Power Group, Clyde Bergemann Materials Handling Ltd (Doncaster UK) for plant design, construction and operations phases.

Project Records

Project Manager /Site Manager are responsible for project records including environmental management system records

- Environmental records will be filed within the project filing system.
- Details of qualifications held by personnel responsible for environmental monitoring and assessment
- Minutes of CEMP management review meetings
- Follow up actions taken as result of meetings
- Environmental monitoring reports
- Internal and external environmental audit reports
- Site induction and training records including specific environmental subjects
- Records of sub contractor compliance/non-compliance
- Copies of permits and associated authorities
- A copy of all records will be maintained on site

Reporting

Responsibilities for reporting are defined within the Project Manager's and Site Managers responsibilities.

Distribution of reports is a responsibility defined in the Project Manager's position description.

The number and type of report will be set by the Project Manager

Site Management meet at frequent intervals to discuss the project performance including environmental issues.

Reports are substantially based on

- Monitoring data and records
- Identification of compliance
- Identification of non compliance
- Corrective actions
- Action items including means of communication to personnel and applicable monitoring.

Environmental Awareness Training

Training on environmental awareness will be provided by management and will be specific to the site environmental aspects associated with the construction phase.

As this project involves commissioning of plant and operation of the plant for a nominated period the training will need to cover all areas of the project.

It is planned to undertake training at each stage for site personnel

- Site establishment and construction
- Commissioning stage will cover construction and equipment installation.
- Plant operation will cover the design parameters of the plant and equipment.

The induction process provides

- Induction records to be maintained
- Conditions of entry
- Site office facilities, restricted areas
- Visitor's induction/ condition of entry
- Project overview of construction, commissioning, operation
- Receiving of deliveries
- An entry level to environmental aspects and their impacts
- Potential sensitive areas on the site
- Marine life and prohibition of fishing or swimming in natural waters
- Waste Management for construction site and office facilities
- Monitoring and measurement of environmental controls
- Monitoring check sheets and required period of monitoring
- Emergency and Incident management process

Project specific awareness training nominally will cover

- Identification of construction specific environmental aspects as set out in the CEMP
- Assessment of risk and significance of impact
- Identification of controls required to be put in place
- Planning of work method statement to ensure identified controls are in place
- Review nominated control performance
- Review site controls, daily, weekly
- Reports required for the project

The above items listed for awareness training is not exhaustive and site conditions will be considered for additional training to be provided if required.

Communications with community and other interested parties

Eraring Energy runs a community forum each quarter to inform local community groups of the progress of all projects. The CCP project has been the subject of many updates and presentations as part of the approvals process.

The Eraring Energy web site will be updated regularly as the project works are carried out. The site includes copies of the EA, concept approval and project approval. Additionally, the site will have contact details in regard to the project as well as updates mentioned previously.

Communication will be undertaken to inform interested parties of construction activities which may have an effect on their local environment area.

Forms of communication

Forms of communication will vary from

- Direct contact with affected personnel or associated contractor on the site
- Listing on community notice boards
- For external interested parties a letter drop may be required

Project management and site staff will make extensive effort to provide an open and responsive two way communication with interested parties before commencement of any abnormal operation which may affect their property access or their amenity.

Staff will be made available to communicate with interested parties and local stakeholders within a reasonable time frame.

Project staff will be trained in the manner of communicating with interested parties and associated stake holders.

Provision of environmental management plans and work method documentation will be provided for public perusal where required.

Environmental Complaints

Avoidance of environmental complaints is the objective and implementation of a sound environmental management plan to minimize disruptions to the neighbourhood or work associated construction areas.

Complaints on this site should be limited to inter contract or principal considerations. Provision of direct telephone contact number to site project management will be maintained.

Initial contact for complaints will be dealt with verbally by the Site Manager within 8 hours (business hours) of receipt, with the complaint logged in the improvement request register (IRR) – refer Appendix A.

Complaints logged via the IRR are reviewed and corrective action initiated depending on the level of action required, with a written response provided on completion of any investigation.

Emergency Response/ Incident Management

Where a construction or associated activity or event which has or may initiate an environmental deviation from defined controls and cause harm to the environment requiring remedial action it will be acted upon as follows:

- Immediate action to prevent further harm to the environment should be undertaken if safe to do so
- Immediate notification to the Project Manager or nominated representative
- Immediate notification to the Principal's Representative
- Where directed by the Principal's Representative notification to the regulatory authorities
- In consultation with the Principal, remedial action is to be initiated with required resources allocated to the incident, including outside resources for major incidents.
- Where directed by the Principal's Representative, request outside assistance from nominated organization able to assist in containment and remedial action.

Note

The Principal must at all times be advised of remedial progress and be consulted on any changes to methods or practices of remedial actions being undertaken.

Environmental Emergencies which may also be associated with accidents Emergency Contacts Phone or other contact details

Emergency Contacts	Phone or other contact details
Principal Representative	
Power Station Contact	
Project Manager/ nominee	
Site Manager/ nominee	
DECC (EPA) Pollution Line	13 15 55
Fire Brigade	000
Police	000
Ambulance	000

Management of spills are the most likely occurrence which requires a response, Emergency response for spills

- Be aware of emergency telephone numbers – for large scale spills call for assistance immediately as defined on emergency contact numbers
- For small spills follow advice on the MSDS of the product
- Stop the source of the spill immediately if safe to do so.
- Contain the spill and prevent it entering any storm or waste water system
- Clean up the spill promptly using suitable absorption materials
- Do not allow solvents or chemicals to soak into the ground

IMPLEMENTATION

Risk Assessment

Environmental Impact Assessment Documentation

Requirements of certification to ISO14001:2004 emphasise the identification of environmental aspects and assessment of their impacts on internal and external components of all work and operations to be provided for the construction and plant operations phases.

The identification process also requires the contractor to consider any environmental aspects associated with the work site from review of Environmental Assessment for this project which is available on the Principal's website.

Environmental Aspects Risk Register

The documentation lists all environment aspects and details each aspect and assessed impact on the environment. A risk assessment is undertaken to establish the level of risk associated with each aspect and the controls required to establish an acceptable level of operation or controls required for construction activities. This aspect risk register is part of site specific project management plan submitted to the Principal on possession of the site and commencement of construction activities.

Risk Assessment Process

(AS4360:2004, HB 436:2004 companion HS)

Selection of this standard is based on the growing use within Australia as a consistent methodology in practical terms for risk assessment covering a wide range of effects in a number of related fields of application.

Extracts are drawn from AS 4360 Companion Document HB 436:2004

Risk assessment for site construction environmental aspects generally are simplistic in nature and generally they fit into a category of high medium or low for significance of impact.

ISO14001:2004 provides sound guidance on the methodology for assessing environmental aspects for construction and operational activities.

The attached guide in ISO 14001:2004 also aligns with pathways of environmental output in as similar classification to environmental authorities for licenses.

Level of Risk

Risk categories may be linked to the level of management responsibility recommended and the time scale of the response required.

Table 3.1 Simple Risk Level Assessment

Likelihood	Consequences			
	Major	Moderate	Minor	
Likely	Red	Red	Amber	
Possible	Red	Amber	Green	
Unlikely	Amber	Green	Green	
Red	Immediate action			High Impact
Amber	Heightened Action			Medium Impact
Green	Manage by Routine Procedures			Low Impact

TRAFFIC MANAGEMENT PLAN

A traffic management plan is required to be developed as part of the CoA for the CCP project (section 4.2 b).

Traffic Management External to the Power Station

Management of the movement of heavy vehicle and equipment or associated over size loads can have a major effect on the surrounding residents from sources such as movement of machinery and equipment to nominated sites which can also be affected by:

- Load limits in the area
- Available clearance for wide or high loads
- Noise influence on the area from heavy haulage vehicles
- Vibration effects on buildings adjacent to roadways from passing heavy loads.

It is unlikely for this project oversize and/or over mass vehicle movements will be necessary. Almost all equipment will be delivered to site in standard 20ft or 40ft general purpose shipping containers loaded on standard semi-trailers. Cranes used for the project will be mobile cranes, generally no larger than a lifting capacity of 50 tonne, with a maximum of 100 tonnes. Should a larger mobile crane be required due to lifting constraints (position) or the unavailability of smaller cranes, these will be subject to the RTA guidelines as detailed for oversize and/or over mass equipment as detailed below.

Contact and discussions with the RTA and Lake Macquarie Council will not be required for the Eraring Energy CCP Project as no road closures are envisaged.

Traffic Route – Standard Loads

Almost all deliveries will be via 20ft and 40ft general purpose containers originating from overseas which shall be sent to Sydney port. The containers will then be delivered via standard road transport from Sydney up the F3 Freeway, taking the Morriset turnoff, along Mandalong and Wangi Roads, into Rocky Point Road then right up Construction Road and into Eraring Power Station. Other miscellaneous deliveries originating from within New South Wales will follow a similar route.

Should deliveries of plant such as pumps and compressors (shipped in specialised packaging) which shall be within standard width and weight, come into Newcastle Port, the likely route taken would be via Pacific Highway and the F3 Freeway.

Traffic Movements

The total number of traffic movements (semi trailers) into Eraring Power Station would be limited to a maximum of fifteen GP container deliveries per 24 hour period. The total number of GP containers delivered from Sydney Port to site for the construction period is approximately 170. Less than fifteen traffic movements are anticipated to originate from Newcastle Port.

Traffic Route and Movements – Oversize and/or Over mass Loads

In the event an oversized and/or over mass vehicle movement (including mobile cranes) is required as part of the works, a specialised heavy haulage transport company would be engaged to ensure all Statutory requirements are met. Reference to the RTA publication 01.085 “Operators Guide to Oversize and Over mass Vehicle Movements (Permits for Non-Agricultural Vehicles including Mobile Cranes” would be utilised. This publication and RTA requirement take into consideration the following:

Movement of heavy equipment and machinery

- Load limits apply on roadways, bridges
- Vehicle type restrictions apply to nominated roads (“B” Double limited to nominated routes)
- Limitations on roadways in proximity of the construction zone (private roads)
- Limitations on travel times using public roads
- Limitations on travel times for private roads
- Limitations on travel times and working hours in local communities

Reviews required for movement of heavy equipment

- Destination from point of dispatch to construction site
- Consideration of latest RTA or similar requirements
- Available routes to be travelled
- Police escort required
- Transport escort vehicles
- Affect on communities and residents within close proximity of the construction zone
- Review of known or planned road closures
- Review of community events in time slot of equipment or machinery movement
- Community consultation in applicable areas

Movement of oversize equipment or machinery

- Vehicle type restrictions apply to nominated roads (“B” Double limited to nominated routes)
- Side clearance over bridges and chosen route
- Height clearance of power lines and other cables
- Loads of extensive length needs to consider the access and clearance of bends in the road and access to plant areas
- Allowable travel times on freeways, motorways and local roads

Reviews required for movement of oversize equipment or machinery

- Destination from point of dispatch to construction site
- Consideration of latest RTA or local government council regulations
- Available routes to be travelled
- Police escort required
- Transport escort vehicles
- Affect on communities and neighbours of the construction zone
- Review of known or planned road closures

- Review of community events in time slot of equipment or machinery movement

Traffic Management within the boundaries of Eraring Power Station

Management of traffic within the boundaries of the power station and associated areas will be controlled with liaison and consultation with the Principal's representatives and other contractors on the site. Interruption of normal vehicle access to sections of the construction will be controlled and minimized.

Managing heavy and oversize loads on the construction site

It is not likely large non-mobile cranes will be required for the Eraring Energy CCP Project, however if large cranes are required to travel to the site the above considerations for heavy and oversize loads may apply.

Unloading of heavy and oversize equipment on site, setting up of cranes and transport vehicles on site require the same considerations as the transportation.

Large crane jibs for high and long reach work require extensive areas to set up on the site.

Very heavy lifts may require a number of other cranes and specialist equipment to set up the primary crane for the lift

Storage of heavy and or oversize equipment on site

Arrangements need to be made with the principal for storage of oversize or heavy equipment on site as the above consideration needs to be made.

CONSTRUCTION NOISE MANAGEMENT PLAN

A Construction Noise Management Plan is required to be prepared under the CoA for the CCP project (Section 4.2 c).

The management of noise levels is directed by the principals operating license requirements based largely on the time frame of normal activity during the working day.

The Principal's license does not have noise level requirements, however CBST will endeavour to restrict construction noise levels at the boundary of the following three closest receptors:

- 6A Border Street – noise at boundary, 55dBa
- Eraring Public School – noise at boundary, 42 dBa
- 53 Point Piper Road – noise at boundary, 43.7dBa

The above noise criteria has been based on the Emergency Gas Turbine Generator (EGTG) operational requirements of 85 dB at 1m above ground surface and 1m from the vertical external surface of the EGTG. In the absence of noise goals for the operation of the EGTG, it was determined to limit the intrusive noise levels at the three closest receptors to no more than 5 dBA above the measured background level.

Noise levels at these boundaries will be recorded and reported to the Principal prior to construction work commencing.

All work will be scheduled where practical within the standard working day and within the normal hours of work for this project.

Normal working hours are Monday to Friday 7am to 6pm and 7am to 1pm on Saturdays.

Construction equipment used on this site will normally be hired equipment in compliance with standard construction guidelines' which generate noise levels within a range of 80 to 96 dB at a distance of 5-10 metres.

Identification of the potential environmental impacts during construction will be identified, controlled, monitored and responsibilities nominated in accordance with the Environmental Aspects Risk Register contained in Appendix B. The schedule for construction work is shown in the works program on page 11.

Equipment used for monitoring will be used, tested and calibrated in accordance with manufacturers and industry standards.

The site environmental coordinator will be responsible for the monitoring programs as identified in the Environmental Aspects Risk Register. The programs will be monitored at the commencement of work and after any changes to site conditions such as inclement weather.

Reporting of the exceedances will be in accordance with the improvement request system with the IMS management System.

Complaint based construction noise monitoring and reporting will be in accordance with the section above headed "Environmental Complaints" on page 25. After receipt of the complaint and the initial response is given within 8 working hours, an investigation will be undertaken within 3 working days with the results notified to the Principal. In consultation with the Principal, the complainant will be notified of the results. If a breach of construction noise levels has been determined, steps shall be taken to mitigate the construction noise to acceptable limits. Noise levels will be taken after the mitigation measures are in place to ensure compliance of the Principals licence requirements.

Monitoring of noise generated in the construction zone

Noise monitoring where required will be undertaken by the contractor at nominated periods to ensure the noise levels are retained within specified levels of the Principal's licensed levels at the boundary fence. Monitoring will be carried out as follows:

- Prior to commencement of construction work to set base noise levels.
- On start up of construction activities at each of the work areas, i.e. underneath the fabric filters, at the compressor plant, the high density fly ash slurry plant and along the route of the dual dense phase slurry pipelines.
- When significant changes to construction activities occur.
- Upon receipt of a complaint.
- After mitigation measures have been undertaken to satisfy the breach of construction noise levels.

General list of Equipment to be used on the worksite

Excavators, Concrete vehicles
Cranes and associated lifting equipment
Dust control water tankers
Gully suckers or similar vacuum equipment
Road making equipment, graders, bulldozers, road and sealing equipment
Pipe laying equipment, welders,
Hand tools to support all trades
Trucks and transport vehicles for nominated equipment
Scaffolding, scissor lifts
Fencing equipment

Maintenance of equipment

Equipment used on the site by the contractor or suppliers will be maintained within equipment specification for noise containment and in good condition with absences of oil or other liquid leaks.

Condition of combustion engines will be maintained to ensure emissions of excess exhaust fumes is prevented.

Records of equipment maintenance will be maintained

EROSION AND SEDIMENT MANAGEMENT PLAN

An Erosion and Sedimentation Management Plan is required to be prepared under the CoA for the CCP project (Section 4.2 d).

Identification of the potential environmental impacts will be identified, controlled, monitored and responsibilities nominated in accordance with the Environmental Aspects Risk Register contained in Appendix B. Equipment used for monitoring will be used, tested and calibrated in accordance with manufacturers and industry standards.

The site environmental coordinator will be responsible for the monitoring programs as identified in the Environmental Aspects Risk Register.

Reporting of the exceedances will be in accordance with the improvement request system with the IMS management System.

Complaint based erosion and sediment monitoring and reporting will be in accordance with the section above headed "Environmental Complaints"

Soils contain plant nutrients, minerals, organic matter and seeds and may contain pesticides and other toxic substances used on the vegetation and soil over an extended period.

Machinery Operations

Machinery operations disturb and loosen soil potentially creating dust and debris, which is easily washed into waterways unless sediment controls are established.

Disturbed soil

Is especially vulnerable to erosion, which takes away fertile topsoil and reduces the ability to survive of plants and animals that depend on it

Runoff water

Runoff water from construction sites can travel into creeks and rivers via gutters and drains.

Contaminated runoff water

Can affect fish and other marine life

When soil, sand and other contaminants enter waterways they can:

- Block drains increasing flooding risk
- Lower the quality of drinking water.
- Spread weeds and smother water plants
- Create algae blooms and generate unpleasant smells
- Suffocate water animals
- Spoil the look of waterways

Mitigation Measures:

Mitigation measures are to conform or exceed the requirements of the "Managing Urban Stormwater: Soils and Construction (Landcom, 2004)" document.

- Install erosion and sediment controls before work starts.
- Divert runoff from upslope land away from the site by suitable catch drains.
- Install sediment controls down slope of the site to catch sediment. (silt fences, or bunds).
- Do not place materials in the gutter or on the road.
- Clearly identify site access points and limit vehicle entries where vegetation is to be preserved. Leave as much ground vegetation as possible. Install temporary fences to define no go areas that are not to be disturbed. This may include areas under tree canopies.
- Reinstate disturbed areas of vegetation as soon as possible.
- Install onsite waste receptacles such as skip bins.
- Stabilise any exposed earth banks when work is completed.

Monitoring of erosion and sediment controls

Monitoring of the erosion and sediment controls to ensure effectiveness of the mitigation (control) measures will be carried out as follows:

- Prior to commencement of construction work.
- On start up of construction activities.
- Regularly during construction activities, at least weekly and after significant rainfall events (greater than 15mm in 24 hours).

Marine Life

The power station has sensitive waterways containing marine life and has an obligation to prevent any water contamination of this pristine water system from plant operations or human social activities.

The nominated waterways are identified as:

- Area 1 – the one (1) megalitre pond along side the CCP area construction site which flows into Muddy Lake.
- Area 2 – the ash dam which overflows into Crooked Creek which can flow into Lake Macquarie or in high tides backflow into Whitheads lagoon

Minimize disturbance to surrounding water ways

The Principal has in place substantial controls for the prevention of contamination of these water ways.

No fishing or swimming in the nominated waterways or associated lakes.

Significant signage is in place to advise all personnel working within the power station boundaries of their obligations.

Security cameras monitor the waterways within the plant and associated utility areas.

Mechanical isolation of the operating plant area drainage system from the surrounding natural water is managed via a specific secondary drainage system to ensure any contaminated water is captured and managed by the Principal's water handling systems.

Slurry Pipeline Construction Area

This area is mainly outside the secondary drainage area and will be of interest during the construction of the dual pipelines to the CCP storage facility.

The distance of the pipelines from the sensitive water ways is considerable and risk of contamination from the construction of the pipeline is manageable via planning and the implementation of sound controls during construction.

Construction of the pipeline is over distance of approximately 3km, commencing at the high density fly ash slurry plant located at the northern end of unit four, continuing along the fire trail at RL140. Clearing of vegetation will be kept to a minimum and will be in accordance with the Flora and Fauna Management Plan detailed on page 36 of this CEMP.

AIR QUALITY MANAGEMENT PLAN

Identification of the potential environmental impacts will be identified, controlled, monitored and responsibilities nominated in accordance with the Environmental Aspects Risk Register contained in Appendix B. Equipment used for monitoring will be used, tested and calibrated in accordance with manufacturers and industry standards.

The site environmental coordinator will be responsible for the monitoring programs as identified in the Environmental Aspects Risk Register.

Reporting of the exceedances will be in accordance with the improvement request system with the IMS management System.

Complaint based air quality monitoring and reporting will be in accordance with the section above headed "Environmental Complaints"

Air Quality Dust and fly Ash

Fine Particulates, Fly ash and dust

Construction activities can influence the quality of local air by generation of dust, fumes, gases, or smoke.

Particulates and fines from above sources may exist within the plant locations during construction activities.

The Principal's current instructions on management of fine particulates will be followed.

Removal of part of the existing fly ash collection system during installation of new fly ash collection system may encounter a residue of fine fly ash in the current ducting.

Review of the working procedure will be undertaken in consultation with the Principal's representative to ensure the materials are contained within acceptable limits. The Principal shall ensure the systems are emptied and vacuumed out prior to removal of existing equipment by the contractor.

Dust Generated from Earth Works Excavation of plant and equipment foundations

The excavation of the foundations are reasonably limited on the project and placed within current power generation areas.

Management of the spoil will be undertaken in consultation with the Principal and in line with current spoil management processes on the work site

Dust Generated from Roadwork

Road works are involved with the project in the high density slurry plant area and adjacent to the slurry pipelines route to the CCP storage facility.

This construction will be controlled by work method statement detailing the methodology for controlling any dust generated.

Dust Generated from Pipeline Installation

The construction of the pipeline is generally following the current route of the slurry canal to the CCP storage facility.

The design of pipeline and joining methods has a major role in reducing the amount of earthwork and potential for dust generation.

Mitigation

- Planning of work/ scheduling/ reduced exposure to dust generation, smoke or fumes
- Cover materials and stockpiles or water disturbed areas
- Containment of dust, suppression with water application
- Work method statements considering the available control methods
- Selection of equipment and pipe laying process and methods
- Mulch cuttings rather than burn and do not burn plastic or rubber products.
- Ensure plant is in good mechanical order and does not emit excess exhaust or other fumes.

Stock Pile Management

- Store materials in Principal's defined areas for nominated materials.
- Protect against effects of wind.
- Dust management covers placed over materials within the nominated areas.
- Ensure addition or removal of product to the stock pile or allocated area is managed effectively.

Disposal of stockpile products

Disposal of product will be directed to an approved receptor or nominated location.

WATER MANAGEMENT PLAN

Identification of the potential environmental impacts will be identified, controlled, monitored and responsibilities nominated in accordance with the Environmental Aspects Risk Register contained in Appendix B. Equipment used for monitoring will be used, tested and calibrated in accordance with manufacturers and industry standards.

The site environmental coordinator will be responsible for the monitoring programs as identified in the Environmental Aspects Risk Register.

Reporting of the exceedances will be in accordance with the improvement request system with the IMS management System.

Complaint based water quality monitoring and reporting will be in accordance with the section above headed "Environmental Complaints"

Water Quality

Any water traversing or occurring on a construction site is potentially affected by local or construction operations.

Water will pick up sediment, oil, grease, nutrients, organic matter, rubbish, agricultural, petroleum or other chemicals which may contain soluble pollutants.

Contaminated water exiting from a construction site must be prevented from entering waterways, stormwater systems or underground water tables.

Environmental controls are required to initially prevent any contamination and or stringently control the effects on water passing through the site

Mitigation measures:

- Plan work area to reduce water entering construction zone
- Where able, drain surface water away from construction zone
- Ensure erosion and sediment controls are in place as detailed in the Erosion and Sedimentation Plan.
- Consider work practices to minimise contamination
- Maintain equipment to prevent fuel and oil leaks
- Store all chemicals in a secure bunded area

WASTE MANAGEMENT

Construction waste accounts for approx 20% of all waste discarded into landfill. The majority of the organization's operations generate community acceptable recycled products or high percentage of re usable products, which are stored on site for construction requirements.

Mitigation measures

- Reduce the use of materials
- Re use and recycle if possible
- Separate and recycle if possible
- Dispose of waste material, surplus chemicals, and rubbish at licensed disposal sites.
- Chemical and petroleum wastes should be well labelled.
- Avoid spillage during servicing of plant
- Be aware of potentially hazardous wastes such as asbestos, PCB's and glass fibre – these require specialist procedures.

HAZARDOUS MATERIALS

Most materials can be hazardous or dangerous to the environment if handled or stored incorrectly.

CBST may use a number of hazardous substances such as solvents, plastic glues etc. These require special precautionary practices to protect both the environment and operator health.

Mitigation Measures

- Always read and follow the information on the labels of chemical products. The label will have essential information about possible harmful effects of the chemical and procedures for safe use.
- Obtain material safety data sheets for all chemicals. These contain information about the chemical concerned and how to safely store, use and dispose of it
- Avoid products that can affect your health and damage the environment
- Store chemicals, including solvents and cleaners in a lock up store that has an impervious floor and can contain any spillage.
- Put waste chemicals in sealed and labelled containers for hazardous waste collection
- Take care not to spill materials. Clean up spill immediately

ASBESTOS

On occasions CBST may encounter asbestos materials during demolition or attachment to the Principals existing plant.

Mitigation Measures

- Do not remove asbestos product and isolate the area/product affected.
- Immediately advise supervisor /management of the presence and location of asbestos.

Advise Principal of location and seek direction

The site manager or project manager would engage the services of a specialist and qualified company/person to identify the asbestos. If asbestos is determined to be present, the specialist company would handle and remove the asbestos in accordance with the procedures as covered within the Occupational Health and Safety documents.

Waste material would be suitably sealed, labelled and disposed of at a licensed waste facility.

FLORA AND FAUNA MANAGEMENT PLAN

A Flora and Fauna Management Plan is required to be prepared under the CoA for the CCP project (Section 4.2 a). This plan was prepared by ENSR and is attached as Appendix C.

Native Fauna Habitat

The clearing of land for fly ash placement is not part of this Contract and will be carried out by others following the "Flora and Fauna Management Plan" prepared for the Principal as per Appendix C.

Excess disturbance of vegetation may destroy wildlife habitats.

Trees, bushes, grasses provide substantial part of fauna habitat and need to be protected and preserved.

There will be no vegetation affected during construction within the power station site or at the proposed new storage and pumping plant as these plant areas will be positioned on currently paved surfaces.

The slurry pipe line will follow existing roads and fire trails where ever possible to minimise disturbance. If vegetation is required to be removed it will follow the mitigation measures indicated below.

Disturbance to Vegetation

Native vegetation including, trees, shrubs and grasses is valuable.

Its preservation is important because it:

- Gives protection for plants and animals
- Provides a movement corridor for native animals
- Gives shelter and a food source for animals
- Provides a source of seed for revegetation
- Protects soil from salinity and erosion
- Provides an attractive landscape

Mitigation Measures

- Minimise machinery movement in vegetation.
- Retain or relocate tree hollows, where practical
- Be alert for native fauna movements
- Retain dead trees in areas of native vegetation if possible.
- Check the site for any trapped animals
- Clear or disturb only the vegetation that must be disturbed
- Confine vehicle movements and avoid movement on undisturbed areas
- Avoid storing or parking equipment under trees
- Re use cleared vegetation where possible for mulch, seed collection, or firewood
- Limit removal of vegetation from site to reduce risk of spreading weeds
- Protect trees when working in close proximity with physical protection or a limiting fence.

ARCHAEOLOGICAL, HERITAGE OR ABORIGINAL SITES

These sites will generally be advised by a client and may include Aboriginal or European sites of significance or natural geographical formations. There are many examples of heritage sites throughout the Sydney Metropolitan and regional areas.

Protection of identified sites

If such sites are in the vicinity or are encountered during our operations all activities will immediately cease and the relevant authority contacted before further work is undertaken as required under section 2.14 of the conditions of approval.

LEGISLATION APPLICABLE TO THIS PROJECT

The legislation applicable to this project is in accordance with Eraring Energy's Environmental Assessment and Project Approval dated 29 April 2008.

Details of applicable legislation are detailed below.

Matter	Detail
Local	
Lake Macquarie Local Environmental Plan 2004 (Lake Macquarie LEP) Local Government Act 1993	The proposed works fit within the definition of 'utility installation' under the Lake Macquarie LEP and are permissible without Council consent.
Regional	
Hunter Regional Environmental Plan 1989	The proposal is considered to be generally in line with the provisions of the plan as they relate to economic development and environmental protection in the region.
State	
State Environmental Planning Policy 2005 (Major Projects) SEPP 2005	Under the provisions of Clause 24 in Schedule 1 to SEPP 2005, the proposal meets the criteria for classification as a major development, as a development with a capital investment of more than \$30 million and being for the purposes of coal-fired and gas electricity generation, with the Minister being the approval authority.
State Environmental Planning Policy 14 – Coastal Wetlands (SEPP 14)	Eraring Wetland or 'Muddy Lake' is located on the EPS site and is listed under SEPP 14. It is located to the west of the site and is within a separate catchment to that of the power station therefore, there would be minimal impact upon the wetland in accordance with the aims of SEPP 14.
Environmental Planning and Assessment Act 1979	The proposed upgrade and expansion of the CCP management system constitutes a major project under Part 3A of the EP&A Act. Concept Approval for the project and a subsequent project approval were granted by the Minister for Planning respectively on 14 December 2006 and 29 April 2008.
Protection of the Environment Operations Act 1997 (POEO Act)	The subject site benefits from an existing environment protection licence (EPL) issued under the POEO Act. A variation to the licence under Section 58 of the POEO Act may be required.

National Parks and Wildlife Act 1974 (NPW Act)	An assessment of the proposed works on Indigenous Heritage was included in Section 7.6 of the Eraring Energy Environmental Assessment. The assessment concluded that Indigenous heritage was not likely to be impacted by the project. As the proposal was assessed under Part 3A of the EP&A Act, it is exempt from the need for a section 87 or section 90 Permit under the NPW Act.
Threatened Species Conservation Act 1995	The impact of the proposed CCP storage facility in relation to threatened species is discussed in Section 7.2 of Eraring Energy Environmental Assessment. The assessment concludes that no threatened species would be adversely affected as a result of the proposed project. CBST will comply with Eraring Energy's requirement.
Native Vegetation Act 2003	As the proposed upgrade and expansion of the CCP management system has been approved by the Minister under part 3A of the EP&A Act, the provisions of the Native Vegetation Act 2003 do not apply to the project.
Heritage Act 1997 (as amended 1998)	There are no known items of heritage significance under the Heritage Act 1977 on the site the subject of the proposed works.
Occupational Health and Safety Act 2000 – Regulation 2001	Covered by Company's OH&S Policy, including the Site Specific OH & S Management Plan issued for this project.
Worker's Compensation Act 1987 – Workplace Injury Management and Workers Compensation Act 1998	Covered by Company's OH&S Policy
Roads Act 1993	All road works are within site.
Noxious Weeds Act 1994	Refer Environmental Management System.
Dangerous Goods Act 1975.	WorkCover Licences will be applied for.

Site Establishment Environmental Aspect / Impact Planning Checklist

Clyde Bergemann Senior Thermal Environmental Management System Page 1
Site Establishment Environmental Aspect / Impact Planning Checklist

Site Eraring Power Station Contract ER 267 Site Review By _____ Date _____

Environmental Aspect/ type	Identified Y /N	Impact H M L	Control Req	Monitor Req
Air Quality Dust from construction site				
Normal Conditions Generated by plant/vehicle movements, haulage or processing operations	Y	L	Y	VISUAL
Abnormal conditions Dry, windy conditions	Y	M	Y	Y
Normal Conditions Dust generated from stockpiles		L		VISUAL
Abnormal conditions Dry, windy conditions?		M	Y	Y
Air Quality Smoke from Fires				
Are fires proposed to burn cleared vegetation or other waste material or litter.	N	L		VISUAL
Abnormal conditions Is there potential for unplanned fires (eg.dry grass)	Y	H	Y	Y
Air Quality Vehicle Emissions				
Construction plant and machinery generates visible exhaust emission	Y	L		Y
Environmental Aspect/ type	Identified Y /N	Impact H M L	Control Req	Monitor Req
Noise Construction equipment can generate significant noise that may disturb neighbouring residents.				
Nearby by noise-sensitive (eg schools, hospital)	N			
Normal Conditions Work standard construction hours	Y	L		
Abnormal conditions Construction work performed outside normal working	Y	M	Y	Y
Vibration and Air Blast				
Vibration affect from construction plant or operations damage to adjacent buildings	Y	L	N	N
Nearby structures which are sensitive to vibration- (ex. historic buildings)				
Vibration or air blast from construction plant may create disturbance to neighbouring residents				Y
Environmental Aspect/ type	Identified Y /N	Impact H M L	Control Req	Monitor Req
Vegetation and Fauna part of or adjacent to work areas Requires to be retained				
Construction vehicles will affect the vegetation	Y	H	Y	Y
Storage of materials , spoil effect area				
Construction activity introduce or spread weeds				
Is disturbed top soil allowed be re-used				
Can cleared vegetation be re-used elsewhere on site	Y	H	Y	Y
Will earthworks batters, etc. Require Revegetation /Landscaping				
Will areas of disturbed ground (eg. access roads, storage areas) need to be revegetated?	N			

Clyde Bergemann Senior Thermal Environmental Management System Page 2
 Site Establishment Environmental Aspect / Impact Planning Checklist

Site Eraring Power Station Contract ER 267 Site Review By _____ Date _____

Environmental Aspect/ type	Identified Y/N	Impact H M L	Control Req	Monitor Req
Native fauna present Land based Will animals be disturbed by construction work	Y	M	Y	Y
Will animals be permanently deposed of their habitat	Y	H	Y	Y
Native Fauna present Water Based Are fish in permanent water courses likely to be disturbed by construction work	Y	H		Y
Environmental Aspect/ type	Identified Y/N	Impact H M L	Control Req	Monitor Req
Contaminated soil or surrounding pavement Are areas of contaminated soil identified within the construction zone	N	L	N	N
Are areas of possible contaminated soil expected on the construction site or associated areas.	N	H		Y
If identified as part of the construction will it involve treatment or off-site disposal of contaminated soil?	N			
Environmental Aspect/ type	Identified Y/N	Impact H M L	Control Req	Monitor Req
Fuels/ oils / lubricants	Y			
Plant or vehicles be refuelled on site	Y	L		Y
Fuel storage on site/ bunding / self bunded	Y	L		Y
Maintenance of vehicles and plant	Y	L		Y
Chemicals				
Hazardous chemicals used during construction	Y	L	Y	Y
Hazardous chemicals stored on site/ bunding	Y	L	Y	Y
Environmental Aspect/ type	Identified Y/N	Impact H M L	Control Req	Monitor Req
Indigenous and Non-Indigenous Heritage	N			
Work site in an area where items of Aboriginal origin could be encountered				
Work site in an area where items of value as non-indigenous relics could be encountered				
Environmental Aspect/ type	Identified Y/N	Impact H M L	Control Req	Monitor Req
Waste Management	Y			
Construction process generation of surplus material that can be recycled	Y	L	Y	Y
Can be effectively re- used or disposed on site	Y	L	Y	Y
Requires to be disposed off site	Y	L	Y	Y
Environmental Aspect/ type	Identified Y/N	Impact H M L	Control Req	Monitor Req
Facilities / amenities for site personnel generate effluent	Y	L	Y	Y
Facilities site personnel generate kitchen waste	Y	L	Y	Y
Facilities site personnel generate office type waste	Y	L	Y	Y

Clyde Bergemann Senior Thermal Environmental Management System Page 3
 Site Establishment Environmental Aspect / Impact Planning Checklist

Site Eraring Power Station Contract ER 267 Site Review By _____ Date _____

Environmental Aspect/ type	Identified Y /N	Impact H M L	Control Req	Monitor Req
Restoration of Site Construction operations disturb ground around the construction site. Restoration of site required on completion of project.	Y	M		Y
Fuel storage areas or plant servicing areas may				
Restoration required on contaminated areas.				

MONITOR AND REVIEW

Environmental Monitoring

Responsibilities

Project Manager

Ensure the project's identified environmental aspects are consistently monitored and any deviation from planned control programs are identified and corrected in an effective manner.

Responsible to ensure the audit schedule for this project is maintained, audit reports are completed and reviewed.

Environmental Coordinator

Responsible to: -

- Ensure internal and external audits and associated monitoring programs are established and maintained
- Establish an environmental audit program for internal and external audits within 6 weeks of site establishment
- Establish an audit report format
- Establish environmental monitoring plan for the project including contractors work areas
- Ensure monitoring programs are maintained
- Review all audit reports for completeness and clarify any documentation deficiencies.

Site Manager

Responsible to ensure the project and associated personnel are available to be audited as per schedule.

Contractors' forming part of the project construction team will be included in the audit program.

Audit Schedule

Site establishment assessment

Full Project Audit

Full Project Audit

Nominated Period

6 weeks after the site is established

6 months after site established.

6 monthly until completion of construction.

Scope of Project Audit

Internal audit by will be conducted by CBST and will review:

- Procedures, process control plans, associated work procedures and work instructions forming part of this Construction Environmental Management Plan
- Completion and maintenance of project documentation
- Management of project records, completion of records
- Sub Contractors engaged on the construction site engaged to carry works identified on page 19 of this CEMP.

External audit by Certification body as part of the site sample method.

ISO9001:2000, ISO14001:2004, BS OHSAS 18001:2007 ASNZS 4801:2001
Scope determined by the certification body. Currently BSI (Formerly BSI Benchmark)

Audit reports

All audit reports will be filed in the project filing system.

Monitoring Records

Monitoring of project construction is usually by daily routine reviews for the site.

Weekly site inspections are undertaken to assess the environmental performance and recorded on weekly site environmental review check lists.

Daily diaries provide adequate coverage of routine matters associated with environmental issues.

Non-Conformance / Corrective / Preventive Actions

The key to environmental management programs is to identify potential problems and implement preventive action.

A number of opportunities exist to review work plans and risk assessment before work commences and modify work methods and available controls to reduce environmental outputs or damage to the environment.

Where construction activities are not meeting specified environmental performance levels they will be recorded, as follows:

- On the inspection and test plan and where appropriate in the site diary.
- All non conformances will be recorded on the site specific improvement request form or directly input into the electronic management system improvement request section.
- Environmental non-conformance as specified will be notified to the principal's representative immediately.

Records

All non-conformance will be recorded and form part of the project documentation for review at the next management meeting or on completion of the project of the construction process.

A summary of the improvement request register will be maintained Documented improvement request or corrective actions will detail the immediate corrective action or longer-term process changes to eliminate or reduce the risk of similar problems recurring.

It is important to maintain accurate records of the non-conformance/ improvement request and subsequent corrective actions for review by internal and external audit processes.

Principal Approval of corrective action

Where the corrective action involves environmental remedial action, external or other interested parties, and/or the principal's operations, no progress on improvement activity is to be commenced unless the principal has approved the proposed corrective action.

Review of Construction Environmental Management Plan

The Project Manager is responsible for the review of this CEMP:

- During the construction stage where significant construction changes are evident
- On completion of the project's construction stage.

Review of the CEMP will be documented.

Appendix A – Improvement Request Register (Sample only)

IR Numb	Date Raised	Raised By	Level Category IR , OBS	Responsibility Allocated	Improvement Action Required	Planned Action Action Taken Improvement Action Progress	Review Date	Status C Comp WIP
17	28/11/2008	Peter Abbey	IR	Production Manager	The bulk storage area at the rear of the yard Storage of Hazardous and Dangerous goods . A number of goods stored in areas where they do not belong or mixed storage of goods which may not be allowable. Flammable good store has a number of products stored	Area has been reviewed and drawing produced to identify the storage areas. Improvement has been noted . Current re assessment of the heat treatment area is being undertaken for environmental status of soil contamination. Changes may be made in these area		WIP
19	28/11/2008	Peter Abbey	IR	Production Manager	There is a nominated spill control area, No spill kit is available as the red spill kit is used as a garbage bin and has broken lid. The kit is not under the sign	Spill Kit area is under review		WIP
20	28/11/2008	Peter Abbey	IR	Production Manager	The kit is not under the sign	Spill Kit area is under review		WIP
21	28/11/2008	Peter Abbey	IR	Production Manager	The water recycling pit has an emergency shut of button inside the bunded area making it difficult to access without tripping over open top of pit.	21-02-08 Planned to relocate the position where current goods are stored. Current re assessment of the heat treatment area is being undertaken for environmental status of soil contamination. Changes may be made in these		WIP
22	28/11/2008	Peter Abbey	IR	Production Manager	There is a light used in open manway of the pit which has lead running and laying on the top of the pit . The lead is in a questionable condition and the requirement for the light being hung by the power cord needs to be considered	21-02-08 Planned to relocate the position where current goods are stored. Current re assessment of the heat treatment area is being undertaken for environmental status of soil contamination. Changes may be made in these areas		WIP

Appendix B – Environmental Aspects Risk Register

Appendix C – Flora and Fauna Management Plan (prepared by ENSR)

Appendix D – Project Approval