



**COAL COMBUSTION PRODUCTS (CCP)
PROJECT**

**OPERATION ENVIRONMENTAL
MANAGEMENT PLAN**

OEMP

**FOR CCP PLACEMENT IN THE STORAGE
FACILITY
AT ERARING POWER STATION**

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BACKGROUND

Introduction

This Operation Environmental Management Plan (OEMP) is prepared to satisfy the requirements of Condition 4.3 of the project approval, 07_0084 granted on 29 April, 2008. This OEMP is to be read in conjunction with the OEMP prepared by Clyde Bergemann Senior Thermal (CBST) for the CCP collection, transfer, storage and pumping plant to which this document is attached as Appendix C.

The operation and maintenance of the new CCP collection, transfer, storage and pumping plant will be under the control of CBST for a period of 12 months following successful testing of all four Units when connected. This is expected to commence in February, 2010. There is an option for this to be extended by a further 12 months but at this time the option has not yet been exercised. CBST has developed an OEMP which covers this area of work and this document is attached to that document as Appendix C.

Eraring Energy is reviewing options for the long term Operations and Maintenance (O&M) strategy for the CCP system in the future. The O&M may be carried by external staff or in house by Eraring Energy personnel. The OEMP for this area of plant will be based upon the CBST document and will be modified to suit the strategy developed by Eraring Energy and all future documentation will reflect any changes.

Eraring Energy will control the placement of CCP in the storage facility under Management Plans which are discussed in a later section of this OEMP. These plans cover: -

- The Habitat Offset Plan (HOP) developed for the project as a compensatory habitat package as required under conditions 2.1b), c), d) and e) of the project approval,
- Clearing of land in preparation for CCP placement as required under condition 2.1 a) of the project approval,
- The Flora and Fauna Management Plan (FFMP) developed for clearance protocols for the project as required under condition 4.2 a) of the project approval,
- Work within the CCP storage facility to minimise uncontrolled discharge from the storage facility through an increase in the overflow level of the spillway for the storage facility and works around the siphon pond to protect this equipment from the increase in water height as a result of the increase in overflow height as required under condition 4.3 f) ii) of the project approval,
- The Long Term Management Strategy (LTMS) for CCP placement within the storage facility over time as required under condition 3 of the concept approval for the project.

Project Description

The CCP project has three distinct operational areas. These three areas are: -

- The CCP transfer, storage and pumping facility,
- The CCP collection systems on each operating unit and
- The placement of CCP within the storage facility.

The first two areas are covered under the OEMP prepared by CBST to which this OEMP is attached as Appendix C.

The area of CCP placement is controlled by Eraring Energy staff. This involves approved clearing of land, construction of roads out into the CCP storage facility to allow placement of CCP further into the storage facility and the raising of the level of CCP placement. These processes are covered in the Management Plans later in this OEMP.

a. Location

The CCP placement facility is at Eraring Power Station, Rocky Point Road, Eraring, NSW, Australia.

PHOTOGRAPH 1 – CCP Management Facility



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b. Operational Activities

CCP is produced continuously from an operating power station. CCP is collected and reused where possible. The CCP project involves the design and construction of new CCP collection systems on all four generating units and transfer systems to transport CCP to plant areas for reuse or placement within the storage facility.

The excess CCP which cannot be reused must be placed in the storage facility for future reuse to enable the power station to continue to operate. This CCP placement and related activities such as clearing of land, building of roads to allow access to areas for CCP placement, works within the storage facility to increase the height of the spillway and associated works, groundwater monitoring and water quality monitoring to receiving waters are the major operational activities covered by this OEMP.

c. Timing and Scheduling

The new CCP plant will commence operations from August 2009 when the transfer, storage and pumping system will be available for service. This will be the first plant area to be commissioned using CCP provided from the existing fly ash collection system operated by FAA. Once this system is proven then the generating units will be connected.

As each unit collection system is connected, more CCP will be available for reuse through a truck loading facility and if unable to be utilised, CCP will be placed in the CCP storage facility on site using the new dense phase placement system.

Unit connections are proposed for: -

- First Unit Connection (Unit 1) - Complete by October 2009
- Second Unit Connection (Unit 4) - Complete by November 2009
- Third Unit Connection (Unit 3) - Complete by January 2010
- Fourth Unit Connection (Unit 2) - Complete by January 2010
- Performance Test of all four Units - Complete by February 2010

CCP placement will occur in the dense phase process only as Units are connected to the system. Quantity of CCP to be placed in the storage facility will be small to start. From February, 2010 all excess CCP produced will be placed in the storage facility using the dense phase placement method.

OEMP Context

a. Planning Process

The CCP project was declared 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. The CCP project (Application Number 05_0138) was granted Concept Approval on 14 December, 2006 following an Environmental Assessment process which included substantial periods of public review. The project was again subject of further public review when Project Approval was sought (Application number 07_0084). Project Approval was granted 29 April, 2008.

b. Environmental studies

Environmental Assessments (EA) were carried out both for the Concept Approval and Project Approval for the CCP project. These studies are available on the Eraring Energy web site (www.eraring-energy.com.au).

c. Approval / Consent Documentation

Copies of the signed front page of each document, the Concept Approval (05_0138) and Project Approval (07_0084) are attached (attachments 1). The full documentation is available on the Eraring Energy web site (www.eraring-energy.com.au).

ATTACHMENT 1 – Concept and Project Approvals



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d. Government Agency Consultation / Stakeholder Consultation

As part of the EA process, Government agencies, stakeholders and the public were consulted as shown in each EA prepared for the Concept Approval and Project Approval. These documents are available on the Eraring Energy web site (www.eraring-energy.com.au).

e. Environmental Management System (EMS) / Relationship with OEMP

Eraring Energy is compliant to ISO14001 which is externally certified to an accredited environmental system. Eraring Energy has prepared a Land Management Plan (LMP) which is the over arching plan for the station. The HOP sits under the umbrella of this LMP. The OEMP reflects the requirements of the HOP and project approval.

ENVIRONMENT MANAGEMENT

Eraring Energy has Intranet-based Environment and Safety Management Systems. These systems are described under the title of “Environment Management.”

Many of the OHS procedures relate to personal harm caused by hazardous substances. These same substances also harm the environment. In addition, the Emergency Response Plan, Plant Failure / Incident Reporting and Corrective Action procedures are common for both systems. The Contract Management procedures extend these predominantly operational systems to include contractors.

Safety Management System

A screen dump of the OHS Manual is shown below.

The screenshot displays the OHS Manual website. On the left is a vertical navigation menu with the following items: Our Safety, OHS Manual - EPS, Hydro and Wind Safety, Access to Apparatus Rules, Dangerous Goods, Emergency Response Plan, Fire Plan, Fitness for Work, Health, Safety Alerts, Our Environment, Our Plant, Our Projects, Our Business, Governance, My Employment, Who's Who, and Help Me. The main content area is titled "Section 1 - OHS Management System" and contains the following text:

OHS Management System

- [Element 1 - Health and Safety Policy](#) - This section of the OHS Management System sets out Management's commitment to OHS and covers Eraring Energy's OHS objectives and targets.
- [Element 2 - Planning](#) - In the Planning section of the OHS Management System you will find information on staying up to date with OHS Legislation, OHS improvement planning, performance indicators and risk assessment
- [Element 3 - Implementation](#) - Implementation is the largest Element of the OHS Management System and contains information on resourcing, responsibilities and accountabilities, training, consultation, OHS reporting, OHS documentation control, risk management (contractor safety, plant mods, P TWs, PPE, hazardous substances / dangerous goods, etc.) and emergency response.
- [Element 4 - Measurement and Evaluation](#) - This is where you can find information on testing, monitoring and inspection programs, health surveillance, incident investigation, OHS records and OHS auditing.
- [Element 5 - Management Review](#) - This element covers Management's review of the OHS Management System.

Note that the page also links to a Dangerous Goods, Emergency Response Plan and Fire Plan pages. These plans are also Intranet-based and contain links to site plans, contact lists and emergency scenarios, amongst other things. Copies of documents are available on request.

The SMS is audited by WorkCover every three years. The SMS is also accredited to AS 4801 and is also independently audited - surveillance audits every six months and re-certification every three years.

This page also refers to OHS Guidelines.

Section 2 - OHS Guidelines

A	B	C
<p>Abrasive Blasting - OHS003</p> <p>Accessing and Working on Ash Dams - OHS007</p> <p>Asbestos Removal - OHS006</p> <p>Automotive Battery Charging - OHS038</p>	<p>Housekeeping and Temporary Barriers - OHS011</p> <p>Biological Control of ACW Towers - OHS041</p> <p>Abrasive Blasting - OHS003</p> <p>Automotive Battery Charging - OHS038</p>	<p>Clinker Shooting - OHS008</p> <p>Confined Spaces - OHS016</p> <p>Colour Coding of Pipes - OHS002</p>
D	E	F
<p>Management of Bulk Dangerous Goods Depots - OHS009</p> <p>Accessing and Working on Ash Dams - OHS007</p> <p>Workplace Design and Ergonomics - OHS028</p>	<p>Testing Electrical Equipment - OHS004</p> <p>Using Electrical Equipment - OHS005</p> <p>Employee Health Services (EAP) and Health Surveillance - OHS050</p> <p>Excavation Procedures for Site Contractors - OHS039</p> <p>Workplace Design and Ergonomics - OHS028</p> <p>Working Near Electromagnetic Fields (EMFs) - OHS010</p>	<p>Fabric Filters - OHS019</p> <p>Fire Hazards - OHS017</p> <p>Freeing People Trapped in Lifts - OHS014</p>
G H	I	J K L
<p>Housekeeping and Temporary Barriers - OHS011</p> <p>Hot Work - OHS018</p> <p>Safe Use of Hazardous Substances - OHS047</p> <p>Employee Health Services (EAP) and Health Surveillance - OHS050</p> <p>Haul Road Maintenance - OHS030</p> <p>Use of Mobile Plant Near High Voltage Conductors - OHS024</p> <p>Working at Heights - OHS001</p>	<p>Incident Investigation - OHS044</p> <p>Infection Control - OHS020</p>	<p>Online Leak Sealing - OHS025</p> <p>List of Scheduled Work - OHS023</p> <p>Freeing People Trapped in Site Lifts - OHS014</p>
M N	O P Q	R
<p>Manual Handling - OHS022</p> <p>Use of Mobile Plant Near High Voltage Conductors - OHS024</p> <p>Safe Use of Mobile Phones While Operating Equipment / Vehicles - OHS036</p>	<p>Online Leak Sealing - OHS025</p> <p>Occupational Diving - OHS035</p> <p>Routine Inspections and Operations Risk Assessments - OHS040</p> <p>PCB Handling and Disposal - OHS029</p> <p>Pressure Hazards - OHS034</p> <p>PPE - OHS015</p> <p>Pickling of Stainless Steel - OHS013</p>	<p>Radioactive Sources - OHS037</p> <p>Raw Sewage and Secondary Treatment Effluent - OHS046</p> <p>Risk Management for Work Experience Students - OHS042</p> <p>Traffic, Roadway and Vehicle Safety - OHS033</p> <p>Work Process Risk Assessment - OHS032</p> <p>Routine Inspections and Operations Risk Assessments - OHS040</p>
S	T U V	W X Y Z
<p>List of Scheduled Work - OHS023</p> <p>Signs and Notices - OHS021</p> <p>Smoking - OHS031</p> <p>Spray Painting - OHS012</p> <p>Synthetic Mineral Fibres - OHS026</p> <p>Pickling of Stainless Steel - OHS013</p>	<p>Traffic, Roadway and Vehicle Safety - OHS033</p> <p>Visitor Safety - OHS027</p>	<p>Working at Heights - OHS001</p> <p>Workplace Design and Ergonomics - OHS028</p> <p>Work Process Risk Assessment - OHS032</p> <p>Risk Management for Work Experience Students - OHS042</p>



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Guidelines which are relevant to the EMP include abrasive blasting, asbestos removal, dangerous goods, excavation, fire hazards, housekeeping, hazardous substances, incident investigation, PCB disposal, pickling, spray painting, synthetic fibres, and traffic safety.

The full register, and other guidelines, are available on request.

Environment Management System

A screen dump of the ISO accredited EMS is shown below.

Our Safety	Our Environment			
Our Environment	General Information <ul style="list-style-type: none"> • Greenhouse • Factsheets & Newsletters • Reports • Audits • DECC • Department of Planning • PS Emissions Handbook • Department of Environment 	Environmental Management <ul style="list-style-type: none"> • Environment Training • Committees and Meetings • Waste Management • Land Management • Major Projects • Feral Animal Reporting Form 	Systems & Procedures <ul style="list-style-type: none"> • Policy and Procedures • Compliance Manual • Environment Strategy • Licences and Legislation • EMS Database • Environment Forms • Emergency Response 	 EPS Environment Manual EPS Site Specific links
Community Forums				 Hydro and Wind Environment Manu Hydro and Wind Site Specific Links
Environment Audits				
EPS Environment Manual				
Greenhouse				
Hydro and Wind Environment Manual				
Land Management				
Waste Management				
Our Plant				
Our Projects				
Our Business				
Governance				
My Employment				
Who's Who				
Help Me				

EPS Site Specific Links

Land Management	Major Projects	Routes	Community Forums	Emergency Response	Impact Statements	PCB Register
						

Environmental Manual

[Link to Printable Manual](#)

[1. Introduction](#)

[2. Policy and Objective](#)

[3. Planning](#)

[4. Implementation & Operation](#)

[5. Checking & Corrective Action](#)

[6. Environmental Management Review](#)

[7. Link To EMS Manual Reference Material](#)

Relevant links include reports, audits, training, committees, major projects, policy, legislation, community forums, emergency response (same as OHS), impact statements, PCB register and S4, 5 & 6 of the manual.

Copies of any document referred to above are available on request. The Environment Manager is responsible for ensuring compliance with Eraring Power Station's Environment Protection Licence (No 1429) and other legislation as detailed in the EMS.

IMPLEMENTATION

Risk Assessment

- *Environmental Assessment* – Environmental Assessments were carried out during the Concept and Project applications and can be found on the Eraring Energy web site (www.eraring-energy.com.au).

The following prompt list of typical issues was reviewed as part of the project management to assess the risk of the CCP project: -

- Erosion and Sedimentation Particularly during clearing
- Water Quality Runoff and discharge
- Groundwater Seepage issues
- Air Quality Dusting during placement
- Flora and Fauna During clearing
- Rehabilitation Capping of areas
- Indigenous heritage During clearing
- Non-indigenous heritage Not applicable
- Noise and Vibration During clearing
- Waste Not applicable
- Hazardous materials Not applicable – not used in process
- Traffic During clearing

A HAZOP was also carried out during the design phase of the new CCP plant and issues raised were identified and finalised during the design phase. See appendix E for more information.

- *Conditions of Approval* – Concept Approval was granted on 14 December 2006 and Project Approval was granted on 29 April 2008. These documents can be found on the Eraring Energy web site (www.eraring-energy.com.au).
- *List of Activities* – As stated previously in this OEMP the activities covered by this document are: -
 1. Protocols for preparation to clearing of land in readiness for the placement of CCP through FFMP.
 2. Clearing of land in approved stages as set out in the LTMS.
 3. Placement of CCP in stages as set out in the LTMS.
 4. Works within the storage facility to allow control of water discharge from the storage facility during rainfall events: -
 - a. Increase the height of the spillway by 1m.
 - b. Increase height of earthworks around the siphon pond to cater for the increase in spillway height.
 - c. Improve erosion control of the spillway discharge to Crooked Creek during uncontrolled discharge through installation of a new weir

5. Construction of roadways within the storage facility to allow more controlled and efficient placement of CCP within the storage facility

For more information see Environmental Management Plans later in this document.

- *Identification of Actual and Potential Environmental Impacts* – During the EAs for both the Concept Approval and Project Approval the various environmental issues were raised and these issues were investigated through modelling and reviews. These issues and associated reports can be found in the EAs on Eraring Energy web site (www.eraring-energy.com.au).
- *Identification of Significant Environmental Impacts* – As above these issues can be seen in the EAs on Eraring Energy web site (www.eraring-energy.com.au).
- *Designed Environmental Management Activities* – The following section of this OEMP sets out the Environmental Management Plans for the CCP project known as CPP Management Plans: -

Environmental Management Plans

a. CCP Management Plans

1. Introduction

These CCP Management Plans have been developed to satisfy the requirements of condition 4.3 f) of the Project Approval.

CCP will be placed in the CCP storage facility (or ash dam) using high concentrate slurry disposal (HCSD) or dense phase placement as the generating units are connected to the new CCP placement system. The first Unit will be connected commencing in August 2009 and will take approximately 8 weeks to install. This will be carried out whilst the unit is in service. Whilst this connection is occurring, all other units will continue to place CCP in the storage facility using the existing lean phase method of placement.

To ensure that the two different placement methods do not interfere with each other, lean phase placement is occurring at the north eastern corner of the storage facility whilst the dense phase placement will occur on the north western corner. Once all units are connected to the new dense phase system, the dense phase placement will be spread across the storage facility from three points of discharge.

In condition 2.2 of the concept approval for the project, it was required that clearing shall be carried out in not less than three stages and that no more

than seven hectares of vegetation is removed in any single stage of the proposal. The concept approval also limited the extent of vegetation clearing to “approximate extent of land clearance at year 10” of the EA in condition 2.1 of the approval which has been determined as RL140m.

In preparation for the placement of the CCP in the storage facility, land will be cleared. The first clearance of approximately 3.5 hectares occurred in October, 2008 whilst the second clearance of 7 hectares will occur prior to October, 2009. The first clearance was reduced in size from 7 hectares so as not to interfere with an active sea eagles nest discovered as part of the pre clearance protocol. A third clearance of 3.5 hectares will occur in June 2010. If required a fourth clearance of 7 hectares will occur at a later time but not prior to the end of 2015. The requirement for this stage of clearing is dependant on the reuse of CCP over time. The total clearing allowed under the project approval is 21 hectares.

As required by condition 2.1 of the project approval “a compensatory habitat package consisting of two hectares for each hectare of terrestrial vegetation removed as part of the project” was developed in conjunction with the DECC. Land offsets required under condition 2.1 b) of the project approval have been included in the Habitat Offset Plan (HOP). These offsets have been approved by the Department of Environment and Climate Change (DECC) and Department of Planning (DoP) under the HOP. These offsets cover two projects being the CCP project and the Upgrade project as required under condition 2.1 c) of the project approval. The offsets have been protected using a positive covenant which was accepted by DoP as a method for legal protection of the offset areas in September, 2008 as required by condition 2.1 e) of the project approval.

CCP in the dense phase form will be placed over the existing CCP lean phase deposits. To increase the volume of CCP placed, roads will be prepared into the storage facility at RL 135m and if required at RL140m (using CCP as the base) to allow access to areas further into the storage facility and optimise the area for CCP placement.

2. Stage 1 – Lean Phase Placement at North Eastern Corner of Storage Facility - COMPLETE

Lean phase CCP placement occurred from the western corner of the storage facility. In preparation for the new dense phase placement method the lean phase placement was transferred to the north eastern corner of the storage facility in July, 2008. This allowed the north western corner to be prepared for dense phase placement and preparatory clearing to occur.

3. Stage 2 – Preparation of HOP – See Attachment 2, 3, and 4 - COMPLETE

The HOP was prepared by Eraring Energy and approved by DECC and DoP in September, 2008. The HOP represented the compensatory habitat package which includes a schedule of vegetation clearing, is in line with the DECC’s

offsetting principles, is co-ordinated with the offsets of the CW Attenuation Reservoir and meets the requirements of connectivity as required under the project approval. Eraring Energy has prepared a positive covenant as the legal mechanism to protect the offset areas (which has been approved by DoP) and the Deposited Plan (DP) was approved by the Department of Lands (DoL) as DP 1134678 on 8/04/09. This DP has referenced the positive covenant.

The DP Approval from DoL is attached as Attachment 4.

The HOP is attached as Appendix A.

The Positive Covenant is attached as Appendix B.

ATTACHMENT 2 – Approval of HOP from DECC



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ATTACHMENT 3 – Approval of Boundary Change by DECC



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ATTACHMENT 4 – Plan Registration with DoL for Offset Area



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4. Stage 3 – First Stage Clearing (3.5 Hectares) - COMPLETE

Approval was granted to clear the first stage for the project by the DoP in October 2008 (see attachment 5). The first stage clearing of the storage facility commenced in November, 2009. Originally, 7 hectares were to be cleared. At the commencement of clearing it was determined that a sea eagles nest within the area to be cleared was active. So as not to interfere with the nest, a clearance protocol was developed to keep 200m clear of the nest thus reducing the available land to be cleared. As the project approval allowed for no less than 3 stages of clearing and Eraring Energy only cleared 3.5 hectares at this time it is likely that a further (fourth) clearance will be required. A pre clearance protocol was enacted and the approved Flora and Fauna Management Plan (FFMP) was utilised to clear threatened species and protect fauna prior to and during the clearing process. The land was cleared to RL135m.

ATTACHMENT 5 – Approval to clear land from DoP



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5. Stage 4 – Second Stage Clearing (7 Hectares)

The second stage of clearing is planned to occur prior to October, 2009 so as not to interfere with the breeding season of other threatened fauna species such as the little bent winged bat. The area to clear on this occasion will be the maximum allowed under the project approval (7 hectares). The area will be surveyed to ensure that no more than 7 hectares is cleared and the pre clearance protocol will be utilised to minimise the effect on flora and fauna. The FFMP will also be used when clearing occurs. The clearing will occur to RL135m.

6. Stage 5 – Raise Spillway Height and Siphon Pond Surrounds - See Attachments 6, 7, 8 and 9 - COMPLETE

As required under clause 4.3 f) ii), Eraring Energy developed a strategy to manage and minimise the likelihood of overflows from the CCP storage facility and weir during rainfall events and these works are discussed below.

To ensure that major storm events can be handled by the storage facility in future as the CCP covers a greater surface area and to minimise uncontrolled discharge to Crooked Creek, Eraring Energy has raised the spillway by 1 metre and increase the siphon pond surrounds to allow for this increase in overflow height. Additionally, Eraring Energy has prepared improvements in the baffles in Crooked Creek to assist in erosion control in the unlikely scenario of a major overflow event. The spillway increase in height was approved by the Dam Safety Committee (DSC) in March 2008 (see attachment 6 (a)). This work was completed in May 2009.

Modelling developed for the EA has shown that runoff from record rainfall events can be controlled by the continual operation of two return water pumps when the catchment of the CCP storage facility is at maximum. On occasions operation of two return water pumps has not been possible in the past when maintenance is required on a return water pump. To overcome this issue Eraring Energy is preparing to install a third return water pump which is to be a dedicated standby pump for the two normal in service pumps. If either normal in service pump fails for any reason, the standby pump will be placed in service maintaining maximum flow to eliminate the likelihood of overflow from the CCP storage facility. This work is to be completed during 2012/13.

ATTACHMENT 6 – Approval from DSC to raise spillway height



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ATTACHMENT 7 – Raising of Spillway Drawing



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ATTACHMENT 8 – Works Around Siphon Pond



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ATTACHMENT 9 – Crooked Creek Works



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7. Stage 6 – First Stage of CCP Placement (North Western Corner of the Storage Facility) at RL130 and RL 135m – See Attachments 10 and 11

Two new slurry pipelines are being installed as part of the new CCP project which will transfer dense phase fly ash slurry to the CCP storage facility. The pipe lines run along an existing pipe route and then along an existing fire trail at RL 140m out to the storage facility. These lines will each have three discharge points within the storage facility and these discharge points will run from RL140m to approximately RL 130m or 5 vertical metres above the existing storage facility level. The natural fall will allow CCP to be placed using gravity towards the storage facility surface. Until the second clearing is finalised CCP will be placed from RL 135m in the same area. This will allow approximately 9 months of CCP placement (or 0.7 million cubic metres) to occur before the discharge points will need to be moved further east at RL135m to allow more placement of CCP.

ATTACHMENT 10 – CCP placement at RL130m



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ATTACMENT 11 – CCP Placement at RL135m



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A3.pdf

8. Stage 7 – Clearing of remaining 3.5 hectares at RL135m

The remaining 3.5 hectares of land at RL135m will be cleared prior to October, 2010 to allow CCP to be placed at the higher level in the second stage of CCP placement. Further clearing beyond this will not occur until after the end of 2015.

9. Stage 8 – Second Stage of CCP placement at RL135m – See Attachment 11

CCP placement will utilise the discharge points across the storage facility to place CCP to RL135m over the previously placed CCP at RL130m. This is expected to last a further 9 months (or 0.6 million cubic metres of CCP placement to a total of 1.3 million cubic metres).

10. Stage 9 – Increase CCP placement at RL135m Using Roads – See Attachment 12

To increase the quantity of CCP to be placed in the storage facility, roads will be constructed from CCP out into the storage facility. This will allow the CCP to be placed further towards the south of the storage facility. The CCP will not be allowed to encroach within 200m of the siphon pond to maximise the storage facility use for storm surge. The roads will also allow backfill to RL 135m using CCP to maximise the capacity of the storage facility. This will allow placement of an additional 5 million cubic metres (or approximately an additional 5 years of CCP placement for a total of 6.3 million cubic metres).

ATTACHMENT 12 – CCP Placement at RL135m with Roads



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11. Stage 10 – Clearing of land to RL 140m (if required)

Depending on the reuse of CCP developed by Eraring Energy, clearing of land up to RL 140m may be required. If required land will be cleared to RL140m using the same protocols as were used in previous clearings. This will not occur before the end of 2015 as indicated in the Long Term Management Strategy (LTMS). Again a maximum of 7 hectares will be cleared.

12. Stage 11 – Placement of CCP at RL 140m with roads – See attachment 13

CCP will be placed over the CCP placement at the RL 135m. Roadways will be increased at RL 140m at the same time to allow maximum placement of CCP in the storage facility. It is expected that a total of 10.3 million cubic metres of CCP will be placed with this method.

ATTACHMENT 13 – CCP Placement at RL140m with Roads



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13. Stage 12 – Future CCP Placement beyond stage 10 – See attachment 14

Timing for this or the need for this requirement is not yet available as it is dependent upon the ability of Eraring Energy to increase the reuse of CCP. Eraring Energy has carried out a review for the placement of CCP by back filling from the south of the CCP placement area. An additional 11 million cubic metres of CCP is expected to be placed with this method. This position will be developed further over time as the reuse of CCP becomes clearer.

ATTACHMENT 14 – CCP Placement from South for future



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14. Groundwater Monitoring Program

Eraring Energy has prepared a groundwater monitoring regime which is to be submitted to DoP as required under condition 3.2 of the project approval. This regime includes utilising relevant existing bore holes, installation of a new background bore hole up gradient of the storage facility and new bore holes to allow monitoring of the affect on groundwater of seepage from the storage facility as required under condition 4.3 f) i). This program is attached as Appendix D.

b. Water Quality Monitoring to Receiving Waters

Eraring Energy as part of the groundwater monitoring regime has developed a quarterly monitoring program for all bore holes, storage facility concentration of contaminants and discharge to the outlet canal. See appendix D for more information

MONITOR AND REVIEW

Environmental Monitoring

Eraring Energy has a multiple approach to reporting environmental performance for projects. These levels of review are: -

- Project weekly reports
- Project steering committee reporting each month
- Monthly Production Environmental Meeting
- 6 weekly Executive Environment Meeting
- Quarterly Board Environment Meeting

At these meetings environmental plans, incidents, reports, issues and corrective actions are reviewed.

Once the project is completed, ownership will revert to the Asset Boiler Team and they will report to the last three meetings as part of the review process. This team will carry out daily reviews of the CCP storage facility as part of their duties.

- *Monitoring Checklist*
 - Environmental Auditing

Eraring Energy's EMS and SMS are independently audited for accreditation compliance at least every three years (WorkCover, ISO and AS). Components of the systems are audited more frequently.

- *Audit program*
 - Corrective Action

All employees and contractors are urged to report all safety and environmental issues or incidents to their supervisors. Supervisors have the responsibility of putting the first line corrective action in place and/or ensuring further corrective action is initiated as required. Corrective action can be initiated by phone, email or intranet.

An intranet based incident reporting system exists with nominated Eraring Energy officers responsible for initiating Plant Failure/Incident reports, if required. These incidents and associated corrective actions are reviewed at the station's monthly environment and safety meetings.

- *Procedures for Non Compliance*
 - OEMP Review

The CCP project is an ongoing project that will most likely continue through the life of the power station or 2032. The OEMP will be monitored for issues such as with land clearing, threatened species, CCP placement, groundwater quality, and overflow issues.

- Each stage of clearing will be carried out in accordance with the protocols set down in the FFMP. Any changes required to this plan following previous clearing will be included before the next clearing of land takes place.
- The protocols set out for threatened species in the FFMP will be followed and updated if required.
- The CCP placement plans will be reviewed when CCP storage capacity is reviewed following surveys of the storage facility. These surveys will be typically carried out every 12 months.
- Groundwater quality will be monitored quarterly and as trends are developed, mitigation procedures will be incorporated to minimise or eliminate if possible any contamination issues.
- Discharge concentrations to the outlet canal will be monitored and if trends are developed that raise concerns, mitigation procedures will be put in place to minimise any contamination issues.

RISK ASSESSMENT REVIEW

Issue	During what phase?	Risk Management Strategy	Action By	Action Date	Status
Erosion and Sedimentation	<ul style="list-style-type: none"> a. During clearing b. Following clearing for ash placement 	<ul style="list-style-type: none"> a. Staged clearing to minimise area open to erosion. b. Clearing to use mulching as last stage. When covered in dense phase CCP issue will be removed 	<ul style="list-style-type: none"> a. Project Manager b. Project Manager 	<ul style="list-style-type: none"> a. Prior to 1st clearing b. Prior to placement 	<ul style="list-style-type: none"> a. Complete b. Complete
Water Quality	<ul style="list-style-type: none"> a. Discharge to Crooked Creek during high rainfall events b. Discharge to Outlet Canal for level control 	<ul style="list-style-type: none"> a. <ul style="list-style-type: none"> i) Ash Dam over flow level increased by 1m to allow capture of record rainfall events. ii) Increase height of surrounds around siphon pond - allow for increase in overflow height iii) Install new improved baffles in Crooked Creek to minimise erosion during overflow iv) Install third Return Water pump for use as standby in loss of in service pump b. <ul style="list-style-type: none"> i) Model discharge to canal using dense placement. ii) Monitor levels of contaminants in outlet canal as per EPL. 	<ul style="list-style-type: none"> a. Project Manager b. Project Manager 	<ul style="list-style-type: none"> a. <ul style="list-style-type: none"> i) June 2009 ii) June 2009 iii) June 2009 iv) 2013/14 b. <ul style="list-style-type: none"> i) During EA ii) During operation 	<ul style="list-style-type: none"> a. Complete i), ii) and iii) in May 2009-07-01 iv) In budget b. <ul style="list-style-type: none"> i) Complete ii) Monitor
Groundwater	Prior to placement of CCP using dense phase technique	<ul style="list-style-type: none"> a. Develop Groundwater Monitoring Program b. Install new background borehole up gradient of the storage facility c. Review if existing boreholes are acceptable for use and utilise if acceptable d. Install new boreholes if required 	<ul style="list-style-type: none"> a. Project Manager including b, c and d. 	<ul style="list-style-type: none"> a. July 2009 b. June 2009 c. July 2009 d. July 2009 	<ul style="list-style-type: none"> a. Underway b. Complete c. Underway d. Complete

Air Quality	a. Dust generation during clearing b. Dust generation during CCP placement	a. Use water tanker to keep dust down and mulch after clearing b. Dense phase forms crust and little dust generated and utilise spray system for dust mitigation	a. Project Manager b. Project Manager	a. October 2008 b. August 2009	a. Complete b. Underway
Flora and Fauna	During clearing phases	Develop Flora and Fauna Management Plan (FFMP) with protocols for clearing	Project Manager	Prior to 1 st clearing	Complete
Rehabilitation	When CCP areas have reached capacity	Long term to develop CCP Storage Facility Rehabilitation Plan	Project Manager	August 2010	
Indigenous Heritage	During Clearing	Immediately cease work if discovered and report to DECC.	Project Manager	Nothing found to date	Ongoing with clearing
Non-indigenous heritage	Not Applicable				Not Applicable
Noise and Vibration	During clearing	Ensure machines used during clearing meet noise requirements (85dBa)	Project Manager	Prior to each clearing	1 st clearing successful
Waste	No waste generated during process	All material cleared reused for mulching or roosting sites. Seed collection prior to clearing and propagation of local species.	Project Manager	With each clearing	1 st clearing successful
Hazardous Materials	Not Applicable	No chemicals used on site during process			Not Applicable
Traffic	During Clearing	Area for process is away from most high traffic areas. During clearing, restrictive access will be put in place.	Project Manager	With each clearing	1 st clearing successful