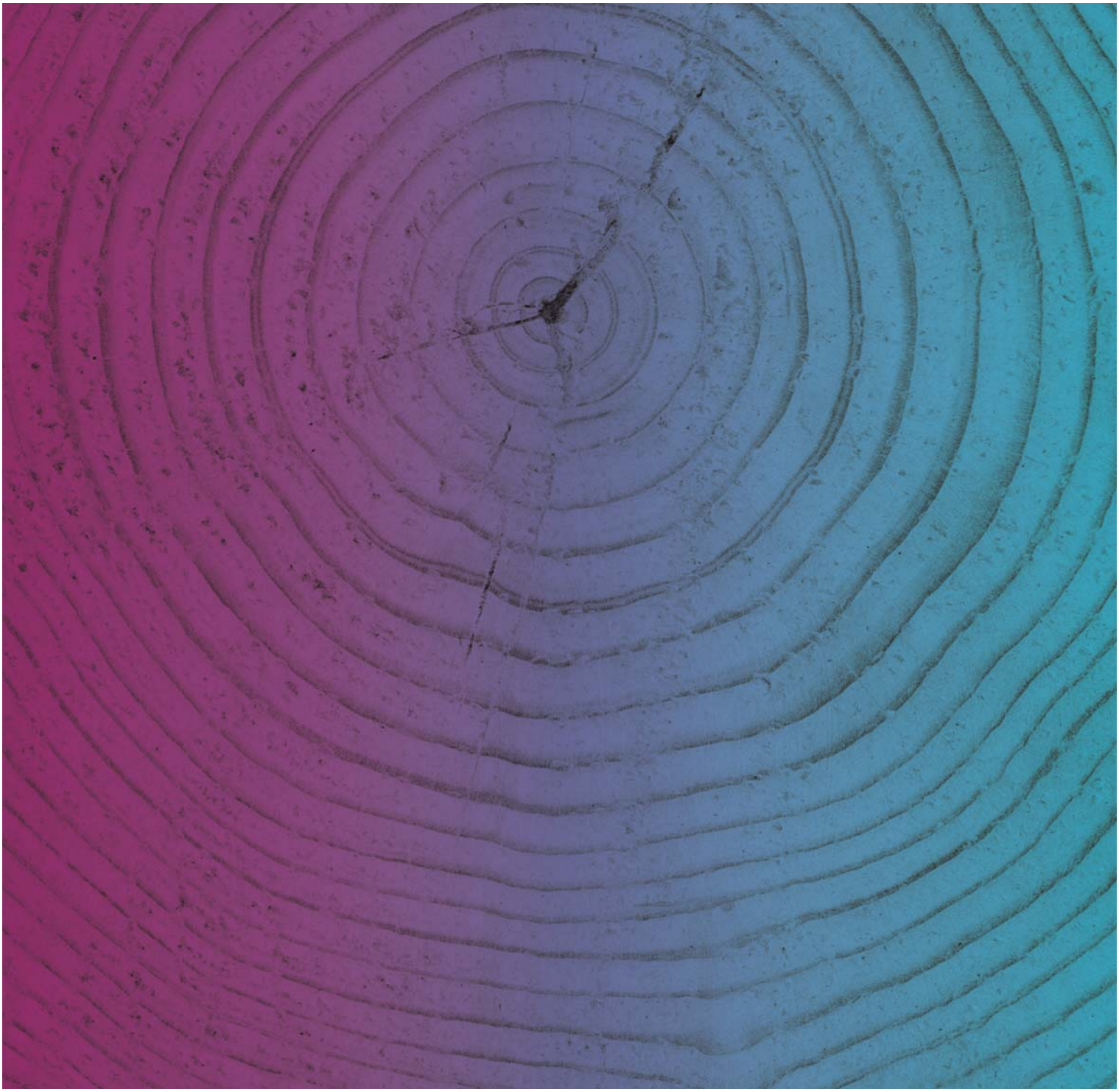
Environmental Services for the Hunter River Pump Station

Macquarie Generation

23-Aug-2013

Independent Environmental Audit

Hunter River Pump Station - Post Construction



Independent Environmental Audit

Hunter River Pump Station - Post Construction

Client: Macquarie Generation

ABN: 18 402 904 344

Prepared by

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Quality Information

Document Independent Environmental Audit

Ref 60153014

Date 23-Aug-2013

Prepared by Kate Michelmore

Reviewed by Graham Taylor

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
A	04-Dec-2012	Draft for Client Review	Peter Horn Associate Director - Environment	
B	05-Jul-2013	2nd Draft for Client Review	Peter Horn Associate Director - Environment	
C	23-Aug-2013	Final	Peter Horn Associate Director - Environment	

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Executive Summary

AECOM Australia Pty Ltd (AECOM) was commissioned by Macquarie Generation (MacGen) to conduct the post-construction Independent Environmental Audit (IEA) for the Hunter River Pumping Station Upgrade Project (the Project) in accordance with NSW Department of Planning *Project Approval 06_0259 (as modified)*, dated 23 May 2007 and subsequent modification approved 27 November 2007.

This Audit was undertaken generally in accordance with *AS/NZS ISO 19011:2003 – Guidelines for quality and/or environmental management systems auditing*.

This audit covers the period between May 2007 and September 2012, and includes:

- Comments on MacGen compliance against the conditions of *Project Approval 06_0259 (as modified),* Environmental Assessment and other environmental approvals and management plans (Section 3.0);
- An assessment of the effectiveness of the environmental management at MacGen (Section 4.0); and
- A list of recommendations flowing from the findings of this audit (Section 5.0).

This audit was conducted by Peter Horn and Kate Michelmore and consisted of a detailed desktop review of documentation, interviews with key MacGen staff and a site visit of Hunter River Pump Station Augmentation. Additional desktop reviews were conducted prior to and following the site inspection. A peer review of the IEA was conducted by Graham Taylor.

MacGen has in place an Environmental Management System (EMS) that is certified to the international standard ISO 14001:2004 – Environmental Management Systems – Requirements with Guidance for Use. The EMS includes the operation of the Hunter River Pump Station and forms the basis of environmental management at the site.

Over 292 conditions and commitments in the documents listed above were audited, with a total of 33 non compliances. Many of the conditions listed as Not Compliance were due to the audit team not being provided with the information required to verify compliance.

A consolidated list of recommendations stemming from these non-compliances can be found in Section 5.0. Individual non-compliances are outlined in more detail in Section 3.0. At the time of the audit, MacGen staff were made aware of many of the identified non compliances against conditions of *Project Approval 06_0259 (as modified)* and the environmental assessment and environmental management plans assessed.

Since the time construction concluded, to the time this audit was carried out a lot of personnel changes occurred within MacGen's organisation. These changes have resulted in unsatisfactory record keeping of environmental information. In many cases during the audit it was evident that MacGen had originally satisfied their regulatory responsibilities outlined under *Project Approval 06_0259 (as modified),* however evidence to verify compliance at the time of the audit was unable to be obtained.

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1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was commissioned by MacGen to conduct the post-construction Independent Environmental Audit (IEA) for the Hunter River Pumping Station Upgrade Project (the Project) in accordance with NSW Department of Planning *Project Approval 06_0259 (as modified)*, dated 23 May 2007 and subsequent modification approved 27 November 2007.

The IEA was undertaken consistent with Schedule 2 Condition 3.1 of *Project Approval 06_0259 (as modified)* and focused on verification of the site's compliance against key approvals, licences and supporting documents.

This report outlines the findings of the IEA and provides recommendations to improve compliance and environmental performance of the facility.

1.1 Background

MacGen is a State owned corporation, which is responsible for the operation of two coal-fired power stations: Bayswater and Liddell, in the Upper Hunter Region of NSW. The two power stations provide about 40% of the state's electricity supply. An annual water supply of approximately 60,000 megalitres (ML) is required for the operation of the two power stations, most of which is required for the power station cooling water systems.

The Hunter River is the primary source of water for the two power stations. Water is extracted from the Hunter River in accordance with MacGen's Water Management License.

The *Project Approval 06_0259 (as modified)* was issued on the 23rd May 2007, based on the Environmental Assessment (EA) dated 16th January 2007, prepared by Connell Wagner on behalf of MacGen and submitted to the NSW Department of Planning (DoP) as part of the Major Project Assessment.

The approval for the augmentation of the Hunter River pumping station enabled MacGen to capture a higher volume of water during high flow events, improving access to 1,200 ML/day, in accordance with license entitlements.

1.2 Background to the Approved Project

The Project site is located in the Upper Hunter Valley, approximately two kilometers north of Jerry's Plains. It is approximately 20 km south of Muswellbrook and 30km north-west of Singleton. The Project site is within the Singleton Local Government Area and the land is owned by MacGen.

The augmentation works involved the construction of an additional pumping station; pipelines to transfer the water approximately two kilometers to Plashett Dam; a water discharge structure at Plashett Dam; associated power supply works; access works; site restoration and any other related construction activity undertaken on MacGen's land pertaining to the Project.

1.3 Report Structure

This report is structured generally in accordance with Schedule 2 Condition 3.1 of the *Project Approval 06_0259 (as modified)* as follows:

Section 1.0 provides an introduction, background, description and layout of The Project and provides a guide to the structure of the report.

Section 2.0 provides an outline to the IEA approach, including objective, scope, documents reviewed and limitations.

Section 3.0 provides a discussion of non-compliances against the Project Approval, Statement of Commitments and Management Plans.

Section 4.0 describes the effectiveness of the environmental management relating to the Project.

Section 5.0 provides recommendations for measures or actions to improve the environmental performance of the Project.

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2.0 Audit Approach

2.1 Audit Objective

This IEA and subsequent report has been prepared pursuant to Schedule 2 Condition 3.1 of the *Project Approval 06_0259 (as modified).* Table 1 lists the requirements of this condition and indicates where each has been addressed in this IEA report.

Table 1 Auditing conditions and where each is addressed in this report

Condition	Commitment	Where addressed in this report
3.1*	Twelve months after the commencement of operations of the project, or within such period as otherwise agreed by the Director-General, the Proponent shall commission an independent person or team to undertake and Environmental Audit of the project. The independent person or team shall be approved by the Director-General prior to the commencement of the Audit shall be submitted for the approval of the Director-General no later than one month after the completion of the Audit. The Audit shall:	This Audit Report & Appendix C
3.1a	Be carried out in accordance with ISO 14010 – Guidelines and General Principles for Environmental Auditing and ISO 14011 – Procedures for Environmental Auditing.	This Audit
3.1b	Assess compliance with the requirements of this approval, and other licences and approvals that apply to the project.	Section 3.0
3.1c	Assess the environmental performance of the project against the predictions made and conclusions drawn in the documents referred to under condition 1.1 of this approval.	Section 3.0
3.1d	Review the effectiveness of the environmental management of the project, including any environmental impact mitigation works.	Section 4.0
3.1e	Review the effectiveness of the Ecology Management Plan referred to under condition 6.4.	Section 3.4 & 4.2

** This audit has interpreted condition 3.1 of the Project Approval 06_0259 (as modified) as a requirement for the audit report to be submitted for approval by the Director-General no later than one month after completion of the audit.*

2.2 Audit Scope

This IEA was undertaken generally in accordance with *AS/NZS ISO 19011:2003 – Guidelines for quality and/or environmental management systems auditing* by the following AECOM staff:

- Peter Horn (Associate Director) – Lead Auditor;
- Kate Michelmore (Graduate Environmental Professional) – Audit Assistant; and
- Graham Taylor (Technical Director) – Peer Review/Quality Control.

This IEA consisted of a detailed desktop review of documentation, interviews with key MacGen staff and a site visit of the Project on 12 September 2012. Attendees at interviews included:

- Kieran Scott – Acting Environment Manager/Operations;
- Kathryn Yates – Environment Officer;

- Paul Coffey – Veolia Site Manager; and
- Chris Rooney – Professional Officer (Bayswater Water and Chemical).

Agendas for the site meetings and itinerary for the site inspection components of the IEA (both inclusive of attendees) are shown in Appendix A.

An inspection of Hunter River Pump Station facilities was undertaken on 12 September 2012 from approximately 10am to 2pm. Weather at the time of the field inspection was warm and sunny, with an average temperature of around 25 degrees.

2.3 Documents Reviewed

The documents and approvals used to assess compliance during this audit are listed below:

- *Project Approval 06_0259 (as modified)* (Section 3.1);
- MacGen Hunter River Pump Station Augmentation, Environmental Assessment (EA), prepared by Connell Wagner Pty Ltd and dated 16 January 2007 (Section 3.2)
- Operation Environmental Management Plan (OEMP)- Hunter River Pump Station Augmentation Bayswater Power Station, prepared by ENSR Australia Pty Ltd and dated March 2009 (Section 3.3)
- Ecology Management Plan (EMP) Bayswater Power Pumping Station Upgrade to Increase Water Extraction Capacity, prepared by ENSR Australia Pty Ltd and dated February 2009 (Section 3.4)

2.4 Audit Limitations

The AECOM audit team received complete cooperation from all staff during the IEA. However, the following issues arose during the IEA which limited, to some extent, its findings:

- Opinions presented in this report apply to the site's conditions and features as they existed at the time of AECOM's site visit in 12 September 2012. They necessarily cannot apply to conditions and features which AECOM is unaware of and has not had the opportunity to evaluate.
- The conclusions presented in this report are professional opinions based solely on AECOM's visual observations of the Project site and the immediate vicinity, and upon AECOM's interpretations of the documentation reviewed, interviews and conversations with personnel knowledgeable about the site and other available information, as referenced in this report. These conclusions are intended exclusively for the purpose stated herein, at the site listed, and for the project indicated.
- This report does not, and does not purport to, give legal advice on the actual or potential environmental liabilities of any individual or organisation, or to draw conclusions as to whether any particular circumstances constitute a breach of relevant legislation or a risk of environmental harm.

3.0 Environmental Compliance

Environmental Compliance was assessed as follows:

- P*roject Approval 06_0259 (as modified)* conditions, Statement of Commitments listed in the EA and requirements listed in the OEMP and EMP were reviewed to establish the Audit Criteria and Audit Protocol against which compliance was assessed.
- Relevant documents referred to in the P*roject Approval 06_0259 (as modified)* and EA were reviewed.
- A site inspection was conducted and interviews were undertaken with MacGen personnel to progressively identify and obtain evidence to support audit findings.

Audit findings in this Audit Report are presented in tabulated format, including recommendations for improvement, as appropriate.

In the assessments of compliance, the status of each condition is described as:

- "Complies" or
- "Not Compliant"
- "Not Triggered" (used where conditions have not yet been activated due to activities not being commenced or requests not being made for example),
- "Not Able to be Verified" (used where compliance with conditions/commitments could not be supported with documentation or where conditions/commitments were unable to be audited due to time constraints).

292 conditions and commitments in the *Project Approval 06_0047 (as modified),* EA and the Environmental Management Plans were audited, with a total of 33 non compliances.

A summary of these observed non compliances is outlined in **Table 2**.

Table 2 Summary of Non Compliances Found and Recommendations Made

Document	Reference	Non Compliances	Recommendations Made
Project Approval 06_0259 (as modified)	Section 3.1	3	Table 10
Statement of Commitments	Section 3.2	13	Table 10
Operational Environmental Management Plan	Section 3.3	6	Table 10
Ecology Management Plan	Section 3.4	11	Table 10

3.1 Project Approval 06_0259 (as modified)

Table 3 shows the conditions that were found non-compliant against the P*roject Approval 06_0259 (as modified)*. A more detailed explanation of each condition and comments can be found in **Appendix D**. Recommendations stemming from the identified non-compliances are listed in **Section 4.0**.

Table 3 Identified Non Compliances against *Project Approval 06_0259* (as modified)

Schedule	Condition	Commitment	Audit Finding
2	4.1	The Proponent shall develop and implement a Compliance Tracking Program to track compliance with the requirements of this approval. The Program shall include, but not necessarily limited to: a) provisions for periodic review of the compliance status of the project against the requirements of this approval b) provisions for periodic reporting of compliance status to the Director-General c) a program for independent environmental auditing at least annually, or as otherwise agreed by the Director-General, in accordance with ISO 19011:2002 - Guidelines for Quality and/ or Environmental Management Systems Auditing d) mechanisms for rectifying any non-compliance identified during environmental auditing or review of compliance.	Compliance tracking program sighted. This Independent Audit has not occurred within the allocated time frame. No evidence of an extension of time permitted by the Director-General was provided.
2	5.2	Prior to the commencement of construction of the Project, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation): - a postal address to which written complaints may be sent	Postal address was not on the MacGen Website at the time of the audit. MacGen has since uploaded postal address to the website.
2	5.2	Prior to the commencement of construction of the Project, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation): - The telephone number, the postal address and the email address shall be displayed on the Proponent's website and on a sign near the site, in a position that is clearly visible, and which clearly indicates the purposes of the sign.	At the time of the audit no sign was in place that detailed these requirements in a location accessible to the general community.

3.2 Statement of Commitments

Table 4 shows the conditions that were found to be non-compliant against the Statement of Commitments (SoC) listed within the MacGen Hunter River Pump Station Augmentation, Environmental Assessment, prepared by Connell Wagner Pty Ltd and dated 16 January 2007. A more detailed explanation of each condition and comments can be found in **Appendix E**. Recommendations stemming from the identified non compliances are listed in **Section 4.0.**

Table 4 Identified Non Compliances against *Macquarie Generation Hunter River Pump Station Augmentation, Environmental Assessment* (2007)

Reference	Condition	Audit Finding
1.2	Macquarie Generation will submit a Pre-construction Compliance Report to the Director-General at least two weeks before construction commences (or within any other time agreed to by the Director-General).	During the audit the pre-construction compliance report could not be provided to the audit team. As per the previous audit conducted the outcome was that there was no evidence that a pre-construction compliance report was prepared and submitted to the Director-General.
4.2(a)	Prior to the commencement of construction, Macquarie Generation will ensure that the following is available for the construction and operation period: a postal address to which written complaints may be sent	Postal address was not on the MacGen Website at the time of the audit. MacGen has since uploaded postal address to the website.
9.4	Following completion of the construction works, the disturbed areas (i.e. working width) will be rehabilitated with native and locally endemic species robust to local climatic conditions. It is anticipated that this will improve the visual amenity when compared with the pre-construction condition of the area.	Rehabilitation techniques were employed, however rehabilitation areas were in poor condition at the time of the audit. Many introduced species have overrun rehabilitation areas and maintenance of the area is not evident.

Table 5 shows the conditions of the MacGen Hunter River Pump Station Augmentation, Environmental Assessment, prepared by Connell Wagner Pty Ltd and dated 16 January 2007, that were found to be Not Compliant due to required information unable to be provided.

Table 5 Identified Non Compliances against *Macquarie Generation Hunter River Pump Station Augmentation, Environmental Assessment (2007)* due to evidence unable to be provided to the audit team

Reference	Condition	Audit Finding
1.1	Macquarie Generation will notify the Director-General in writing, relevant Government Departments and Singleton Council of the start of the Project's Construction and Operation. Such notification must be provided at least four weeks before the relevant start date unless otherwise agreed to by the Director-General. Macquarie Generation will bring to the Director-General's attention any matter that may require further assessment by the Director-General. Macquarie Generation will comply with any requirements of the Director-General arising from the Director-General's assessment of:	Correspondence to the Director-General (relevant Government Departments) and Singleton Council could not be provided to the audit team.
1.1(a)	any reports, plans or correspondence that are submitted to satisfy the Conditions of Approval	
1.1(b)	the implementation of any actions or measures contained in such reports, plans or correspondence.	
1.4	The Construction Compliance Reports will be made publicly available.	No evidence that the reports were made publicly available was provided.
2.1	An Environmental Impact Audit Report - Construction will be prepared by Macquarie Generation and submitted to the Director-General a maximum three months after construction is complete (or at any other time interval agreed to by the Director- General). The Environmental Impact Audit Report – Construction will also be submitted to other government departments upon the request of the Director-General. The Environmental Impact Audit Report – Construction will: (a) identify the major environmental controls used during Construction and assess their effectiveness (b) summarise the main environmental management plans and processes implemented during construction and assess their effectiveness (a) identify any innovations in construction methodology used to improve environmental management (b) discuss the lessons learnt during construction, including recommendations for	Environmental Impact Audit Report – Construction - was unable to be provided

Reference	Condition	Audit Finding
	future Projects.	
2.2	An Environmental Impact Audit Report - Operation will be submitted by Macquarie Generation to the Director-General a maximum 24 months after the Project begins Operation and at any additional periods that the Director-General may require. The Environmental Impact Audit Report - Operation must also be submitted to other government departments upon the request of the Director-General. The Environmental Impact Audit Report - Operation will: (a) be certified by an independent person at the Proponent's expense. The certifier must be advised to the Director-General before the Environmental Impact Audit Report – Operation is prepared (b) compare the operation impact predictions made in the EA, Submissions Report and any supplementary studies with the actual impacts (c) assess the effectiveness of implemented mitigation measures and safeguards (d) assess compliance with the systems for operation maintenance and monitoring (e) discuss the results of consultation with the local community particularly any feedback or complaints (f) be made publicly available.	Evidence/correspondence sighted from the Department of Planning that this Statement of Commitment can be satisfied by the requirements of condition 3.1 of the project approval (i.e. this audit). The delivery timeframe of this audit report is non-compliant.
3.1	A Construction Environmental Management Plan (CEMP) will be prepared by Macquarie Generation and implemented in accordance with all relevant Acts and Regulations. Macquarie Generation will obtain the Director-General's Approval for the CEMP before construction commences or within any other time agreed to by the Director-General. The CEMP must be reviewed by the EMR before Macquarie Generation seeks the Director-General's approval for the CEMP. The EMR must bring to the Director-General's attention any shortcomings.	The CEMP was provided to the audit team for review. The CEMP content reflects this condition, however there was no evidence available for the audit team to review that verified the Director-Generals approval.
3.1(iii)	As part of the CEMP, a Soil and Water Management Sub-plan will be prepared by Macquarie Generation in consultation with relevant Government Departments and Singleton Council. The Sub-plan will:	The *Erosion and Sediment Management Plan* (Appendix N - CEMP) details these requirements. No evidence of consultation with the relevant government departments and Singleton Council could be provided to the audit team.
3.2	An Operation Environmental Management Plan (OEMP) will be prepared by Macquarie	The OEMP was provided to the audit team to review, OEMP submission email to the Director-

Reference	Condition	Audit Finding
	Generation and implemented in accordance with these Conditions and all relevant Acts and Regulations. Macquarie Generation will obtain the approval of the Director-General for the OEMP before Operation commences or within any other time agreed to by the Director-General. Macquarie Generation will ensure that the mitigation measures identified in this EA are incorporated into the OEMP or the relevant Sub-plan.	General was sighted. Evidence of approval from the Director-General was unable to be provided to the audit team.
14.3	A Vegetation Management Plan will be prepared detailing restoration works, including weed management and re-establishment of native understorey species along the Hunter River.	Vegetation Management Plan was unable to be provided to the audit team.

3.3 Operational Environmental Management Plan (2009)

Table 6 shows the conditions that were found to be not compliant against the Operation Environmental Management Plan (OEMP) - Hunter River Pump Station Augmentation Bayswater Power Station, prepared by ENSR Australia Pty Ltd and dated March 2009. A more detailed explanation of each condition and comments can be found in **Appendix F.** Recommendations stemming from the identified non compliances are listed in **Section 4.0**.

Table 6 Identified Non Compliances against *Operation Environmental Management Plan - Hunter River Pump Station Augmentation Bayswater Power Station* (2009)

Reference	Condition	Audit Finding
3.3	Environmental Schedules are copies of forms, reports or registers used during day-to-day environmental management. Macquarie Generation forms, reports and registers relevant to this project include: • Bayswater Power Station Monthly Environmental Inspection Checklist • Environmental Incident Report form • Shift Managers logs • Intellex environmental management database which includes: - non-compliance and Corrective Action reports - complaints reports - environmental Incident reports.	At the time of the audit MacGen had in place tools to support environmental management on site. These included: - Incident reporting forms; - Complaints Forms; and - Shift Managers logs. Monthly Environmental inspection Checklist was not in place at the time of the audit.
4.2.1	In addition to this independent environmental audit, Macquarie Generation will undertake annual environmental auditing and will develop a Compliance Monitoring and Tracking program in accordance with Condition 4.1 of the Project Approval. This process will include an assessment of the compliance status of the project against the Project Approval conditions and mechanisms for rectifying any noncompliance identified during the environmental auditing.	Compliance tracking program sighted. Audits have not occurred within the allocated time frames. No evidence of an extension of time permitted by the Director-General was provided.
4.4	OEMP Review An independent environmental audit will be undertaken twelve months after the commencement of operation of the project. Subsequently, the OEMP will be reviewed to incorporate any issues identified through the audit process. This review process will also ensure that the OEMP is still current and that changes to operating procedures have been incorporated into the updated OEMP.	Observation: The OEMP has been running for approximately 4 years without review, an update was required after the 12 month Independent Environmental Audit (i.e. this audit) and 12 months after the commencement of operations. No updates or review have occurred to the OEMP to date.

Table 7 shows the conditions that were found to be Not Compliant against the OEMP. These conditions were not able to be verified due to the required evidence not able to be provided to the audit team.

Table 7 Identified Non Compliances against the *Operation Environmental Management Plan* due to information unable to be provided

Reference	Condition	Audit Finding
2.3.1	Compliance Tracking As part of the compliance-tracking program required by the DoP, Macquarie Generation will submit a compliance report to the Director-General within 3 months of construction being completed. The internal audit will include the following: • Review of the compliance status of the project against the requirements of the Development Approval conditions applying to the project. • The major environmental controls used during construction and assess their effectiveness. • Summarise the major environmental plans and processes implemented and assess their effectiveness. This will include a review of corrective actions adopted by contractors. • Identify any innovative methodologies used to improve environmental management. • Discuss lessons learnt during construction, including recommendations for future projects. The audit will comply with ISO 19011:2002-Guidelines for Quality and/or Environmental Management Systems Auditing. The timing and frequency of subsequent audits is to be agreed with the Director General of DoP (refer Condition 4.1(c) of the Project Approval).	Environmental Impact Audit Report – Construction - was unable to be provided.
4.2.2	Auditing Required by Macquarie Generation Section 4.5.5 of the Bayswater Power Station Environmental Management Manual Part 1 Environmental Management System Producers outlines the auditing required at Bayswater Power Station. In summary, audits required under the procedure are: • External Environmental Audit (biennial) • Cross Station EMS Audit (annually) • Internal EMS Audit (each team will be audited on a biennial basis). The Corporate Procedure ENV007 Environmental Audits, provides details on the process for conducting environmental audits and reporting results.	Audit reports were unable to be provided to the audit team. The audit team was unable to verify times that audits have occurred.
4.3	Corrective Action The findings, conclusions and recommendations developed through the monitoring and auditing processes are reported to the Executive and Management Team. In addition, corrective actions and preventative actions are identified and implemented to minimise environmental	Audit reports were unable to be provided to the audit team. The audit team was unable to verify times that audits have occurred.

Reference	Condition	Audit Finding
	impacts through the following: • Monthly Compliance Report • Bayswater Environmental Review Committee (BERC) (quarterly) • Executive Environmental Committee (quarterly).	

3.4 Ecology Management Plan (2009)

Table 8 shows the conditions that were found non-compliant against the Ecology Management Plan (EMP) Bayswater Power Pumping Station Upgrade to Increase Water Extraction Capacity, prepared by ENSR Australia Pty Ltd and dated February 2009. A more detailed explanation of each condition and comments can be found in **Appendix G**. Recommendations stemming from the identified non compliances are listed in **Section 4.0.**

Table 8 Identified Non Compliances against *Ecology Management Plan Bayswater Power Pumping Station Upgrade to Increase Water Extraction Capacity* (2009)

<table>
<tr><th>Reference</th><th>Condition</th><th>Audit Finding</th></tr>
<tr><td>2.1.5
Table 1</td><td>
Table 1: Platypus Threats and Management
<table>
<tr><th>Threats</th><th>Management recommendations</th></tr>
<tr><td>Riparian vegetation removal</td><td>Buffer zones of healthy vegetation should be maintained along the bank of the Hunter River.
Vegetation removal shall be avoided and when required should be timed for immediately prior to crossing construction or trenching and where practical chained off at ground level to allow immediate regrowth.
Pipelaying work is to be completed in a timely manner. Temporary sediment collection measures are to be installed including drainage banks, silt fencing (instream and slope), geofabric covered straw bales and use of sterile cover crops. Riparian and smaller vegetation strips are to be protected and developed in the vicinity of drainage links to filter sediment and nutrients and protect fauna and for human health.
Riparian revegetation should be researched and wide enough to support a self-sustaining plant community including native understorey vegetation as well as mature specimens of tree species originally found in the habitat.
Fire Asset Potection Zones (APZ) should be maintained outside of the core riparian area.
Careful collection of layers of vegetation and soil material during clearing and grading. Careful stockpiling of materials away from the floodplain upper bank.
In stream, logs and debris should be retained whenever possible as they provide habitat for benthic invertebrates and also helps to oxygenate water. Logs and branches covering more than 10% of a channel can be moved closer to the banks to improve flow capacity.</td></tr>
<tr><td>Water quality</td><td>Water quality management and ongoing water quality improvement for drainage line and catchment areas during disturbance and rehabilitation.
Regular water quality monitoring along Hunter River to be incorporated into water monitoring program.</td></tr>
<tr><td>Bank stability - erosion</td><td>Ensure that areas of bare soil and compacted vegetation are topsoiled, scarified and revegetated as quickly as possible including understorey. Erosion control jute matting or straw mulching is to be utilised on steep slopes.
Maintain sediment and erosion control measures along the riverbank and pipeline corridor.
Permanent erosion control measures (earth banks) are to be used and revegetation undertaken immediately after works.
Monitoring and maintenance is to be undertaken to ensure a stable revegetated pipeline easement and other disturbed areas with promotion of local provenance vegetation or pasture as required.</td></tr>
<tr><td>Pollution and litter</td><td>Inspections of Hunter River to be conducted as part of quarterly monitoring program.
Education programs regarding litter and its effects, waste reduction and recycling.</td></tr>
<tr><td>Predation</td><td>Monitor and control pest animal populations</td></tr>
</table>
</td><td>Management of platypus threats has not been conducted in line with the recommendations presented in Table 1.</td></tr>
<tr><td>2.16
Table 2</td><td>
Table 2: Platypus Monitoring
<table>
<tr><th>Monitoring and Reporting</th><th>Method</th><th>When</th><th>By whom</th></tr>
<tr><td>Observational monitoring</td><td>Platypus sighting form (Appendix A)</td><td>As required</td><td>Form to be returned to Macquarie Generation Environment Officer with results collated quarterly.</td></tr>
<tr><td>Two biannual surveys</td><td>As per recommendation of appointed survey expert</td><td>Every two years (2010 and 2012)</td><td>To be conducted only by an experienced biologist or researcher</td></tr>
<tr><td>Independent Environmental Audit</td><td>As per Condition 3.1 of Project Approval No. 06-0259</td><td>12 months after the commencement of operation</td><td>Appointed consultant</td></tr>
</table>
</td><td>Platypus investigation was conducted in 2008 (Bayswater Power Station Hunter River LPP Augmentation - Construction environmental Management Plan - Platypus Investigation of Excavation Activities, Grant 2008). Platypus surveys have not been conducted biannually. Evidence of Observational Monitoring could not be provided to the audit team.</td></tr>
</table>

<table>
<tr><th>Reference</th><th>Condition</th><th>Audit Finding</th></tr>
<tr><td>2.2.4
Table 3</td><td>
Table 3: River Flat Eucalypt Forest Threats and Management
<table>
<tr><th>Threats</th><th>Management Actions</th></tr>
<tr><td>Clearing and fragmentation</td><td>Recognition of the value of all River Flat Eucalypt Forest remnant in land use planning.
River Flat Eucalypt Forest remnant present at the Site was not be disturbed during construction and will not be disturbed during operation.
Undertake revegetation seeking species diversity using local provenance seed and tubestock at all vegetation layers. Carry out bush regeneration, maintenance planting and weed control.</td></tr>
<tr><td>Flood mitigation and drainage works</td><td>Integrate into the land use planning process the awareness of the ecological needs of the community
Manage drainage and flooding</td></tr>
<tr><td>Grazing and trampling by stock and feral animals</td><td>Instigate feral animal control programs
Restrict stock access
Regular monitoring and maintenance of fencing to identify are areas where stock or feral animals are accessing the EEC unrestricted</td></tr>
<tr><td>Changes in water quality – particularly increased sedimentation and nutrients</td><td>Undertake pre and post construction water monitoring to identify if there have been any water quality changes as a result of construction activities.
Undertake sediment and erosion control (Landcom 2004)</td></tr>
<tr><td>Weed invasion</td><td>Identify current weed infestations and take steps to manage and eradicate where possible</td></tr>
<tr><td>Removal of dead wood</td><td>Restrict public access
Prohibit removal of deadwood
Promote public awareness and involvement</td></tr>
<tr><td>Rubbish dumping</td><td>Restrict public access
Maintain and monitor fencing
Promote public awareness and involvement</td></tr>
<tr><td>Fire management regimes</td><td>Integrate awareness of the EEC in fire hazard reduction projects</td></tr>
</table>
</td><td rowspan="2">Management of the River Flat Eucalypt Forest has not been conducted in line with the recommendations presented in the EMP.</td></tr>
<tr><td>2.2.5
Table 4</td><td>
<table>
<tr><th>Monitoring and reporting</th><th>Method</th><th>When</th><th>By whom</th></tr>
<tr><td>Photographic monitoring</td><td>Photographs at fixed photo points</td><td>Every six months and after flood event</td><td>Macquarie Generation</td></tr>
<tr><td>Riparian condition survey</td><td>Rapid Appraisal of Riparian Condition (RARC) (Appendix B)</td><td>Annually for five years, and then as required</td><td>Macquarie Generation</td></tr>
<tr><td>Independent Environmental Audit</td><td>As per Condition 3.1 of Project Approval No. 06-0259</td><td>12 months after the commencement of operation</td><td>Appointed consultant</td></tr>
</table>
</td></tr>
<tr><td>3.2
Table 5</td><td>
Table 5: Fishway Threats and Management
<table>
<tr><th>Threats</th><th>Management recommendations</th></tr>
<tr><td>Before Operation
Exposure of previously submerged habitat such as woody debris resulting in reduced available habitat for fish and macroinvertebrates.
Exposure and possible loss of instream macrophytes resulting in loss of available habitat for fish and macroinvertebrates.
Erosion of banks resulting in loss of bank vegetation and sediment in runoff to stream.
Direct destruction of habitat as result of need to remove woody debris and excavate reed beds.
Introduction and spread of pest species such as weeds by construction vehicles.
Sediments and other construction materials may enter the waterway, causing increases in turbidity, suspended solids and nutrients.
Reduction in filtering capacity of riparian zone to filter nutrients, sediments and preventing potential contaminants from reaching the stream.
Release of metals and nutrients from sediments on rewetting resulting in increased turbidity, total suspended solids, nutrients causing smothering of habitat, degraded water quality and increased risk from algal blooms.</td><td>Fish monitoring to establish baseline fish community structure (Refer previous studies Bishop 1967 and Hodgson 1993)
Sediment control methods implemented to prevent off-site transport of sediment in surface-water runoff from the construction site. Erosion and sediment control including diversion banks and revegetation.
Implementation of best practice guidelines.
Chemicals and by-products stored appropriately and not allowed to drain into the catchment or creek. Spill management procedures and on site spill containment and clean up kits.
Water quality monitoring before operation.
Retain and increase riparian vegetation buffer including groundcover.
Washdown of all construction vehicles and equipment prior to entering the riparian corridor.</td></tr>
<tr><td>During Operation
Exposure of previously submerged habitat such as woody debris resulting in reduced available habitat for fish and macroinvertebrates.
Exposure and possible loss of instream macrophytes resulting in loss of available habitat for fish and macroinvertebrates.
Increased concentrations of sediments, nutrients and contaminants in the stream, leading to degraded water quality and reduced available habitat for fish and macroinvertebrates.
Loss of potential long term woody debris recruitment to stream for instream habitat.
Erosion of banks leading to sediment in runoff into the stream.</td><td>Mark and remain inside clearing boundaries and areas of narrow easement or limited access (eg riparian corridor).
Temporary erosion and sediment control measures particularly on drainage lines, banks and steep slopes.
Rehabilitaton of disturbed areas of riparian corridor and upper catchment areas.
Ongoing fish monitoring to assess community changes from the pumping activities.
Water quality monitoring during operation.
Retain instream vegetation and timber snags etc</td></tr>
</table>
</td><td>Management of Fish communities has not been conducted in line with the recommendation presented in Table 5 as the Pre-Operation fish monitoring, evidence could not be verified at the time of the Audit.</td></tr>
</table>

<table>
<tr><th>Reference</th><th>Condition</th><th>Audit Finding</th></tr>
<tr><td>3.3
Table 6</td><td>
Table 6: Fishway Monitoring Program
<table>
<tr><th>Monitoring and reporting</th><th>Method</th><th>When</th><th>By whom</th></tr>
<tr><td>Water Quality</td><td>As per EPA (2004) "Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales" (2004) (Appendix C)</td><td>Prior to construction and operationto establish basdine data.
Periodic monibring for pH, EC, tubidity and other salts and metal pollutans during constnuction and operation</td><td>To be conducted by a specifically trained person for the sampling collection and by a NATA Accredited Laboratory for the analysis.</td></tr>
<tr><td>Fish communities</td><td>As per methods recommended in Section 3.4</td><td>Annually for two years post the pumping station being commissioned and in operation.
Year 1 – baseine data.
Year 2 – comparison data.</td><td>To be conducted only by an experienced fish ecologist.</td></tr>
<tr><td>Independent Environmental Audit</td><td>As per Condition 3.1 of Project Approval No. 06-0259</td><td>12 months aftw the commencement of operation</td><td>Appointed consultant</td></tr>
</table>
</td><td rowspan="2">Water quality monitoring was conducted in line with the CEMP during construction noting that construction commenced in May 2008 whilst The Ecology Management Plan was completed in 2009.

However, monitoring of Fish communities has not been conducted in line with the recommendation presented in Table 6 as it was to occur annually for two years post commissioning and operation and this was not undertaken.</td></tr>
<tr><td>4.1
Table 7</td><td>
Table 7: Rehabilitation Schedule
<table>
<tr><th>Sector</th><th>Rehabilitation method</th><th>Timing</th><th>Maintenance</th></tr>
<tr><td>Coffer dam and inlet at Hunter River</td><td>Primary earthworks to ensure stable structure and erosion and sediment controlled.
Provenance tubestock and / or direct seeding of native riparian, wetland and floodplain species as per Table 5.1 of the Flora and Fauna Management Plan (ERM 2008) (Appendix D)
Placement of locally sourced large woody debris within rehabilitation to provide habitat.</td><td>Post construction of coffer dam and inlet (June 2009 – June 2010).</td><td>Weed control via herbicide application and / or manual removal
Supplementary planting to achieve 85% success rate.</td></tr>
<tr><td>Pipeline corridor</td><td>Earthworks and rehabilitation of final landform to ensure no erosion, dense non weedy vegetation cover and nil subsidence. Direct seeding of native grass and shrub species as per Table 5.1 of the Flora and Fauna Management Plan (ERM 2008) (Appendix D)
Placement of locally sourced large woody debris within rehabilitation to provide habitat.</td><td>At completion of primary earthworks (June 2009 – June 2010).</td><td>Weed control via herbicide application and / or manual removal.</td></tr>
<tr><td>Outlet at Plashett Dam</td><td>Primary earthworks to ensure stable structure.
Tubestock and / or direct seeding of native grass and shrub species as per Table 5.1 of the Flora and Fauna Management Plan (ERM 2008) (Appendix D)</td><td>Post construction of outlet and finalization of site stabalising program (June 2009 – June 2010).</td><td>Weed control via herbicide application and / or manual removal.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Reference</th><th>Condition</th><th>Audit Finding</th></tr>
<tr><td>4.2
Table 8</td><td>
Table 8: Rehabilitation Monitoring
<table>
<tr><th>Sector</th><th>Monitoring</th><th>Method</th><th>When</th><th>By whom</th></tr>
<tr><td>Coffer dam and inlet at Hunter River</td><td>Vegetation survival survey</td><td>Visual inspection and quadrat count of survival status and health of tubestock and direct seeding</td><td>4 weeks post completion of initial revegetation works and ongoing through rehabilitation.</td><td>Macquarie Generation (or appointed consultant)</td></tr>
<tr><td></td><td>Site survey (including weed pest animal, erosion and subsidence monitoring)</td><td>Site inspection checklist (Appendix E) and photographic monitoring</td><td>Annually (spring)</td><td>Macquarie Generation (or appointed consultant)</td></tr>
<tr><td></td><td>Independent Environmental Audit</td><td>As per Condition 3.1 of Project Approval No. 06-0259</td><td>12 months after the commencement of operation</td><td>Appointed consultant</td></tr>
<tr><td>Pipeline corridor</td><td>Vegetation survival survey</td><td>Visual inspection</td><td>4 weeks post completion of initial seeding works and during rehabilitation</td><td>Macquarie Generation (or appointed consultant)</td></tr>
<tr><td></td><td>Site survey (including weed pest animal, erosion and subsidence monitoring)</td><td>Site inspection checklist (Appendix E) and photographic monitoring</td><td>Annually (spring)</td><td>Macquarie Generation (or appointed consultant)</td></tr>
<tr><td></td><td>Independent Environmental Audit</td><td>As per Condition 3.1 of Project Approval No. 06-0259</td><td>12 months after the commencement of operation</td><td>Appointed consultant</td></tr>
<tr><td>Outlet at Plashett Dam</td><td>Vegetation survival survey</td><td>Visual inspection and count of survival status and health of each tube stock stem</td><td>4 weeks post completion of initial revegetation works</td><td>Macquarie Generation (or appointed consultant)</td></tr>
<tr><td></td><td>Site survey (including weed pest animal, erosion and subsidence monitoring)</td><td>Site inspection checklist (Appendix E) and photographic monitoring</td><td>Annually (spring)</td><td>Macquarie Generation (or appointed consultant)</td></tr>
<tr><td></td><td>Independent Environmental Audit</td><td>As per Condition 3.1 of Project Approval No. 06-0259</td><td>12 months after the commencement of operation</td><td>Appointed consultant</td></tr>
</table>
</td><td>Rehabilitation works at the Hunter River Pump Station were in poor condition at the time of the audit. Little to no maintenance of the rehabilitation area was evident. Rehabilitation Monitoring has not occurred in line with the recommendations presented in Table 8.</td></tr>
<tr><td>5.0</td><td>The Ecology Management Plan will be reviewed and updated as required following the Independent Environmental Audit, which is to be undertaken 12 months after the commencement of operation of the project (as per Condition 3.1 of Project Approval No. 06-0259).</td><td>This Audit.</td></tr>
</table>

Table 9 shows the conditions that were found to be Not Compliant against the EMP. These conditions were not able to be verified due to the required evidence not able to be provided to the audit team.

Table 9 Identified non Compliances against the Ecology Management Plan due to evidence unable to be provided

Reference	Condition	Audit Finding
5.0	The progress of activities related to the Ecology Management Plan will be included in the Bayswater Environmental Management Plan, which is to be updated quarterly by Macquarie Generation. Staff and contractors are to be trained in ecological principals associated with their work activities including methods of least possible disturbance, construction management of flora and fauna, erosion and sediment control and rehabilitation.	The Bayswater Environmental Management Plan was unable to be provided to the audit team
5.0	The reports to be prepared as a result of monitoring activities addressed in the Ecology Management Plan include: • Platypus monitoring: - biannual surveys • River Flat Eucalypt Forest monitoring: - riparian condition surveys • Fishway monitoring: - Water quality monitoring - Fish community monitoring • Rehabilitation - Initial survival survey for revegetation - Annual site surveys	Platypus monitoring report provided to the audit team. No other monitoring reports or surveys were able to be produced at the time of the audit.

4.0 Review of Environmental Management of the Project

4.1 Environmental Management (including environmental impact mitigation works)

This Section addresses Schedule 2 Condition 3.1(d) of the Project Approval 06_0047 (as modified), which requires the IEA to *review the effectiveness of the environmental management of the project, including any environmental impact mitigation works*.

The MacGen Environmental Management System (EMS) forms the basis of the environmental management at the site. The EMS is ISO 14001 certified which relies upon an overriding Environmental Management Strategy, a series of management plans and monitoring programs.

Environmental management of the operation of the Pump Station Augmentation was directed by the MacGen EMS. The EMS would cover the operation of the Pump Station following the proposed Expansion.

The MacGen EMS was developed to minimise environmental impacts by providing the strategic context for environmental management across the Bayswater and Liddell Power Stations.

The objectives of the EMS are to:

1. Provide overall framework for environmental management at MacGen utilising the principles of ISO 14001;
2. Utilise operating practices which seek to prevent pollution and minimise environmental impacts in a commercially effective way by:
    a. efficient use of energy and resources with a view to reducing consumption and minimising emissions or discharges to the environment;
    b. waste management practices that include waste minimisation, recycling and approved waste handling and disposal; and
    c. regular environmental assessment of the impact of existing operations.
3. Implement environmental incident response procedures for emergencies or other events which pose a risk to health, safety or the environment; and
4. Facilitate communication within the organisation as well as consultation with governments, contractors, industry groups and the public on matters relating to the environment.

4.1.1 Environmental Management Plans

Project Approval 06_0259 (as modified) requires the site specific environmental Management plans to be prepared and implemented in accordance with the "*Guidelines for the preparation of Environmental Management and Plans" prepared by Department of Infrastructure, Planning and Natural Resources. 2004.* During the construction phase of the project, environmental management was detailed within the Construction Environmental Management Plan (CEMP). The CEMP was developed in line with the guidelines and with consideration to the MacGen EMS and Singleton Council's Development Control Plans.

The CEMP is a procedural document that outlines the environmental goals of the project, the safeguard measures to be implemented, the timing of the implementation in relation to the progress of the project, responsibilities for implementation and management, and a review process.

The overall objective of the CEMP is to ensure that the construction works achieve the environmental performance specified in the Environmental Assessment and that required by the consent conditions. It identifies environmental issues, management roles, procedures and reporting methods.

The CEMP contains the following Management Plans and Work Instructions as appendices to the report. In conjunction with the CEMP these plans directed the standard of environmental management during construction works:

- Hunter River Pump Station Augmentation Project Emergency Manual;
- Flora and Fauna Management Plan;

- Heritage and Cultural Significance Work Instruction;
- Visual Amenity Work Instruction;
- Noise Control Work Instruction;
- Waste Management Work Instruction;
- Traffic and Transport Management Plan;
- Bushfire Prevention Work Instruction;
- Greenhouse and Energy Control Measures;
- Erosion and Sedimentation Management Plan; and
- Chemical Management Work Instruction.

Other Environmental Management plans required by *Project Approval 06_0259 (as modified)* include the Operational Environmental Management Plan (OEMP) and the Ecology Management Plan (EMP). An assessment of compliance was conducted for both of these plans, as required by this audit. **Section 3.3** and **Section 3.4** outlines the identified non compliances against the OEMP and EMP respectively. **Section 4.2** provides a review of the effectiveness of the EMP.

In many instance during this audit it was evident that the conditions of the *Project Approval 06_0259 (as modified)* and SoC were originally complied with, however evidence and supporting documentation to verify compliance was unable to be provided. Refer to **Appendix D** and **Appendix E** for a detailed assessment of compliance.

4.1.2 Environmental Representative

The Environmental Management Representative (EMR) is appointed by MacGen and approved by the Director-General. The EMR provides a means of contact between MacGen and the DoP. The main roles and responsibilities of the EMR in relation to the Hunter River Pump Station Upgrade included:

- Acting as the primary contact in relation to environmental performance of the project;
- Review the Environmental Management Plans for the site and ensure that the management plans and commitments made are implemented and maintained;
- Review site work to evaluate performance compliance, including site inspections of active works on site;
- Consider and advise on matters specific to the condition of *Project Approval 06_0259 (as modified)*; and
- Satisfy the requirements of condition 6.1 from the *Project Approval 06_0259 (as modified)* and conditions 1.4, 3.1 and 3.3 from the Statement of Commitments outlined in the Environmental Assessment.

MacGen appointed an EMR prior to the commencement of construction and gained approval for that appointment by the Director-General. The EMR reported to MacGen on a fortnightly basis and commented on the status of environmental management of the project.

4.1.3 Environmental Impact Mitigation Works

An environmental risk assessment was conducted as part of the CEMP. As part of the risk assessment, mitigation measures were formulated in line with the identified risks, and to be consistent with the Environmental Assessment and the *Project Approval 06_0259 (as modified)* conditions.

The environmental impact control measures for the project are listed in the Aspect/Impact Register (**Appendix E**, CEMP).

Given the time of construction to the time of the audit is a large time frame; it is difficult to verify control measures that occurred during construction works. The audit team relied on compliance reports, inspections conducted by the EMR and site photographs to verify compliance.

Ongoing rehabilitation works were verified during the audit site inspection. Rehabilitation techniques were employed however an area inspected by the audit team, where rehabilitation was conducted was in poor condition. Many areas were overrun with introduced species and ongoing maintenance of the area was not evident.

4.2 Ecology Management Plan (2009)

Section 3.1(e) requires this IEA to *review the effectiveness of the Ecology Management Plan.*

The Ecology Management Plan (EMP) was prepared by ENSR Australia Pty Ltd (February 2009) to fulfil condition 6.4 of *Project Approval 06_0259 (as modified)*.

The Ecology Management Plan provides a system framework that allows for regular review and adaptation of management practices and monitoring regimes to ensure that the long term impacts of the project on flora and fauna are effectively managed at the Project site.

The EMP meets the requirements of *Project Approval 06_0259 (as modified)* and details a number of short and long term monitoring programs and rehabilitation schedules.

The audit revealed that most of the commitments in the EMP were not conducted. Various monitoring regimes set out in the EMP were part way complete or had not been attempted. **Appendix G** provides a detailed assessment of compliance for each condition outlined in the EMP.

In some instances it was evident that various monitoring assessments had originally been conducted. However, due to the extended period of time since the completion of construction, and the personnel changes that have occurred at MacGen in-between, little evidence was sighted to verify beyond doubt that the assessments were completed.

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5.0 Recommendations

This section provides a consolidated list of recommendations for the purpose of improving the environmental performance of MacGen's Hunter River Pump Station, including recommending measures or actions to:

- Improve the environmental performance of the pump station; and
- Update and/or revise any strategy, plan or program assessed during the audit.

The audit team received complete cooperation from the environmental and operations personnel involved in the audit. Issues identified during the audit predominately related to the lack of evidence available for the audit team to review. Since the time construction concluded, to the time this audit was carried out a lot of personnel changes occurred within MacGen's organisation. These changed have resulted in unsatisfactory record keeping of environmental information. In many cases during the audit it was evident that MacGen had originally satisfied their regulatory responsibilities outlined under *Project Approval 06_0259 (as modified),* however evidence to verify compliance at the time of the audit was unable to be obtained.

Table 10 presents key recommendations stemming from this IEA in relation to all non-compliances with approvals and management plans. **Table 10** is intended to provide guidance for MacGen in resolving these non-compliances as outlined in Condition 3.1 of *Project Approval 06_0259 (as modified).*

Table 10 Consolidated list of recommendations

Reference	Recommendation
Recommendations stemming from non-compliances	
Project Approval 06_0259 Schedule 2, Condition 5.2	Install a sign displaying contact details of the site in a position which is visible to the general public.
SoC, Condition 9.4	Improve rehabilitation in proximity to the Hunter River Pump Station. Conduct regular maintenance in line with a rehabilitation schedule.
SoC, Condition 14.2	Rehabilitate vegetation along the pipeline route. Conduct regular maintenance in line with a rehabilitation schedule.
Project Approval 06_0259 Schedule 2, Condition 4.2	Conduct independent environmental audits at least annually as required under the Compliance Tracking Program or agree otherwise with DP&I.
Other	
Reassess ongoing monitoring recommendations set out in the Ecology Management Plan and develop, then implement a monitoring program.	
Many documents were unable to be provided to the audit team, resulting in non-compliances that may have been avoidable. AECOM suggest that MacGen perform a review of their document management system structure and re-establish a reference system for reports, monitoring data and any other documents that may be called upon in the instance of an audit or by a regulatory department.	

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Appendix A

Audit Team Curricula Vitae

Appendix A Audit Team Curricula Vitae

Peter Horn
Associate Director - Environment

Qualifications
Master of Applied Science (Environmental Management and Restoration)

Bachelor Applied Science (Environmental Science)

Lead Auditor Environmental Compliance and Management (certified by RABQSA)

Affiliations
MEIANZ (Environmental Institute of Australia and New Zealand)

MCASANZ (Clean Air Society of Australia and New Zealand)

Career History
Peter has 17 years experience providing professional environmental services to industry and a further 15 years industry experience. Peter has extensive experience as a Director, Project Manager and Team Member for a range of clients in the management of environmental controls and issues including environmental assessment, strategic environmental advice, EMS implementation and auditing, application of ESD principles, contaminated land management and Legal compliance. His project direction experience includes numerous multi-disciplinary projects with deliverables from a broad range of skill sets.

Peter has developed skills in all aspects of environmental management and a good general overview of the project development process. These skills include Project Management, Environmental Assessment, Environmental Constraints Analysis, Air Quality and Noise, Stakeholder Consultation, Site Investigation and Remediation, Ecologically Sustainable Development, Environmental Management Systems, Energy and Climate Change, Water and Waste Water, Community Consultation, Approvals Management, Ecological Rehabilitation, Management of Contractors and Consultants and Communication with key Stakeholders including Regulatory Authorities.

As the Environmental Officer for Ashton Coal Mine, Peter managed all facets of environment and planning for the site including site compliance and compliance of the construction of the underground mine and associated facilities, coordinating with the Site General Manager and Development Manager.

Peter has audited environmental compliance, Environmental Management Systems, NSW Planning approval conditions, Environment Protection License compliance, construction compliance and general environmental performance since completing an ISO 14000 based auditing course in 1997. He has been accepted by NSW Planning as a lead auditor on ten audits to date.

Detailed Experience

Auditing

Peter is a certified lead auditor for Environmental Compliance and Management and has conducted a range of environmental audits across various industries including manufacturing, mining, power generation, Defence and construction. Audits have been focused on general environmental compliance, compliance with approval requirements, compliance with Environment Protection Licenses, compliance with Environmental Management Systems, industry best practice and cleaner production and due diligence audits associated with sale or purchase of assets.

Recent projects include:

- Independent Environmental Audit of Hydro Aluminium as an approved Lead Auditor (DP&I).
- Environmental Compliance Audits of development approval conditions for an explosives mixing plant at Mount Thorley, NSW for Roche Blasting.
- Audited two electrical engineering manufacturing plants in Cardiff (NSW) and Mackay (Queensland) and provided the risk elements and skeleton for an EMS at each site as a sole auditor.
- Audited three Defence sites and developed EMPs for the sites based on the audit observations as sole auditor.
- Audit of the Environmental Management of a sewage treatment plant for the Department of Defence at Williamtown, NSW as a sole auditor.
- Compliance audit of Eraring Energy's Eraring Power Station and six Hydro-electric generation sites.
- Compliance audit of a gas fired power station at Barcaldine, Central Queensland Power (now Origin Energy).
- EMS audits for University of Western Sydney and Colongra Power Station.
- Environmental management audit of New England Trading's Carrington building refurbishment operation, NSW.
- Due diligence audit for AGL pre-joint venture with ACTEW which when successful formed a large joint venture to deliver energy, water and waste water services to the Australian Capital Territory.
- Eco-efficiency Audit of a portion of OneSteel's steel rolling and reforming works at Waratah NSW. Focus on energy and waste efficiency opportunities.
- Compliance Audits of Hunter Valley Operations, Warkworth, Mount Thorley mines for Coal and Allied.
- Independent Environmental Audits of Warkworth Mine, Muswellbrook Coal, Drayton Mine, Integra Mine, Bengalla Mine, Mount Thorley Operations, Mount Owen Complex, Werris Creek Mine, Wilpinjong Mine, Ravensworth Underground Mine and Hydro Aluminium as an approved Lead Auditor (DoP).
- Compliance audits of Exploration Licences as an approved lead auditor by DTIRS DRE for Clarence Colliery and Moolarben Mines.
- Compliance audit of water licences at Ravensworth Surface Operations as an approved lead auditor (by NSW Office of Water).
- EPL compliance for CSA Mine (Cobar) and Ashton Coal Mines.

Training

Train the Trainer, AECOM 2008

Senior First Aid, 2006

Two Day Project Manager Training, PSMJ for AECOM Australia, 2007

World Class Consultant Training, ERM 2005

NSCA Course in OHS Consultation, 2002

Project Manager Training, Parsons Brinckerhoff, 2000

Environmental Management Systems Auditor Training – 1999

Professional History

2006 to Current
AECOM Australia Pty Limited
Associate Director – Environment, Principal Environmental Scientist

2005 to 2006
Carbon Based Environmental
Ashton Coal Mine, Environmental Officer

2004 to 2005
Environmental Resources Management
Senior Environmental Scientist

1999 to 2004
Parsons Brinckerhoff
Senior Environmental Scientist

1995 to 1999
ACIRL
Senior Environmental Scientist/ Environmental Scientist/ Environmental Technician

Kate Michelmore
Graduate Environmental Scientist

Qualifications
Bachelor of Science in Environmental Forensics
University of Technology Sydney (2011)

Career History
Upon graduating with a Bachelor of Science in Environmental Forensics, Kate commenced work as a graduate environmental scientist with AECOM in January 2012. She currently sits within the Hunter Environmental Health and Safety group in the Newcastle office. Kate's studies focused on Environmental Forensics, Environmental Law, Environmental Protection and Assessment, and Global information Systems.

In her time working at AECOM, Kate has been involved in the preparation, fieldwork and reporting for a range of environmental investigations. Her combination of environmental science and environmental law makes her well suited to environmental auditing. Kate has completed the Graham A. Brown Environmental Auditors Certification Workshop as a step towards gaining RABQSA certification.

Since joining AECOM, Kate has assisted with independent environmental audits including Hunter Water, Wilpinjong Mine, Mount Owen Complex, Mount Thorley Operations and Ravensworth Surface operations.

Kate has also developed content for a compliance database for Ravensworth Underground Mine, and assisted with the development of an annual report for Hydro Aluminium's Property Management Plan. Recently Kate has assisted the Brisbane and Canberra AECOM offices with the Estate Technical Regulatory System (ETRS) project for Department of Defence.

Detailed Experience

Independent Environmental Audits – Compliance Audits

- Water Licence IEA Ravensworth Surface Operations (2012)
- Warkworth Mining Limited Specialist IEA (2012)
- Mount Thorley Operations IEA (2012)
- Wilpinjong Coal Mine IEA (2012)
- Ravensworth Underground Mine IEA (2011 – 2012)
- Mount Owen Complex IEA (2011 – 2012)

Her role has included preparation of audit protocols, desktop environmental research, collating specialist's information and report preparation.

Environmental Reporting

- Preparation of the Annual *Hydro Aluminium's Property Management Plan* 2011
- Preparation of the 2011 Annual Environmental Management Plan for *Hydro Aluminium Kurri Kurri Pty Ltd*
- Assisted in preparation of revised Mining Operations Plan for Ashton Coal Pty Limited - (2012).

GIS

- Constructed maps detailing vegetation health and fluoride levels using ArcGIS 10 software (ESRI) for the annual Vegetation Health Survey for Hydro Aluminium Kurri Kurri Limited.

Other Projects

Hunter Water Chemical Audits – (2012)
Audit of 5 Hunter Water waste water and water treatment plants assessing the:

- handling and storage of hazardous chemicals;
- storage of biosoilds; and
- handling and disposal of waste.

Defence Estate Management System (DEMS): Estate Technical Regulatory System (ETRS) - (2012)
Assisted in ETRS project for the Australian Defence Organisation (ADO), involving;

- Classification of hazard estate classes; and
- Identification of technical and regulatory requirements as defined in commonwealth Work Health and Safety (WHS) Legislation.

Centennial Coal Groundwater Surface Water and Dust Monitoring Program – (2012)
Inputting of ALS data into electronic system for the Centennial Coal Environmental Monitoring Project

Ravensworth Underground Mine (RUM) Compliance Database – (2012)
Assembled compliance evidence against the RUM development consent.

Conferences

Attended AECOM's graduate Induction conference in Melbourne, March 2012

Training

Graham A. Brown Environmental Auditors Certification Workshop, October 2012

WorkCover NSW Construction Induction (White Card)

Senior First Aid 2012

Communication for Success – Assertiveness

Communication for Success – Emotional Intelligence

Professional History

2012 – Present
AECOM
Graduate Environmental Scientist

Appendix B

Audit Meeting Agenda

Appendix B Audit Meeting Agenda

AECOM Australia Pty Ltd
17 Warabrook Boulevarde
Warabrook NSW 2304
PO Box 73
Hunter Region MC NSW 2310
Australia
www.aecom.com

+61 2 4911 4900 tel
+61 2 4911 4999 fax
ABN 20 093 846 925

Agenda of Meeting

Macquarie Generation - Hunter River Pump Station

Subject	Independent Environmental Audit - Audit Interview and Site Inspection	Page	1
Venue	Bayswater Power Station	Time	8:00 - 16:30
Participants	Macquarie Generation – Kieran Scott (Acting Environment Manager), Kathryn Yates (Environment Officer), Chris Rooney – (Professional Officer), Paul Coffey (Veolia Site Manager) AECOM – Peter Horn (Lead Auditor), Kate Michelmore (Assistant Auditor)		
Apologies			
File/Ref No.	60153014	Date	Tuesday 11 September 2012
Distribution	As above		

No	Item	Time	Participants
1	Administration	8:00	
2	Opening Meeting • Introductions & Audit Purpose • Confidentiality & Process • Overview of Hunter River Pump Station	8:15	Peter Horn Kathryn Yates
3	Project Approval • Specific Environmental Conditions o Air quality impacts o Flora and fauna management o Water management o Waste management o Hazards and risks o Aboriginal cultural management • Compliance monitoring program • Community information, consultation and involvement • Environmental Management, including: o Construction Environmental Management Plan o Operational Environmental Management Plan	8:30	Kathryn Yates Representatives from: *Community relations *Land Management *Construction / project management

No	Item	Time	Participants
	○ Ecology Management Plan • Environmental reporting ○ Incident reporting		
	LUNCH	12:00	
4	Statement of Commitments • Compliance reports • Environmental impact audits • Environmental Management ○ Construction Environmental Management Plan and sub-plans ○ Operational Environmental Management Plan ○ Environmental Management Representative • Community and consultation • Project design • Noise management • Erosion and sedimentation • Water • Visual impacts • Air quality • Indigenous heritage • Non-indigenous heritage • Waste management • Terrestrial ecology • Ecology mitigation measures	12:30	Kathryn Yates
5	Site tour	14:00pm	All
6	Closeout meeting	16:00pm	Peter Horn
7	Audit close	16:30pm	

Appendix C

Correspondence

Appendix C Correspondence

Appendix D

Audit Protocol - Project Approval 06_0259 (as modified)

Appendix D Audit Protocol - Project Approval 06_0259 (as modified)

PA Cond. No	Condition	Evidence / Comments	Audit Finding
ADMINISTRATIVE CONDITIONS			
	Terms of Approval		
1.1	The Proponent shall carry out the Project generally in accordance with the: a) Major Projects Application 06_0259 b) Macquarie Generation Hunter River Pump Station Augmentation, Environmental Assessment, prepared by Connell Wagner Pty Ltd and dated 16 January 2007 as modified by Macquarie Generation Modification to Project Approval, prepared by Macquarie Generation and dated 26 September 2007. c) the conditions of this consent.	This IEA has assessed compliance against this PA and Environmental Assessment. See Audit Report for assessment of compliance. Assessment of compliance against the Environmental Assessment is given in Appendix E of the audit report. Assessment of compliance against conditions of this consent is provided in the sections below	Complies
1.2	If there is any inconsistency between the above, the conditions of this approval shall prevail to the extent of the inconsistency.		
1.3	The Proponent shall comply with any reasonable requirement(s) of the Director-General arising from the Department's assessment of: - any reports, plans or correspondence that are submitted in accordance with this approval - the implementation of any actions or measures contained in these reports, plans or correspondence.	At the time of the audit the Director-General had not made any requirements.	Not Triggered
	Limits of Approval		
1.4	This approval shall lapse five years after the date on which it is granted, unless the works' subject of this approval is physically and substantially commenced on or before that time.	The Project Approval was issued on 23 May 2007. The project approval was valid during the audit period	Complies
1.5	The pumping station component of the project shall consist of up to 20 submersible pumps with a total extraction capacity of 800 ML/day.	Daily operating instruction shows daily allowances of water to extract. Continuous monitoring is undertaken. Pumping amounts are sent daily to NSW Office of Water. PDPS Pumping station overview sighted during audit interview. daily amounts of water extracted is programed into PDPS system and once reached pump shuts down for the day. There are 12 pumps in place at Hunter River Pump station. Each pump has an individual pump meter and no exceedences in water extraction capacity were recorded during the audit period.	Complies
1.6	The Proponent shall only extract water from the Hunter River in accordance with the Water Management Licence.	Water Licences Report sighted.	Complies
	Statutory Requirements		
1.7	The Proponent shall ensure that all licences, permits and approvals are obtained and maintained as required throughout the life of the project. No condition of this consent removes the obligation for the Proponent to obtain, renew or comply with such licences, permits or approvals. The Proponent shall ensure that a copy of this consent and all relevant environmental approvals are available on the site at all times during the project.	MacGen licences and approvals made available on intranet.	Complies

SPECIFIC ENVIRONMENTAL CONDITIONS			
	Air Quality Impacts		
2.1	The Proponent shall construct the project in a manner that minimises dust emissions from the site, including wind-blown and traffic-generated dust. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Proponent shall identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease	CEMP provided to the audit team for review During construction Macquarie Generation facilitated water tankers as a measure to mitigate dust. (section 2.2.2.7 CEMP). Other mitigation measures are outlined in the CEMP. as part of the Safety and Quality Environment Program weekly assessments were conducted.	Complies
	Flora and Fauna Management		
2.2	The pumping station component of the project and associated construction works shall be confined to the heavily disturbed section of the bank immediately upstream of the existing plant. The Proponent shall erect temporary fencing around the River-Flat Eucalypt Forest and adjacent river bank, up to the section requiring disturbance as part of construction activities. Orange mesh and reflective markers are to be attached to the fence along its perimeter. The fence is to be maintained for the duration of site clearing, preparation and construction works.	Temporary fencing sighted in photos from construction. Reports to be provided. The audit team reviewed the Flora and Fauna Management Plan (appendix F of the CEMP). Section 4.2.1 details this condition. The audit team viewed pictures taken during construction showing the temporary fencing around the River-Flat Eucalypt forest.	Complies
2.3	All construction works associated with the pumping station component that may impact on the local platypus population shall be undertaken in accordance with the methods described in *Macquarie Generation Modification to Project Approval* dated 26 September 2007.	The audit team was provided with the Bayswater Power Station Hunter River LPP Augmentation - Construction environmental management plan - Platypus investigation of excavation activities.	Complies
2.4	The Proponent shall not remove any hollow-bearing trees potentially affected by the construction of the pipeline and shall undertake all practicable measures to ensure the retention of existing native trees.	Compliance reports from CEMP Section 4.2.1 of the Flora and Fauna Management Plan details that no hollow-bearing trees were found to be removed during construction. During the audit interview it was stated that no hollow bearing trees were removed however if any tree was to be removed a certified individual was engaged to assess the situation.	Complies
	Water Management		
2.5	Except as may be expressively provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the Protection of the Environment Operations Act 1997 which prohibits the pollution of waters.	noted	noted

2.6	Soil and water management controls shall be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities, in accordance with Landcom's *Managing Urban Stormwater Soils and Conservation* .	As per Erosion and Sediment Control Plan (CEMP, Appendix N); some of the soil/water control measures employed at the site are: - Regular inspections of erosion and sediment control devices. - Coffer dam construction around the river bank excavation to ensure that the construction area is kept dry and that the sediment from the construction site does not enter the river. - Sediment basins construction at the bottom of disturbed catchments. - No spoil to be stored adjacent to the waterways or drainage lines. - Surface flows and roof water diverted around the areas of disturbed ground and soil stockpiles. - Sediment fences constructed downstream of all disturbed sites to minimize the influx of sediment and other pollutants into local waterways. - Barrier fencing to minimize disturbance by vehicle/pedestrian access and to reduce wind and water erosion. - Contingency plan for chemical, fuel and oil spills. Management plan appears to be adequate, however no evidence showing implementation available	Not able to be verified
	Waste Generation and Management		
2.7	All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials. The Proponent shall maximise the treatment, reuse and/ or recycling on the site of any waste oils, excavated soils, slurries, dusts and sludges associated with the Project, to minimise the need for treatment or disposal of those materials outside the power station. To remove any doubt, this condition does not allow the use of any of the materials listed above as potential fuel sources.	MacGen commented that waste was taken by a licensed facility ("Wally Vac Trucks") and directed to a waste management facility lawfully permitted to accept the materials. To verify compliance the audit team requested the waste tracking reports however this could not be provided.	Not Compliant - Evidence could not be provided
2.8	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.	MacGen commented that waste was taken by a licensed facility ("Wally Vac Trucks") and directed to a waste management facility lawfully permitted to accept the materials. To verify compliance the audit team requested the waste tracking reports however this could not be provided. No information could be provided to the audit team to verify this condition.	Not Compliant - Evidence could not be provided

2.9	The Proponent shall ensure that all liquid and/or non-liquid waste generated and/or stored on the site is assessed and classified in accordance with Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes (DECC, 2004), or any future guideline that may supersede that document.	MacGen commented that waste during construction included: - General, Copper, Metal, Wood and small amounts of Fuel Waste. Waste was stored and disposed of as per the Waste Management Work Instruction (Section 5.5, Appendix J of the CEMP). To verify compliance the audit team requested the waste tracking reports however this could not be provided. No information could be provided to the audit team to verify this condition.	Not Compliant - Evidence could not be provided
	Hazards and Risk		
2.10	The Proponent shall demolish all relevant structures strictly in accordance with Australian Standard 2601-1991: The Demolition of Structures, as in force at 1 July 1993.	No demolition took place, all construction was new	Not Triggered
2.11	The Proponent shall store and handle all dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with: - all relevant Australian Standards - a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund - the EPA's Environment Protection Manual Technical Bulletin Bunding and Spill Management. In the event of an inconsistency between the requirements listed from a) to c) above, the most stringent requirement shall prevail to the extent of the inconsistency.	There was no storage of dangerous goods on site during the audit period.	Not Triggered
	Aboriginal Cultural Heritage		
2.12	In the event that an Aboriginal object is identified during construction of the project, the Proponent shall adopt management strategies to ensure that such Aboriginal objects are subjected to partial or nil impact. The Proponent shall ensure that the cultural heritage management strategies are developed in conjunction with the Aboriginal community.	River Pump Station Aboriginal Site inspection (ENSR, 2009) Site inspection revealed aboriginal artefacts north east of the pump station. Site was immediately sectioned off and a qualified archaeologist was commissioned whom confirmed the site. Compliance Tracking Program Report and pre-operation compliance reports were viewed by audit team verifying site inspection outcomes. Management strategies are covered in ENSR, 2009 inspection report .	Complies
ENVIRONMENTAL MONITORING AND AUDITING			
	Environmental Auditing		
3.1	Twelve months after the commencement of operation of the project, or within such period as otherwise agreed by the Director-General, the Proponent shall commission an independent person or team to undertake an Environmental audit of the project. The independent person or team shall be approved by the Director-General prior to the commencement of the Audit shall be submitted for the approval of the Director-General no later than one month after the completion of the Audit. The Audit shall:	Audit has occurred outside of time frame indicated. Audit report was not submitted within the month time frame following the completion of the audit.	Not Compliant
	a) be carried out in accordance with ISO 14010 - Guidelines and General Principles for Environmental Auditing and ISO 14011 - Procedures for Environmental Auditing	This audit	Complies
	b) assess compliance with the requirements of this approval, and other licences and approvals that apply to the project	Audit Report	Complies

	c) assess the environmental performance of the project against the predictions made and conclusions drawn in the documents referred to under condition 1.1, and of this approval	Audit Report	Complies
	d) review the effectiveness of the environmental management of the project, including any environmental impact mitigation works	Audit Report	Complies
	e) review the effectiveness of the Ecology Management Plan referred to under condition 6.4.	Audit Report	Complies
	The Director-General may require the Proponent to undertake works to address the findings or recommendations presented in the Environmental Compliance audit Report. Any such works shall be completed within such time as the Director-General may agree. The Environmental Compliance Audit Report shall be made available for public inspection on request.	Audit Report	Complies
COMPLIANCE MONITORING AND TRACKING			
	Compliance Tracking Program		
4.1	The Proponent shall develop and implement a Compliance Tracking Program to track compliance with the requirements of this approval. The Program shall include, but not necessarily limited to: a) provisions for periodic review of the compliance status of the project against the requirements of this approval b) provisions for periodic reporting of compliance status to the Director-General c) a program for independent environmental auditing at least annually, or as otherwise agreed by the Director-General, in accordance with ISO 19011:2002 - Guidelines for Quality and/ or Environmental Management Systems Auditing d) mechanisms for rectifying any non-compliance identified during environmental auditing or review of compliance.	Compliance tracking program sighted. Audits have not occurred within the allocated time frames. No evidence of an extension of time permitted by the Director-0general was provided.	Not Compliant
COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT			
5.1	Subject to confidentiality, the Proponent shall make all documents required under this approval available for public inspection on request.	Current Environmental Manager has no recollection of anyone requesting information	Complies
	Complaints Procedure		
5.2	Prior to the commencement of construction of the Project, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation):		
	a telephone number on which complaints about construction and operational activities at the site may be registered	Inquires line on Mac Gen information	Complies
	- a postal address to which written complaints may be sent	Not online at the time of the audit, however Mac Gen have since uploaded postal address to website	Not Compliant
	- an email address to which electronic complaints may be transmitted.	Email address online	Complies
	The telephone number, the postal address and the email address shall be displayed on the Proponent's website and on a sign near the site, in a position that is clearly visible, and which clearly indicates the purposes of the sign.	No sign was in place at the time of the audit	Not Compliant

5.3	The Proponent shall record details of all complaints received through the means listed under Condition 5.2 of this approval in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to:	Complaints sheet was sighted by the audit team. Complaints procedure was in place at MacGen however the Complaints Register could not be provided to the audit team.	Not Compliant - Evidence could not be provided
	- the date and time, where relevant, of the complaint		
	- the means by which the complaint was made (telephone, mail or email)		
	- any personal details of the complainant that were provided, or if no details were provided, a note to that effect		
	- the nature of the complaint		
	- any action(s) taken by the Proponent in relation to the complaint, including any follow-up contact with the complainant if no action was taken by the Proponent in relation to the complaint, the reason(s) why no action was taken.		
	The Complaints Register shall be made available for inspection by the Director-General upon request.		
ENVIRONMENTAL MANAGEMENT			
	Environmental Representative		
6.1	Prior to the commencement of construction of the Project, the Proponent shall nominate a suitably qualified and experienced Environmental Representative(s) for the approval of the Director General. The Proponent shall employ the Environmental Representative(s) on a full-time basis, or as otherwise agreed by the Director-General, during the construction of the project. The Environmental Representative shall be:	letter from DG dated 9/7/2008 containing history of environmental representatives and approving current sighted	Complies
	- the primary contact point in relation to the environmental performance of the project responsible for ensuring that all Management Plans and commitments made by the Proponent under this approval are implemented		
	- responsible for considering and advising on matters specified in the conditions of this approval, and all other licences and approvals related to the construction impacts of the project		
	- given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur.		
	Construction Environmental Management Plan		
6.2	Prior to the commencement of construction of the Project, the Proponent shall prepare and implement a **Construction Environmental Management Plan** to outline environmental management practices and procedures to be followed during the construction of the Project.	The Construction Environmental Management Plan (Tenix Alliance) was provided to the audit team for review.	Complies
	The Plan shall be prepared in accordance with Guideline for the Preparation of Environmental Management Plans (DIPNR 2004) and shall include, but not necessarily be limited to:	The plan was prepared in accordance with Guideline for the Preparation of Environmental Management Plans (DIPNR 2004)	Complies

	An **Erosion and Sedimentation Management Plan** to detail measures to minimise erosion during site preparation, construction and demolition works associated with the project. The Plan shall include, but not necessarily be limited to:	The Erosion and Sedimentation Management Plan was developed to minimise erosion associated with the project.	Complies
	i) results of investigations into soils associated with the site, in particular the stability of the soil and its susceptibility to erosion	Section 2.2 of the Erosion and Sedimentation Management Plan	Complies
	ii) details of erosion, sediment and pollution control measures and practices to be implemented during construction of the project, with specific measures outlined for minimising bank sedimentation and erosion	Section 4 for Erosion Control (Section 4.3), Sediment Control (Section 4.5), and Pollution Control Measures (Section 4.7)	Complies
	iii) demonstration that erosion and sediment control measures will conform with, or exceed, the relevant requirements of the Regional Erosion and Sediment Control Policy and Code of Practice adopted by Council	These requirements were included in the Erosion and Sedimentation Management Plan.	Complies
	iv) design specifications for diversionary works, banks and sediment basins	These requirements were included in the Erosion and Sedimentation Management Plan.	Complies
	v) an erosion monitoring program during construction and demolition works associated with the project	These requirements were included in the Erosion and Sedimentation Management Plan.	Complies
	vi) measures to address erosion, should it occur, and to rehabilitate/stabilize disturbed areas of the site.	These requirements were included in the Erosion and Sedimentation Management Plan.	Complies
	A **Flora and Fauna Management Plan** to detail measures to minimise impacts on flora and fauna during site preparation, construction and demolition works associated with the project. The Plan shall be consistent with section 5 of the EA and shall be formed in consultation with the DECC. The Plan shall include, but not necessarily be limited to:	The Bayswater Hunter River Pump Station Augmentation Flora and Fauna Management and Rehabilitation Plan was provided to the audit team.	Complies
	i) detailed maps clearly indicating the relative locations of construction areas and sensitive flora and fauna habitat areas	Figures 3.1 and 3.2 in the Flora and Fauna Management and Rehabilitation Plan	Complies
	ii) comprehensive procedures and work methodologies to minimise adverse impacts on flora and fauna habitat with specific attention given to platypus habitat and River-Flat Eucalyptus Forest	These requirements were included in the Flora and Fauna Management and Rehabilitation Plan	Complies
	iii) specific measures, such as fencing to ensure that the removal of hollow bearing trees are avoided	These requirements were included in the Flora and Fauna Management and Rehabilitation Plan	Complies
	iv) a description of methods for ensuring the retention and separation of topsoil from other soils for the purposes of site rehabilitation.	These requirements were included in the Flora and Fauna Management and Rehabilitation Plan	Complies
	A **Chemical Management Plan** to detail measures to prevent any oil or chemical spills associated with the construction of the project from contaminating the river. The Plan shall be in accordance with the EPA's Environment Protection Manual Technical Bulletin Bunding and Spill Management.	The Chemical Management Work Instruction plan was provided to the audit team	Complies
	Operation Environmental Management Plan		
6.3	Prior to the commencement of operation, the Proponent shall develop an **Operation Environmental Management Plan** to detail an environmental management framework, practices and procedures to be followed during operation of the project and existing plant. The Plan shall be consistent with Guideline for the Preparation of Environmental Management Plans (DIPNR 2004) and shall be formed in consultation with DECC and DWE. The Plan shall include, but not necessarily be limited to:	The Operation Environment Management Plan was provided to the audit team for review. The plan contains these conditions.	Complies

	a) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project, including all approvals, licences, approvals and consultations	These requirements were included in the Operational Environmental Management Plan.	Complies
	b) a description of the roles and responsibilities for all relevant employees involved in the operation of the project	These requirements were included in the Operational Environmental Management Plan.	Complies
	c) overall environmental policies and principles to be applied to the operation of the project	These requirements were included in the Operational Environmental Management Plan.	Complies
	d) standards and performance measures to be applied to the project, and a means by which environmental performance can be periodically reviewed and improved, where appropriate	These requirements were included in the Operational Environmental Management Plan.	Complies
	e) management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval	These requirements were included in the Operational Environmental Management Plan.	Complies
	f) the additional plans listed under condition 6.4 of this approval	These requirements were included in the Operational Environmental Management Plan.	Complies
	g) the environmental monitoring requirements outlined under condition 3.1.	These requirements were included in the Operational Environmental Management Plan.	Complies
	Ecology Management Plan		
6.4	Prior to the commencement of construction the Proponent shall, in consultation with the DECC, prepare and implement a **Ecology Management Plan** which will outline measures and a monitoring regime to ensure that the long-term impacts of the project on flora and fauna are effectively managed. The Plan shall be submitted to the Director-General for approval and shall include, but not necessarily be limited to:	Ecology Management Plan (EMP) provided to the audit team. The EMP was developed in compliance with Project Approval conditions. Consultation with DoP included: - EMP final submitted to DoP in January 2009. - DoP replied with comments that required changes to EMP (letter dated 05/02/09) - Updated EMP was resubmitted to DoP (letter dated 16/03/09) - DoP Approved the EMP (letter dated 29/04/09)	Complies
	a) a system framework that allows management practices and monitoring regimes to be regularly reviewed and adapted as appropriate, such that any adverse impacts are avoided or rectified	The Ecology Management Plan was prepared in accordance with the consent conditions	Complies
	b) a long-term management plan detailing a monitoring regime and specific measures that will be undertaken to conserve the local platypus population and the River-Flat Eucalypt Forest	The Ecology Management Plan was prepared in accordance with the consent conditions	Complies
	c) a monitoring program to regularly assess the functionality of the fishway before and after the operation of the project with specific attention given to the impact of the project on the fishway during breeding season	The Ecology Management Plan was prepared in accordance with the consent conditions	Complies
	d) a detailed rehabilitation schedule describing areas to be rehabilitated, rehabilitation methods and maintenance regimes	The Ecology Management Plan was prepared in accordance with the consent conditions	Complies
	e) a program to monitor the health of rehabilitation areas and to ensure that the occurrence of weeds and pests in areas adjacent to the project are controlled.	The Ecology Management Plan was prepared in accordance with the consent conditions	Complies

	The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of operation of the project, or within such period otherwise agreed by the Director-General. Operation shall not commence until written approval has been received from the Director-General.	Macquarie generation comment that this did happen however correspondence could not be obtained at the time of the audit	Not Compliant - Evidence could not be provided
ENVIRONMENTAL REPORTING			
	Incident Reporting		
7.1	The Proponent shall notify the Director-General of any incident with actual or potential significant off-site impacts on people or the biophysical environment within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the Director-General within seven days of the date on which the incident occurred.	An incident did occur however documentation could not be provided to the audit team	Not Compliant - Evidence could not be provided
7.2	The Proponent shall meet the requirements of the Director-General to address the cause or impact of any incident, as it relates to this approval, reported in accordance with condition 7.1 of this approval, within such period as the Director-General may require.	An incident did occur however documentation could not be provided to the audit team	Not Compliant - Evidence could not be provided

Appendix E

Audit Protocol - Environmental Assessment (2007)

Appendix E Audit Protocol - Environmental Assessment (2007)

	Statement of Commitment	Evidence / Comment	Audit Finding
1. ADMINISTRATIVE CONDITIONS			
1.1	**Notification of the Project's Construction and Operation**		
	Macquarie Generation will notify the Director-General in writing, relevant Government Departments and Singleton Council of the start of the Project's Construction and Operation. Such notification must be provided at least four weeks before the relevant start date unless otherwise agreed to by the Director-General. Macquarie Generation will bring to the Director-General's attention any matter that may require further assessment by the Director-General. Macquarie Generation will comply with any requirements of the Director-General arising from the Director-General's assessment of:	Correspondence to the Director-General (relevant Government Departments) and Singleton Council could not be provided to the audit team.	Not Compliant - Evidence unable to be provided
	(a) any reports, plans or correspondence that are submitted to satisfy the Conditions of Approval		
	(b) the implementation of any actions or measures contained in such reports, plans or correspondence.		
1.2	**Pre-construction Compliance Report**		
	Macquarie Generation will submit a Pre-construction Compliance Report to the Director-General at least two weeks before construction commences (or within any other time agreed to by the Director-General).	During the audit the pre-construction compliance report could not be provided to the audit team. No evidence was found that suggested a pre-construction compliance report was ever prepared and submitted to the DG.	Not Compliant
	The Pre-construction Compliance Report will include:		
	(a) details of how the Conditions of Approval required to be addressed before construction were complied with		Not Compliant
	(b) the time when each relevant Condition of Approval was complied with, including dates of submission of any required reports and/or approval dates		Not Compliant
	(c) details of any approvals or licences required to be issued by relevant Government Departments before construction commences.		Not Compliant
1.3	**Pre-operation Compliance Report**		
	Macquarie Generation will submit a Pre-operation Compliance Report to the Director-General at least two weeks before Operation commences (or within any other time agreed to by the Director-General).	The Pre-operation compliance report was provided to the audit team for review.	Complies
	The Pre-operation Compliance Report must include:	The Pre-operation compliance report was provided to the audit team for review.	Complies
	(a) details of how the Conditions of Approval required to be addressed before Operation were complied with	The Pre-operation compliance report was provided to the audit team for review.	Complies
	(b) the time when each relevant Condition of Approval was complied with, including dates of submission of any required reports and/or approval dates	The Pre-operation compliance report was provided to the audit team for review.	Complies
	(c) details of any approvals or licences issued by relevant Government Departments for the Project's operation.	The Pre-operation compliance report was provided to the audit team for review.	Complies

1.4	**Construction Compliance Reports**		
	Macquarie Generation will provide the Director-General, Singleton Council and any other government department nominated by the Director-General, with Construction Compliance Reports. The environmental management representative (EMR) must review the Construction Compliance Reports before they are submitted to the Director- General and bring to the Director-General's attention any shortcomings.	EMR letter sighted reviewing construction compliance report Submission Letter to singleton Council and DG sighted	Complies
	The first Construction Compliance Report will report on the first six months of construction and be submitted a maximum six weeks after expiry of that period (or at any other time interval agreed to by the Director-General). The second, and subsequent, Construction Compliance Reports will be submitted at maximum intervals of six months from the date of submission of the first Construction Compliance Report (or at any other time interval agreed to by the Director General) for the duration of Construction.	Construction Compliance report sighted by the audit team. (2009 report). The audit team was unable to verify dates of submission to the Director-General.	Not Compliant
	The Construction Compliance Reports will include information on:		
	(a) compliance with the CEMP and the Conditions of Approval	The Construction Compliance Report Contains the required information	Complies
	(b) compliance with any approvals or licences issued by relevant Government Departments for Construction	The Construction Compliance Report Contains the required information	Complies
	(c) the implementation and effectiveness of environmental controls	The Construction Compliance Report Contains the required information	Complies
	(a) the assessment of effectiveness will be based on a comparison of actual impacts against performance criteria identified in the CEMP	The Construction Compliance Report Contains the required information	Complies
	(d) environmental monitoring results, presented as a results summary and analysis	The Construction Compliance Report Contains the required information	Complies
	(e) the number and details of any complaints, including a summary of main areas of complaint, action taken, response given and intended strategies to reduce recurring complaints	The Construction Compliance Report Contains the required information	Complies
	(f) details of any review and amendments to the CEMP resulting from construction during the reporting period	The Construction Compliance Report Contains the required information	Complies
	(g) any other matter relating to compliance with the Conditions of Approval or as requested by the Director-General.	The Construction Compliance Report Contains the required information	Complies
	The Construction Compliance Reports will be made publicly available.	No evidence that the reports were made publicly available was provided. Reports are not on MacGen Website.	Not Compliant
2. ENVIRONMENTAL IMPACT AUDITS			
2.1	**Environmental Impact Audit Report - Construction**		
	An Environmental Impact Audit Report - Construction will be prepared by Macquarie Generation and submitted to the Director-General a maximum three months after construction is complete (or at any other time interval agreed to by the Director- General). The Environmental Impact Audit Report – Construction will also be submitted to other government departments upon the request of the Director-General.	Environmental Impact Audit Report - Construction, was unable to be provided	Not Compliant - Evidence unable to be provided
	The Environmental Impact Audit Report – Construction will:	Environmental Impact Audit Report - Construction, was unable to be provided	Not Compliant - Evidence unable to be provided
	(a) identify the major environmental controls used during Construction and assess their effectiveness	Environmental Impact Audit Report - Construction, was unable to be provided	Not Compliant - Evidence unable to be provided

	(b) summarise the main environmental management plans and processes implemented during construction and assess their effectiveness	Environmental Impact Audit Report - Construction, was unable to be provided	Not Compliant - Evidence unable to be provided
	(a) identify any innovations in construction methodology used to improve environmental management	Environmental Impact Audit Report - Construction, was unable to be provided	Not Compliant - Evidence unable to be provided
	(b) discuss the lessons learnt during construction, including recommendations for future Projects.	Environmental Impact Audit Report - Construction, was unable to be provided	Not Compliant - Evidence unable to be provided
2.2	**Environmental Impact Audit Report - Operation**		
	An Environmental Impact Audit Report - Operation will be submitted by Macquarie Generation to the Director-General a maximum 24 months after the Project begins Operation and at any additional periods that the Director-General may require. The Environmental Impact Audit Report - Operation must also be submitted to other government departments upon the request of the Director-General.	Environmental Impact Audit Report - Operation	Not Compliant - Evidence unable to be provided
	The Environmental Impact Audit Report - Operation will:	Environmental Impact Audit Report - Operation	Not Compliant - Evidence unable to be provided
	(a) be certified by an independent person at the Proponent's expense. The certifier must be advised to the Director-General before the Environmental Impact Audit Report – Operation is prepared	Environmental Impact Audit Report - Operation	Not Compliant - Evidence unable to be provided
	(b) compare the operation impact predictions made in the EA, Submissions Report and any supplementary studies with the actual impacts	Environmental Impact Audit Report - Operation	Not Compliant - Evidence unable to be provided
	(c) assess the effectiveness of implemented mitigation measures and safeguards	Environmental Impact Audit Report - Operation	Not Compliant - Evidence unable to be provided
	(d) assess compliance with the systems for operation maintenance and monitoring	Environmental Impact Audit Report - Operation	Not Compliant - Evidence unable to be provided
	(e) discuss the results of consultation with the local community particularly any feedback or complaints	Environmental Impact Audit Report - Operation	Not Compliant - Evidence unable to be provided
	(f) be made publicly available.	Environmental Impact Audit Report - Operation	Not Compliant - Evidence unable to be provided
3. ENVIRONMENTAL MANAGEMENT			
3.1	**Construction Environmental Management Plan**		
	A Construction Environmental Management Plan (CEMP) will be prepared by Macquarie Generation and implemented in accordance with all relevant Acts and Regulations. Macquarie Generation will obtain the Director-General's Approval for the CEMP before construction commences or within any other time agreed to by the Director-General. The CEMP must be reviewed by the EMR before Macquarie Generation seeks the Director-General's approval for the CEMP. The EMR must bring to the Director-General's attention any shortcomings.	The CEMP was provided to the audit team for review. The CEMP content verifies this condition, however there was no evidence available for the audit team to review that verified the Director-Generals approval. The outline of the CEMP was prepared in accordance with Project Approval Condition 6.2.	Not Compliant - Evidence unable to be provided
	Macquarie Generation will ensure that the mitigation measures identified in this EA are incorporated into the CEMP or the relevant Sub-plan.	Mitigation measures are incorporated into appendix E of the CEMP	Complies

The CEMP will be prepared in accordance with the Department's publication entitled Guideline for the Preparation of Environmental Management Plans (2004).	Flora and Fauna Management Plan (Appendix F - CEMP) and Erosion and Sediment Management Plan (Appendix N - CEMP) were developed in consultation with the Environmental representative	Complies
i) Flora and Fauna Management Sub-plan		
A Flora and Fauna Management Sub-plan will be prepared by Macquarie Generation as a Sub-plan of the CEMP. This Sub-plan will include:		
(a) Plans showing terrestrial vegetation communities; important flora and fauna habitat areas; locations where threatened species, populations or ecological communities were recorded; and areas to be cleared. The plans must also identify vegetation adjoining the Project where this contains important habitat areas and/or threatened species, populations or ecological communities.	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(b) Methods to manage impacts on flora and fauna species (terrestrial and aquatic) and their habitat which may be directly or indirectly affected by the Project.	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
These will include:		Complies
(i) procedures for vegetation clearing, soil management and managing other habitat damage during construction	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(ii) methods to protect vegetation both retained within, and also adjoining, the Project from damage during construction	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(iii) a habitat tree management program including fauna recovery procedures and habitat maintenance (e.g. relocating hollows or installing nesting boxes)	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(iv) where possible, and where consistent with DEC or DPI requirements, strategies for re-using in rehabilitation works individuals of any threatened plant species that would be otherwise be destroyed by the Project	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(v) performance criteria against which to measure the success of the methods	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(c) Rehabilitation details including:	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(i) identification of locally native species to be used in rehabilitation and landscaping works, including flora species suitable as a food resource for threatened fauna species	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(ii) methods to remediate affected aquatic habitats	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(iii) the source of all seed or tube stock to be used in rehabilitation and landscaping works including the identification of seed sources within the Project. Seed of locally native species within the Project will be collected before construction commences to provide seed stock for revegetation	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(iv) methods to re-use topsoil (and where relevant subsoils) and cleared vegetation	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
(v) measures for the management and maintenance of all preserved, planted and rehabilitated vegetation.	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies

	(d) A Weed Management Strategy including:	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
	(i) identification of weeds within the Project and adjoining areas	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
	(ii) methods to treat and re-use weed infested topsoil	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
	(iii) strategies to control the spread of weeds during construction.	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
	(e) A program for reporting on the effectiveness of flora and fauna management measures against the identified performance criteria. Management methods must be reviewed where found to be ineffective.	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
	(f) The mitigation measures in Chapter 5 of the EA.	As per the *Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
	ii) Cultural Heritage Sub-plan		
	A Cultural Heritage Management Sub-plan will be prepared by Macquarie Generation as part of the CEMP. The Sub-plan must incorporate the mitigation measures identified in Chapter 5 of the EA.	As per the *Heritage and Cultural Significance Work Instruction* (Appendix G - CEMP).	Complies
	In the event that a non-indigenous heritage item is uncovered during Construction, all work in the vicinity of the object will cease and Macquarie Generation will contact the NSW Heritage Council to determine an appropriate course of action prior to the recommencement of work in the vicinity of the item.	No non-indigenous items were uncovered during construction of the project. The *Heritage and Cultural Significance Work Instruction* details the procedures upon the discovery of an item fitting this conditions description.	Not Triggered
	iii) Soil and Water Management Sub-plan		
	As part of the CEMP, a Soil and Water Management Sub-plan will be prepared by Macquarie Generation in consultation with relevant Government Departments and Singleton Council. The Sub-plan will:	The *Erosion and Sediment Management Plan* (Appendix N - CEMP) details these requirements. No evidence of consultation with the relevant government departments and Singleton Council could be provided to the Audit team.	Not Compliant - Evidence unable to be provided
	(a) where relevant, be consistent with the RTA's Guidelines for the Control of Erosion and Sedimentation in Road works	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(b) identify the Construction activities that could cause soil erosion or discharge sediment or water pollutants from the site	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(c) describe management methods to minimise soil erosion or discharge of sediment or water pollutants from the site including a strategy to minimise the area of bare surfaces during construction	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(d) describe the location and capacity of erosion and sediment control measures	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(e) identify the timing and conditions under which construction stage controls will be decommissioned	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(f) include the mitigation measures in Chapter 5 of the EA, including measures to minimise dust from disturbed areas	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(g) include contingency plans to be implemented for events such as fuel spills	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies

	(h) identify how the effectiveness of the sediment and erosion control system will be monitored, reviewed and updated.	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	Construction		
	An appropriately skilled Engineer or soil scientist will be consulted according to the Soil and Water Management Sub-plan to:		
	(a) undertake inspections of temporary and permanent erosion and sedimentation control devices;	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(b) ensure that the most appropriate controls are being implemented;	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(c) check that controls are being maintained in an efficient condition; and	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	(d) check that controls meet the requirements of any relevant approval and/or licence condition.	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	The results of these inspections and any follow-up actions will be reported in the Construction Compliance Reports.	The Erosion and Sediment Management Plan (Appendix N - CEMP) details these requirements.	Complies
	iv) Greenhouse and Energy Management Strategy		
	A *Greenhouse and Energy Management Strategy* will be prepared by Macquarie Generation prior to construction commencing, to ensure the efficient use of any non-renewable *resources* for Construction and Operation and where practicable, minimised.	As per the *Greenhouse and Energy Control Measures* (Appendix M - CEMP)	Complies
	v) Construction Traffic Management Sub-plan		
	As part of the CEMP, a Construction Traffic and Transport Management Sub-plan will be prepared by Macquarie Generation. The Sub-plan will:	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies
	(a) include the mitigation measures outlined in Chapter 5 of the EA	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies
	(b) identify designated transport routes for heavy vehicles to the Development Site	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies
	(c) include measures to minimise traffic disruption through Singleton and along the New England Highway	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies
	(d) include measures to minimise disturbance from traffic noise	Measures to minimise disturbances from traffic noise are detailed in the *Noise Control Work Instruction* (Appendix I - CEMP)	Complies
	(e) include measures to manage construction traffic to ensure the safety of:	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies
	(i) livestock and limit disruption to livestock movement	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies
	(ii) school children and limit disruption to school bus timetables	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies
	(f) include a community information program to inform the community of any traffic disruptions resulting from the construction program.	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies
	Macquarie Generation will maintain the access road on its property in a safe condition during the construction phase. Any damage resulting from construction traffic, except that resulting from normal wear and tear, is to be repaired at Macquarie Generation's cost.	As per the *Construction Traffic and Transport Management Plan* (Appendix K - CEMP)	Complies

	vi) Bushfire Risk Management Sub-plan		
	As part of the Construction and Operation EMPs, Macquarie Generation will prepare a Bushfire Risk Management Sub-plan based on the guidelines Planning for Bushfire Protection (RFS, 2001 or its latest edition). The Sub-plan will include:	As per *Bushfire prevention Work Instruction* (Appendix L - CEMP)	Complies
	(a) details of the bushfire hazards and risks associated with the Development	As per *Bushfire prevention Work Instruction* (Appendix L - CEMP)	Complies
	(b) mitigation measures including contingency plans	As per *Bushfire prevention Work Instruction* (Appendix L - CEMP)	Complies
	(c) include the mitigation measures in Chapter 5 of the EA	As per *Bushfire prevention Work Instruction* (Appendix L - CEMP)	Complies
	(d) procedures and programs for liaison and regular drills with the Local Rural Fire Service	As per *Bushfire prevention Work Instruction* (Appendix L - CEMP)	Complies
	(e) procedures for regular fire prevention inspections by the Local Rural Fire Service and implementation of any recommendations.	As per *Bushfire prevention Work Instruction* (Appendix L - CEMP)	Complies
	vii) Waste Management and Re-use Sub-plan		
	As part of the CEMP and OEMP, Macquarie Generation will prepare a Waste Management and Re-use Sub-plan to address the management of wastes during the Construction and Operation stages respectively in accordance with the NSW Government's Waste Reduction and Purchasing Policy. The Sub-plan will identify requirements for:	As per *Waste Management Work Instruction* (Appendix J - CEMP)	Complies
	(a) the application of the waste minimisation hierarchy principles of avoid/reduce/reuse/recycle/dispose	As per *Waste Management Work Instruction* (Appendix J - CEMP)	Complies
	(a) waste handling and storage	As per *Waste Management Work Instruction* (Appendix J - CEMP)	Complies
	(b) disposal of wastes. Specific details must be provided for cleared vegetation, contaminated materials, glass, metals and plastics, hydrocarbons (lubricants and fuels) and sanitary wastes	As per *Waste Management Work Instruction* (Appendix J - CEMP)	Complies
	(c) any waste material that is unable to be re-used, re-processed or recycled must be disposed at a facility approved to receive that type of waste; and will include the mitigation measures in Chapter 5.	As per *Waste Management Work Instruction* (Appendix J - CEMP)	Complies
3.2	**Operation Environmental Management Plan**		
	An Operation Environmental Management Plan (OEMP) will be prepared by Macquarie Generation and implemented in accordance with these Conditions and all relevant Acts and Regulations. Macquarie Generation will obtain the approval of the Director-General for the OEMP before Operation commences or within any other time agreed to by the Director-General. Macquarie Generation will ensure that the mitigation measures identified in this EA are incorporated into the OEMP or the relevant Sub-plan.	The OEMP was provided to the audit team to review, OEMP submission email to the Director-General was sighted. Approval from the Director-General was unable to be provided to the audit team.	Not Compliant - Evidence unable to be provided
	The OEMP must be prepared in accordance with the Department's publication *entitled Guideline for the Preparation of Environmental Management Plans (2004).*	The OEMP complies with this requirement	Complies

3.3	**Environmental Management Representative**		
	Macquarie Generation will request the Director-General's Approval for the appointment of an Environmental Management Representative (EMR) at least eight weeks before Construction commences (or within any other time agreed to by the Director-General). In its request Macquarie Generation will provide the following information:	The facility nominated an Environmental Management Representative (EMR), approved by the Director-General (Letter appointing EMR sighted).	Complies
	(a) qualifications and experience of the EMR including demonstration of general compliance with relevant Australian Standards for environmental auditors	The facility nominated an Environmental Management Representative (EMR), approved by the Director-General (Letter appointing EMR sighted).	Complies
	(b) authority and independence (from the Proponent or its contractors) of the EMR including details of the Proponent's internal reporting structure	The facility nominated an Environmental Management Representative (EMR), approved by the Director-General (Letter appointing EMR sighted).	Complies
	(c) resourcing of the EMR role. The EMR will be available:	The facility nominated an Environmental Management Representative (EMR), approved by the Director-General (Letter appointing EMR sighted).	Complies
	(i) for sufficient time to undertake the EMR role. This timing shall be agreed between Macquarie Generation and the EMR and advised to the Director-General in the request for approval	The facility nominated an Environmental Management Representative (EMR), approved by the Director-General (Letter appointing EMR sighted).	Complies
	(ii) at any other time requested by the Director-General	The facility nominated an Environmental Management Representative (EMR), approved by the Director-General (Letter appointing EMR sighted).	Complies
	(iii) during any construction activities identified in the CEMP to require the EMR's attendance	The facility nominated an Environmental Management Representative (EMR), approved by the Director-General (Letter appointing EMR sighted).	Complies
	(iv) for the duration of construction.	The facility nominated an Environmental Management Representative (EMR), approved by the Director-General (Letter appointing EMR sighted).	Complies
	The Director-General may at any time immediately revoke the approval of an EMR appointment by providing written notice to Macquarie Generation. Interim arrangements for EMR responsibility following the revocation must be agreed in writing between the Director-General and Macquarie Generation.	This has not occurred during the audit period.	Not Triggered
	The Director-General may at any time conduct an audit of any actions undertaken by the EMR.	This did not occurred during the audit period.	Not Triggered
	Macquarie Generation will:	This did not occurred during the audit period.	Not Triggered
	(a) facilitate and assist the Director-General in any such audit	This did not occurred during the audit period.	Not Triggered
	(b) include in the conditions of the EMR's appointment the need to facilitate and assist the Director-General in any such audit.	This did not occurred during the audit period.	Not Triggered
	The EMR is authorised to:		Not Triggered
	(a) consider and advise the Director-General and Macquarie Generation on matters specified in the Conditions of Approval and compliance with such	The EMR reported fortnightly to MG, on the environmental status of the project against the project approval and CEMP. Inspection reports from the EMR to MG were sighted by the audit team.	Complies

	(a) determine whether work falls within the definition of construction where clarification is requested by Macquarie Generation		Complies
	(b) review the CEMP		Complies
	(c) periodically monitor Macquarie Generation's activities to evaluate compliance with the CEMP. Periodic monitoring must involve site inspections of active work sites at least fortnightly		Complies
	(d) provide a written report to Macquarie Generation of any non-compliance with the CEMP observed or identified by the EMR. Non compliance must be managed as identified in the CEMP		Complies
	(e) issue a recommendation to Macquarie Generation to stop work immediately if in the view of the EMR an unacceptable impact on the environment is occurring or is likely to occur. The stop work recommendation may be limited to specific activities causing an impact if the EMR can easily identify those activities. The EMR may also recommend that Macquarie Generation initiate reasonable actions to avoid or minimise adverse impacts		Complies
	(f) review corrective and preventative actions to monitor the implementation of recommendations made from audits and site inspections		Complies
	(g) certify that minor revisions to the CEMP are consistent with the approved CEMP		Complies
	(h) provide regular (as agreed with the Director-General) reports to the Director-General on matters relevant to carrying out the EMR role including notifying the Director-General of any stop work recommendations.		Complies
	The EMR must immediately advise Macquarie Generation and the Director-General of any incidents relevant to these Conditions resulting from construction that were not dealt with expediently or adequately by Macquarie Generation.		Complies
4. COMMUNITY AND CONSULTATION			
4.1	**Advice of Construction Activities**		
	Macquarie Generation will ensure that the local community and businesses are advised of construction activities that could cause disruption. Methods to disseminate this information will be identified in the CEMP. Information to be provided will include:	Traffic Management Plan, All construction was conducted on internal roads, no detours of public roads were in place. Community was advise of construction activities that may have caused disruption	Complies
	(a) details of any traffic disruptions and controls	Traffic Management Plan, All construction was conducted on internal roads, no detours of public roads were in place. Community was advise of construction activities that may have caused disruption	Complies
	(b) construction of temporary detours	Traffic Management Plan, All construction was conducted on internal roads, no detours of public roads were in place. Community was advise of construction activities that may have caused disruption	Complies

	(c) work approved to be undertaken outside standard construction hours, in particular noisy works, before such works are undertaken.	Traffic Management Plan, All construction was conducted on internal roads, no detours of public roads were in place. Community was advise of construction activities that may have caused disruption	Complies
4.2	**Complaints Management**		
	Prior to the commencement of construction, Macquarie Generation will ensure that the following is available for the construction and operation period:		
	(a) a postal address to which written complaints may be sent	Not online at the time of the audit, however Mac Gen have since uploaded postal address to website	Not Compliant
	(b) an e-mail address to which electronic complaints may be transmitted	This was made available on the Mac Gen Website	Complies
	(c) a 24-hour telephone contact line.	This was made available on the Mac Gen Website	Complies
	Macquarie Generation will keep a legible record of all complaints received in an up-to-date Complaints Register. The Complaints Register will record, but not necessarily be limited to:	Complaints register could not be provided at the time of the audit	Not Compliant - Evident unable to be provided
	(a) the date and time, where relevant, of the complaint		
	(b) the means by which the complaint was made (telephone, mail or e-mail)		
	(c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect		
	(d) the nature of the complaint		
	(e) any action(s) taken by Macquarie Generation in relation to the complaint, including any follow-up contact with the complainant		
	(f) if no action was taken by Macquarie Generation in relation to the complaint, the reason(s) why no action was taken.		
	The Complaints Register will be made available for inspection on request of the Director-General. The record of a complaint must be kept for at least four years after the complaint was made.		
5. PROJECT DESIGN			
5.1	Macquarie Generation's project design is based on the layout shown in Figures 3.2 to 3.7 and the project description in Chapter 3 of the EA. Actual project design may vary slightly dependent on the final site conditions and equipment specification. The final design will be subject to Consent Authority review as part of the Construction Certificate Application process.	Project design as confirmed as part of the application process and Project Approval issue for the project	Complies
5.2	Macquarie Generation will require the design of the substation to incorporate provision for containment of any oil spillage or leakage from the transformer(s) including secondary containment.	Site inspection verified that transformers were adequately bunded to contain any oil spill or leakage.	Complies
5.3	Macquarie Generation will require the design of the LP Pumping Station to incorporate containment of oil that complies with relevant standards.	Approved during the application process	Complies
5.4	The site access from public roads will be via the Bayswater Power Station River Road. The existing lockable gate will be maintained at the entrance point.	No access to site without going through power station main gates, security pass is required.	Complies

5.5	In the case of areas of oil or fuel storage on-site, Macquarie Generation will provide sufficient containment to contain any spillage that may occur at the location. Such sites will be monitored periodically for integrity of containment and adequacy of handling procedures. For the substation, containment measures will also include a secondary containment pond down-slope of the substation.	The *Chemical Management Work Instruction (* Appendix O - CEMP) details the procedures surrounding the handling and safe storage of dangerous goods, including spill management during the project. No oil or fuel was stored on site however transformers were adequately bunded with appropriate spill kits and safety instructions in place.	Complies
6. NOISE MANAGEMENT			
6.1	Equipment with low noise emission to be used, if required, wherever possible.		
6.2	A Construction Noise Management Plan would be prepared and implemented during the construction phase by the construction contractor.	Noise Control Work Instruction (Appendix I - CEMP) details these requirements.	Complies
6.3	Noise control in the vicinity of the Hunter River may be required during construction. Temporary noise controls, if required, would be detailed in the Noise Management Plan.	Noise Control Work Instruction (Appendix I - CEMP) details	Complies
6.4	If a noise nuisance is reported after the pumping station is commissioned, Macquarie Generation will review the nature of the noise impact and assess the potential sources. If necessary, testing will be conducted to confirm that equipment performance is in accordance with the required noise specification.	Complaints and incident registers could not be provided to the audit team	Not Compliant - Evident unable to be provided
6.5	If the pumping station operation is resulting in noise in excess of the DEC requirements for the relevant receivers, then Macquarie Generation will vary operation of the pumping station to achieve noise compliance.	Complaints and incident registers could not be provided to the audit team	Not Compliant - Evident unable to be provided
7. EROSION AND SEDIMENTATION			
7.1	A Soil and Water Management Plan (SWMP) including an Erosion and Sediment Control Plan (ESCP) will be prepared which will describe detailed control measures and management strategies for potential erosion and sedimentation control during construction.	MG prepared the Erosion and Sediment Management Plan (Appendix N - CEMP) which details these requirements.	Complies
7.2	No spoil will be stored adjacent to existing waterways or drainage lines.	Erosion and Sediment Management Plan, Section 4.3.8 (Appendix N - CEMP)	Complies
7.3	Surface flows will be diverted around areas of disturbed ground or soil stockpiles.	Surface flows were diverted around areas of disturbed ground or soil stockpiles. Erosion and Sediment Management Plan, Section 4.3.8 and 4.3.9 (Appendix N - CEMP)	Complies
7.4	Sediment fences and other similar measures, such as control berms, will be constructed downstream of all disturbed areas to minimise the influx of sediment and other pollutants into local waterways.	Rehab photos sighted during audit interview, Sediment fences were in place, spray grass and other techniques used. Techniques and procedures outlined in the Erosion and Sediment Management Plan (Appendix N - CEMP).	Complies
7.5	Rehabilitation techniques will be employed as necessary to ensure the ongoing stability of the banks of the Hunter River and less drainage lines for the Saltwater Creek catchment. These techniques will be detailed in the construction contractor's rehabilitation plan.	Rehab photos sighted during audit interview, Sediment fences were in place, spray grass and other techniques used. Techniques and procedures outlined in the Erosion and Sediment Management Plan (Appendix N - CEMP).	Complies
8. WATER			

8.1	Excavation of the banks within 10 metres of the stream and to stream level should be carried out with light equipment and inspected to prevent the killing of any platypus in residence at the time excavations commence.	This condition can not be verified. However Erosion and Sediment Control Plan (Appendix N - CEMP) details procedures on excavation.	Not able to be verified
8.2	Explosions and blasting should be avoided if possible.	No blasting took place	Not Triggered
8.3	The Project Construction Environmental Management Plan (CEMP) will detail measures to protect the water quality of the Hunter River.	Detailed within the CEMP	Complies
8.4	Establish comprehensive protocols to ensure pumping is managed in accordance to Licence allowances and rules.	Annual Water licence report - Daily operating instruction shows daily allowances of water to extract. Continuous monitoring is undertaken. Pumping amounts are sent daily to NSW Office of Water. PDPS Pumping station overview sighted during audit interview. daily amounts of water extracted is programed into PDPS system and once reached pump shuts down for the day. There are 12 pumps in place at Hunter River Pump station. Each pump has an individual pump meter and no exceedences in water extraction capacity were recorded during the audit period.	Complies
9. VISUAL IMPACTS			
9.1	In consultation with the neighbouring landowners and Jerry's Plains community, during construction selected tree planting may be undertaken by Macquarie Generation to reduce the visibility of certain elements of the project. The preferred types of plants for screening will be local native varieties.	Following construction trees were planted for visual improvement. No tree screen was in place at the time of the audit, due to lack of maintenance of the plantings.	Not Compliant
9.2	The construction of the pump station, control building and pipeline would be undertaken in a staged and timely manner to minimise impact on local visual amenity.	As per the *Visual Amenity Work Instructio* n (Appendix H - CEMP)	Complies
9.3	The location of the pipeline route, pump station and control building will be chosen to minimise the extent of tree and shrub removal and to minimise destabilising the banks of the Hunter River.	As per the *Visual Amenity Work Instruction* (Appendix H - CEMP)	Complies
9.4	Following completion of the construction works, the disturbed areas (i.e. working width) will be rehabilitated with native and locally endemic species robust to local climatic conditions. It is anticipated that this will improve the visual amenity when compared with the pre-construction condition of the area.	Rehabilitation techniques have been employed however are in poor condition. Many introduced species have overrun rehabilitation area and maintenance of area is not evident	Not Compliant
9.5	Painting of steel structures would be undertaken to minimise their visibility.	Verified during site inspection	Complies
10. AIR QUALITY			

10.1	Provide “all weather” surfaces on construction haul routes and establish and enforce appropriate vehicle speed limits.	Speed limits were established as per the Traffic management Plan.	Complies
10.2	All vehicle loads entering and departing construction areas will be covered.		Not able to be verified
10.3	Exposed stockpiles and unsealed construction areas will be sprayed with water from watering carts as appropriate, or stabilised with seeding and planting.		Not able to be verified
10.4	Vehicles and machinery will be regularly serviced and maintained to optimum working conditions to minimise potential emissions.		Not able to be verified
10.5	Works will cease when wind speeds exceed 10m/s and where dust generation cannot be effectively minimised, until adequate controls can be implemented or until such weather conditions abate.		Not able to be verified
10.6	Vehicles will be confined to work areas to prevent any inadvertent encroachment or otherwise into exposed and stripped areas of ground.	site access was confined to work areas on the project site to prevent encroachment of ground. CEMP Section 2.2.2.7	complies
10.7	All emission controls used on vehicles and construction equipment would comply with relevant DEC standards as provided under Section 124 of the Protection of the Environment Operations Act.	CEMP, Section 2.2.2.7	Complies
11. INDIGENOUS HERITAGE			
11.1	If an item of indigenous cultural heritage is uncovered during construction, work in the affected area will cease immediately so as to avoid any potential damage/disturbance to the artefact/relic of interest.	River Pump Station Aboriginal Site inspection (ENSR, 2009) Site inspection revealed aboriginal artefacts north east of the pump station. Site was immediately sectioned off and a qualified archaeologist was commissioned whom confirmed the site. Compliance Tracking Program Report and pre-operation compliance reports were viewed by audit team verifying site inspection outcomes. Management strategies are covered in ENSR, 2009 inspection report .	Complies
11.2	In the event of an indigenous item found, the construction contractor is to notify the nominated Macquarie Generation Environment Officer immediately to arrange for a DEC officer to attend the site.		Complies
11.3	Appropriate ‘rescue-record’ measures would be implemented for uncovered indigenous heritage, in accordance with appropriate guidelines under the National Parks and Wildlife Act 1974 and the advice received from DEC.		Complies
11.4	Ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance.	Environmental issues are communicated at regular toolbox talks	Complies

11.5	No development works will occur within 20 metres of the isolated indigenous artefact found on site, and it will be fenced off.	River Pump Station Aboriginal Site inspection (ENSR, 2009) Site inspection revealed aboriginal artefacts north east of the pump station. Site was immediately sectioned off and a qualified archaeologist was commissioned whom confirmed the site. Compliance Tracking Program Report and pre-operation compliance reports were viewed by audit team verifying site inspection outcomes. Management strategies are covered in ENSR, 2009 inspection report .	Complies
12. NON-INDIGENOUS HERITAGE			
12.1	Should any item be encountered during pipeline construction that is considered to be of (non-indigenous) heritage value, all work will cease immediately. The construction contractor's Environment Manager would be notified immediately who would then be responsible to make appropriate arrangements for a representative from the NSW Heritage Office or other suitably qualified person to be consulted	No indigenous items were found on the project site (procedure for the event of identifying an indigenous item is outlined in the CEMP, Section 2.2.2.4)	Complies
12.2	All site personnel would be made aware of the proximity of any identified items of indigenous or non-indigenous cultural heritage significance.	No indigenous items were found on the project site (procedure for the event of identifying an indigenous item is outlined in the CEMP, Section 2.2.2.4)	Complies
13. WASTE MANAGEMENT			
13.1	A Resource and Waste Management Plan will be prepared.	*Waste Management Work Instruction* (appendix F - CEMP)	Complies
13.2	Handling, storage and transport of all hazardous materials and waste shall be in accordance with the National Code of Practice and the relevant Material Safety Data Sheets (MSDS) for the product.	*Waste Management Work Instruction* (appendix F - CEMP) and Chemical Management Work Instruction (Appendix O - CEMP)	Complies
13.3	Any wastes will be classified correctly in accordance with the Environmental Guidelines: Assessment, Classification & Management of Liquid and Non-liquid Wastes, produced by the EPA in July 1999 (the Waste Guidelines) to accurately identify management, transportation and disposal requirements.	MacGen commented that waste during construction included: - General, Copper, Metal, Wood and small amounts of Fuel Waste. Waste was stored and disposed of as per the Waste Management Work Instruction (Section 5.5, Appendix J of the CEMP). To verify compliance the audit team requested the waste tracking reports however this could not be provided. No information could be provided to the audit team to verify this condition.	Not Compliant - Evidence unable to be provided
14. TERRESTRIAL ECOLOGY			
14.1	Existing trees will be retained where possible to maintain current foraging and roosting areas for common fauna and connectivity of existing fauna movement corridors.	Section 4.2.1 of the Flora and Fauna Management Plan details that no hollow-bearing trees were found to be removed during construction. During the audit interview it was stated that no hollow bearing trees were removed however if any tree was to be removed a certified individual was engaged to assess the situation.	Complies

14.2	Vegetation along the pipeline route will be rehabilitated and revegetated (representing ground cover, understorey and tree canopy) following construction of the Project.	Pipeline was underground.	Not Triggered
14.3	A Vegetation Management Plan will be prepared detailing restoration works, including weed management and re-establishment of native understorey species along the Hunter River.	Vegetation Management Plan was unable to be provided to the audit team.	Not Compliant - Evidence unable to be provided
14.4	Develop and implement a long-term management plan and monitoring program targeting the health of the River Flat Eucalypt Forest prior to commencement of site works, in conjunction with platypus studies at this locality.	The Ecology Management Plan was prepared in accordance with the consent conditions	Complies
15. AQUATIC ECOLOGY			
15.1	No oil or other chemicals should be stored on the stream bank below maximum stream height to minimise the potential for contamination of the river.	No chemicals stored below max stream height as verified during site inspection. See *Chemical Management Plan* (appendix O - CEMP) for procedures on handling and safe storage of chemicals.	Complies
16. ECOLOGY MITIGATION MEASURES			
16.1	Develop and implement a long-term management plan and monitoring program targeting the health of the River Flat Eucalypt Forest prior to commencement of site works, in conjunction with platypus studies at this locality.	Ecology Management Plan (EMP) provided to the audit team. The EMP was developed in compliance with Project Approval conditions. Consultation with DoP included: - EMP final submitted to DoP in January 2009. - DoP replied with comments that required changes to EMP (letter dated 05/03/09)	Complies
16.2	The new pumping station will be located as close as practicable to the heavily disturbed section of bank immediately upstream of the existing LP pumping station.	New pumping station is located immediately upstream of the existing LP pumping station.	Complies
16.3	Water pumped from the coffer dam should be diverted to settling pond(s) before returning the water to the river, downstream of the weir to prevent sedimentation within the weir pool.	*Erosion and Sediment Control Plan* (Appendix N- CEMP)	Complies
16.4	Undertake excavation for the new LP pumping station in conjunction with a platypus management plan to avoid any impacts on the breeding activity of the local platypus population.	*Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
16.5	Pumping station excavation to occur during the period of mid-March to mid-September or following relocation of local platypus population.	The audit team was provided with the Bayswater Power Station Hunter River LPP Augmentation - Construction environmental management plan - Platypus investigation of excavation activities.	Complies
16.6	Where there is insufficient ground clearance to allow fauna passage, install over or underpass structures, such as earth bridges or tunnels, at strategic points along the pipeline route to allow fauna to cross over the pipeline structure.	Pipeline was underground	Not Triggered.
16.7	Provide habitat niches for insects (which in turn provide food resource for vertebrate species) by distributing any cleared vegetation along the pipeline.	*Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
16.8	Ensure the pipeline design avoids hollow-bearing trees.	Section 4.2.1 of the Flora and Fauna Management Plan details that no hollow-bearing trees were found to be removed during construction. During the audit interview it was stated that no hollow bearing trees were removed however if any tree was to be removed a certified individual was engaged to assess the situation.	Complies

16.9	Clear only the minimum area of vegetation, to minimise soil erosion and removal/modification of flora and fauna habitat.	Verified in site inspection, Erosion and Sedimentation management plan	Complies
16.10	Maximise the retention of food resources, particularly sap-feeding trees and understorey species such as wattles.	Verified in site inspection, Erosion and Sedimentation management plan	Complies
16.11	Retain hollow-bearing trees and recruitment (juvenile) trees.	Section 4.2.1 of the *Flora and Fauna Management Plan* details that no hollow-bearing trees were found to be removed during construction. During the audit interview it was stated that no hollow bearing trees were removed however if any tree was to be removed a certified individual was engaged to assess the situation.	Complies
16.12	Where felling of hollow-bearing trees is required, engage a suitably qualified ecologist to undertake a pre-clearance survey 24 to 48 hours prior to felling to ensure gliders are not present within any of the hollows.	Section 4.2.1 of the *Flora and Fauna Management Plan* details that no hollow-bearing trees were found to be removed during construction. During the audit interview it was stated that no hollow bearing trees were removed however if any tree was to be removed a certified individual was engaged to assess the situation.	Complies
16.13	Engage an ecologist is to inspect felled trees for injured fauna. Handle carefully any shocked, immature or injured fauna.	*Flora and Fauna Management Plan* (Appendix F - CEMP)	Complies
16.14	No equipment, machinery or vehicles to be placed or left within the drip line of trees.		Not able to be verified
16.15	Detail erosion and sediment control measures in the Environmental Management Plan (EMP).	EMP - Section 4 for Erosion Control (Section 4.3), Sediment Control (Section 4.5), and Pollution Control Measures (Section 4.7)	Complies
16.16	Develop a Site Rehabilitation and Weed Management Plan prior to commencement of on-site works. It is anticipated that this Plan would be in force for a minimum period of one to two years following completion of works to ensure the work site has been successfully rehabilitated.	The site rehabilitation and weed management plan was developed as part of the *Ecology Management Plan* and *Flora and Fauna Management Plan.* Site was not successfully rehabilitated.	Not Triggered
16.17	Undertake post-construction rehabilitation of the study area using locally indigenous species.	Post construction rehabilitation had occurred as verified during the site inspection. The rehabilitation was not maintained resulting in poor reestablishment	Complies
16.18	Compensate for native vegetation loss resulting from the pipeline by replanting at a ratio of two to one for each plant lost. This should result in a net increase in vegetation biomass and thus habitat.	Following construction trees were planted for visual improvement. No tree screen was in place at the time of the audit, due to lack of maintenance of the plantings.	Not Compliant
16.19	Stockpile all topsoil (i.e. the first 10 centimetres of the soil profile) and store separately from subsoil in areas designated stockpiles.		Not able to be verified
16.20	Progressively rehabilitate exposed soil areas throughout the construction period.		Not able to be verified
16.21	Progressively re-lay stockpiled spoil, topsoil and vegetation in the order that work progresses.		Not able to be verified

16.22	Establish sandbags, linear silt fencing, or other suitable material between disturbed surfaces and aquatic or riparian habitats, to capture any sediment mobilised during wet weather.	Site inspection - silt fences were in place at the time of the audit inspection. Photographs taken during construction were provided to the audit team showing sediment fencing in place.	Complies
16.23	Maintain silt fences until the site has been revegetated, stabilised and is no longer prone to erosion.	Site inspection - silt fences were in place at the time of the audit inspection. Photographs taken during construction were provided to the audit team showing sediment fencing in place.	Complies
16.24	Inspect and maintain (re-erect, de-silt etc) erosion/siltation control devices weekly and after rainfall event.	No inspection records were provided to the audit team. This condition is unable to be provided sue to the timeframe from the end of construction to the time of the audit being so long.	Not able to be verified

Appendix F

Audit Protocol - Operation Environmental Management Plan (2009)

Appendix F Audit Protocol - Operation Environmental Management Plan (2009)

Section	Condition / Requirement	Evidence / Comments	Audit Finding
1.0 INTRODUCTION			
1.1	Introduction		
1.2	OEMP Context		
1.3	OEMP Objectives		
1.4	Environmental Policy		
2.0 ENVIRONMENTAL MANAGEMENT			
2.1	Environmental Management Structure and Responsibility (Figure 3)		
2.2	Approval and Licensing Requirements		
2.3.1	Compliance Tracking As part of the compliance-tracking program required by the DoP, Macquarie Generation will submit a compliance report to the Director-General within 3 months of construction being completed. The internal audit will include the following: • Review of the compliance status of the project against the requirements of the Development Approval conditions applying to the project. • The major environmental controls used during construction and assess their effectiveness. • Summarise the major environmental plans and processes implemented and assess their effectiveness. This will include a review of corrective actions adopted by contractors. • Identify any innovative methodologies used to improve environmental management. • Discuss lessons learnt during construction, including recommendations for future projects. The audit will comply with ISO 19011:2002- Guidelines for Quality and/or Environmental Management Systems Auditing. The timing and frequency of subsequent audits is to be agreed with the Director General of DoP (refer Condition 4.1(c) of the Project Approval).	Environmental Impact Audit Report - Construction, was unable to be provided	Non compliance - Evidence unable to be provided
2.3.2	Environmental Audit Macquarie Generation will commission an independent person or team to undertake an Environmental Audit of the project twelve months after commencement of operation of the facility. The audit will be submitted to the Director General DoP no later than 1 month after completion of the Audit. The audit will be carried out in accordance with ISO 14010- Guidelines and General Principles for Environmental Auditing and ISO 14011- Procedures for Environmental Auditing and will include: • An assessment of compliance with the requirements of the Development Application Approval, licences and other approvals and undertakings that apply to the project. • Assess the environmental performance of the project against the predictions made and conclusions drawn in the documents referred to under Condition 1.1 of the Development Application Approval. • A review of the effectiveness of the environmental management of the project, including any environmental impact mitigation works. • A review of the effectiveness of the Ecology Management Plan.	Environmental Impact Audit Report - Operation	Non compliance - Evidence unable to be provided
2.4	Environmental Training		
2.5	Emergency Contacts and Response		

2.6	Complaints Record Macquarie Generation will record the details of any complaints or issues raised by the community, regardless of whether they are directed to the contractors or Macquarie Generation. According to the obligations set out by the DoP project approval, the following information will be recorded: • Date and time of the complaint. • The means by which the complaint was made. • Personal details of the complainant, or if none were collected, a note to that effect. • The nature of the complaint. • Actions taken to address the complaint, including investigation and any follow up. • If no action was taken, an explanation as to why no action was taken. All complaints will be managed in accordance with Section 4.4.3 of the Bayswater Power Station Environmental Management Manual Part 1 Environmental Management System Procedures. All complaint records for the project will be kept for a minimum of 4 years.	Individual complaint records were sighted during the audit interview. Complaints register and subsequent follow up actions were not provided to the audit team.	Non compliance - Evidence unable to be provided
3.0 IMPLEMENTATION			
3.1	Environmental Management Activities and Controls		
3.2	Environmental Management Plans Ecology Management Plan		
3.3	Environmental Schedules Environmental Schedules are copies of forms, reports or registers used during day-to-day environmental management. Macquarie Generation forms, reports and registers relevant to this project include: • Bayswater Power Station Monthly Environmental Inspection Checklist • Environmental Incident Report form • Shift Managers logs • Intellex environmental management database which includes: - non-compliance and Corrective Action reports - complaints reports - environmental Incident reports.	At the time of the audit MacGen had in place tools to manage environmental management on site. These included: - Incident reporting forms; - Complaints Forms; and - Shift Managers logs. Monthly Environmental inspection Checklist was not in place at the time of the audit. RECOMMENDATION - inspection checklist and schedule to be incorporated	Non compliance
4.0 MONITOR AND REVIEW OF THE OEMP			
4.1	Environmental monitoring An Ecology Management Plan has been developed in accordance with Condition 6.4 of the Project Approval. This Plan includes: • A monitoring program to regularly assess the functionality of the fishway before and after operation of the project, focusing on the impact of the project on the fishway during breeding season. • A rehabilitation monitoring program focusing on the health of rehabilitation areas to ensure that the occurrence of weeds and pests in areas within and adjacent to the project are controlled.	Ecology Management Plan (EMP) in place and viewed by the audit team. EMP contains monitoring program and rehabilitation program. See Appendix G of audit report for an assessment of compliance against the EMP.	Complies
4.2	Environmental Auditing		

4.2.1	Auditing Required Under the Project Approval An independent environmental audit will be undertaken twelve months after the commencement of operation of the project, in accordance with Condition 3.1 of the Project Approval.	This Audit. Audit has occurred outside the allocated timeframe. No evidence that the Director-General permitted an extension of time was provided.	Non compliance
4.2.1	In addition to this independent environmental audit, Macquarie Generation will undertake annual environmental auditing and will develop a Compliance Monitoring and Tracking program in accordance with Condition 4.1 of the Project Approval. This process will include an assessment of the compliance status of the project against the Project Approval conditions and mechanisms for rectifying any noncompliance identified during the environmental auditing.	Compliance tracking program sighted. Audits have not occurred within the allocated time frames. No evidence of an extension of time permitted by the Director-General was provided.	Non compliance
4.2.1	These actions will be incorporated into Macquarie Generation's existing Environmental Management System (EMS) which is certified to the international standard AS/NZS ISO 14001.	Action Plan from environmental Committee sighted, Actions from audits are incorporated into MacGens Action Plan	Complies
4.2.2	Auditing Required by Macquarie Generation Section 4.5.5 of the Bayswater Power Station Environmental Management Manual Part 1 Environmental Management System Producers outlines the auditing required at Bayswater Power Station. In summary, audits required under the procedure are: • External Environmental Audit (biennial) • Cross Station EMS Audit (annually) • Internal EMS Audit (each team will be audited on a biennial basis). The Corporate Procedure ENV007 Environmental Audits, provides details on the process for conducting environmental audits and reporting results.	Audit reports were unable to be provided to the audit team. The audit team was unable to verify times that audits have occurred.	Non compliance - Evidence unable to be provided
4.3	Corrective Action The findings, conclusions and recommendations developed through the monitoring and auditing processes are reported to the Executive and Management Team. In addition, corrective actions and preventative actions are identified and implemented to minimise environmental impacts through the following: • Monthly Compliance Report • Bayswater Environmental Review Committee (BERC) (quarterly) • Executive Environmental Committee (quarterly).	Audit reports were unable to be provided to the audit team. The audit team was unable to verify times that audits have occurred.	Non compliance - Evidence unable to be provided
4.4	OEMP Review An independent environmental audit will be undertaken twelve months after the commencement of operation of the project. Subsequently, the OEMP will be reviewed to incorporate any issues identified through the audit process. This review process will also ensure that the OEMP is still current and that changes to operating procedures have been incorporated into the updated OEMP.	This Audit. Audit has occurred outside the allocated timeframe. No evidence that the Director-General permitted an extension of time was provided.	Non compliance

4.4	In addition, the OEMP will be a continually revised document, to incorporate changes achieved through: • staff training • environmental audits • implementation of corrective actions • the inclusion of new initiatives in environmental management • revision of PSSIs, Daily Operating Instructions and Plant Notes • regulatory changes.		

Appendix G

Audit Protocol - Ecology Management Plan (2009)

Appendix G Audit Protocol - Ecology Management Plan (2009)

Section	Condition / Requirement	Evidence / Comments	Audit Finding
1.0 INTRODUCTION			
1.1	Project Overview		
1.2	Purpose		
1.3	Scope		
1.4	Consultation		
2.0 FLORA AND FAUNA MANAGEMENT			
2.1	Platypus		
2.1.5	Management Table 1 identifies the threats and management recommendations (both short and long term) of these threats to the local platypus population at the Site.		

2.1.5	**Table 1: Platypus Threats and Management** **Threats** / **Management recommendations** Riparian vegetation removal: Buffer zones of healthy vegetation should be maintained along the bank of the Hunter River. Vegetation removal shall be avoided and when required should be timed for immediately prior to crossing construction or trenching and where practical chained off at ground level to allow immediate regrowth. Pipelaying work is to be completed in a timely manner. Temporary sediment collection measures are to be installed including drainage banks, silt fencing (instream and slope), geofabric covered straw bales and use of sterile cover crops. Riparian and smaller vegetation strips are to be protected and developed in the vicinity of drainage lines to filter sediment and nutrients and protect fauna and for human health. Riparian revegetation should be researched and wide enough to support a self-sustaining plant community including native understorey vegetation as well as mature specimens of tree species originally found in the habitat. Fire Asset Protection Zones (APZ) should be maintained outside of the core riparian area. Careful collection of layers of vegetation and soil material during clearing and grading. Careful stockpiling of materials away from the floodplain upper bank. In stream, logs and debris should be retained whenever possible as they provide habitat for benthic invertebrates and also helps to oxygenate water. Logs and branches covering more than 10% of a channel can be moved closer to the banks to improve flow capacity. Water quality: Water quality management and ongoing water quality improvement for drainage line and catchment areas during disturbance and rehabilitation. Regular water quality monitoring along Hunter	Management has not been conducted in line with the recommendations presented in Table 1.	Not Compliant

		River to be incorporated into water monitoring program.		
	Bank stability - erosion	Ensure that areas of bare soil and compacted vegetation are topsoiled, scarified and revegetated as quickly as possible including understorey. Erosion control jute matting or straw mulching is to be utilised on steep slopes. Maintain sediment and erosion control measures along the riverbank and pipeline corridor. Permanent erosion control measures (earth banks) are to be used and revegetation		
		undertaken immediately after works. Monitoring and maintenance is to be undertaken to ensure a stable revegetated pipeline easement and other disturbed areas with promotion of local provenance vegetation or pasture as required.		
	Pollution and litter	Inspections of Hunter River to be conducted as part of quarterly monitoring program. Education programs regarding litter and its effects, waste reduction and recycling.		
	Predation	Monitor and control pest animal populations		
2.1.6	Monitoring Table 2 details the monitoring regime for the local platypus populations at the Site. Two types of monitoring are recommended – observational monitoring and a biannual survey.			
2.1.6	**Table 2: Platypus Monitoring**		Platypus investigation was conducted in 2008 *(Bayswater Power Station Hunter River LPP Augmentation - Construction environmental Management Plan - Platypus Investigation of Excavation Activities, Grant 2008).* Platypus surveys have not been conducted biannually. Evidence of Observational Monitoring could not be provided to the audit team.	Not Compliant

Monitoring and Reporting	Method	When	By whom
Observational monitoring	Platypus sighting form (**Appendix A**)	As required	Form to be returned to Macquarie Generation Environment Officer with results collated quarterly.
Two biannual surveys	As per recommendation of appointed survey expert	Every two years (2010 and 2012)	To be conducted only by an experienced biologist or researcher
Independent Environmental Audit	As per Condition 3.1 of Project Approval No. 06-0259	12 months after the commencement of operation	Appointed consultant

2.2	River Flat Eucalypt Forest		

<table>
<tr><td>2.2.4</td><td colspan="3">Management
Table 3 identifies the threats and management recommendations (both short and long term) of these threats to the River Flat Eucalypt Forest at the Site.</td></tr>
<tr><td>2.2.4</td><td>
Table 3: River Flat Eucalypt Forest Threats and Management
<table>
<tr><th>Threats</th><th>Management Actions</th></tr>
<tr><td>Clearing and fragmentation</td><td>Recognition of the value of all River Flat Eucalypt Forest remnant in land use planning.
River Flat Eucalypt Forest remnant present at the Site was not be disturbed during consruction and will not be disturbed during operation.
Undertake revegetation seeking species diversity using local provenance seed and tubestock at all vegetation layers. Carry out bush regeneration, maintenance planting and weed control.</td></tr>
<tr><td>Flood mitigation and drainage works</td><td>Integrate into the land use planning process the awareness of the ecological needs of the community
Manage drainage and flooding</td></tr>
<tr><td>Grazing and trampling by stock and feral animals</td><td>Instigate feral animal control programs
Restrict stock access
Regular monitoring and maintenance of fencing to identify any areas where stock or feral animals are accessing the EEC unrestricted</td></tr>
<tr><td>Changes in water quality – particularly increased sedimentation and nutrients</td><td>Undertake pre and post construction water monitoring to identify if there have been any water quality changes as a result of construction activities.
Undertake sediment and erosion control (Landcom 2004)</td></tr>
<tr><td>Weed invasion</td><td>Identify current weed infestations and take steps to manage and eradicate where possible</td></tr>
<tr><td>Removal of dead wood</td><td>Restrict public access
Prohibit removal of deadwood
Promote public awareness and involvement</td></tr>
<tr><td>Rubbish dumping</td><td>Restrict public access
Maintain and monitor fencing
Promote public awareness and involvement</td></tr>
<tr><td>Fire management regimes</td><td>Integrate awareness of the EEC in fire hazard reduction projects</td></tr>
</table>
</td><td>Management of the River Flat Eucalypt Forest has not been conducted in line with the recommendations presented in the EMP.</td><td>Not Compliant</td></tr>
<tr><td>2.2.5</td><td colspan="3">Monitoring
Table 4 details the monitoring regime for the River Flat Eucalypt Forest EEC at the Site. Two types of monitoring are recommended – photographic monitoring and an annual riparian condition survey.
The aim of the annual riparian condition survey is assess the condition of the River Flat Eucalypt Forest EEC and the factors which determine this.</td></tr>
</table>

<table>
<tr><td>2.2.5</td><td><table>
<tr><th>Monitoring and reporting</th><th>Method</th><th>When</th><th>By whom</th></tr>
<tr><td>Photographic monitoring</td><td>Photographs at fixed photo points</td><td>Every six months and after flood event</td><td>Macquarie Generation</td></tr>
<tr><td>Riparian condition survey</td><td>Rapid Appraisal of Riparian Condition (RARC) (Appendix B)</td><td>Annually for five years, and then as required</td><td>Macquarie Generation</td></tr>
<tr><td>Independent Environmental Audit</td><td>As per Condition 3.1 of Project Approval No. 06-0259</td><td>12 months after the commencement of operation</td><td>Appointed consultant</td></tr>
</table></td><td>Monitoring and condition surveys have not been conducted.
IEA has occurred outside the allocated timeframe. No evidence that the Director-General permitted an extension of time was provided.</td><td>Not Compliant</td></tr>
<tr><td colspan="4">3.0 FISHWAY MONITORING</td></tr>
<tr><td>3.2</td><td>Management
Construction activities may indirectly affect fish species through the exposure to less than favourable habitat conditions.</td><td>Noted</td><td>Noted</td></tr>
<tr><td>3.2</td><td colspan="3">Table 5 identifies the threats and management recommendations (both short and long term) of these threats to the fish communities at the Site.</td></tr>
</table>

<table>
<tr>
<td>3.2</td>
<td>
Table 5: Fishway Threats and Management
<table>
<tr><th>Threats</th><th>Management recommendations</th></tr>
<tr><td>Before Operation
Exposure of previously submerged habitat such as woody debris resulting in reduced available habitat for fish and macroinvertebrates.
Exposure and possible loss of instream macrophytes resulting in loss of available habitat for fish and macroinvertebrates.
Erosion of banks resulting in loss of bank vegetation and sediment in runoff to stream.
Direct destruction of habitat as result of need to remove woody debris and excavate reed beds.
Introduction and spread of pest species such as weeds by construction vehicles.
Sediments and other construction materials may enter the waterway, causing increases in turbidity, suspended solids and nutrients.
Reduction in filtering capacity of riparian zone to filter nutrients, sediments and preventing potential contaminants from reaching the stream.
Release of metals and nutrients from sediments on rewetting resulting in increased turbidity, total suspended solids, nutrients causing smothering of habitat, degraded water quality and increased risk from algal blooms.</td><td>Fish monitoring to establish baseline fish community structure (Refer previous studies Bishop 1997 and Hodgson 1993)
Sediment control methods implemented to prevent off-site transport of sediment in surface-water runoff from the construction site. Erosion and sediment control including diversion banks and revegetation.
Implementation of best practice guidelines.
Chemicals and by-products stored appropriately and not allowed to drain into the catchment or creek. Spill management procedures and on site spill containment and clean up kits.
Water quality monitoring before operation.
Retain and increase riparian vegetation buffer including groundcover.
Washdown of all construction vehicles and equipment prior to entering the riparian corridor.</td></tr>
<tr><td>During Operation
Exposure of previously submerged habitat such as woody debris resulting in reduced available habitat for fish and macroinvertebrates.
Exposure and possible loss of instream macrophytes resulting in loss of available habitat for fish and macroinvertebrates.
Increased concentrations of sediments, nutrients and contaminants in the stream, leading to degraded water quality and reduced available habitat for fish and macroinvertebrates.
Loss of potential long term woody debris recruitment to stream for instream habitat.
Erosion of banks leading to sediment in runoff into the stream.</td><td>Mark and remain inside clearing boundaries and areas of narrow easement or limited access (eg riparian corridor).
Temporary erosion and sediment control measures particularly on drainage lines, banks and steep slopes.
Rehabilitation of disturbed areas of riparian corridor and upper catchment areas.
Ongoing fish monitoring to assess community changes from the pumping activities.
Water quality monitoring during operation.
Retain instream vegetation and timber, snags etc</td></tr>
</table>
</td>
<td>Management of Fish communities has not been conducted in line with the recommendation presented in Table 5.</td>
<td>Not Compliant</td>
</tr>
<tr>
<td>3.3</td>
<td colspan="3">Monitoring Program
Table 6 details the monitoring regime that should be implemented to assess the potential impact of the project on the fish communities. Two types of monitoring are recommended – water quality monitoring and fish community monitoring using the methodologies recommended in Section 3.4.</td>
</tr>
</table>

3.3

Table 6: Fishway Monitoring Program

Monitoring and reporting	Method	When	By whom
Water Quality	As per EPA (2004) "*Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*" (2004) (**Appendix C**)	Prior to construction and operation to establish baseline data. Periodic monitoring for pH, EC, turbidity and other salts and metal pollutants during construction and operation.	To be conducted by a specifically trained person for the sampling collection and by a NATA Accredited Laboratory for the analysis.
Fish communities	As per methods recommended in **Section 3.4**	Annually for two years post the pumping station being commissioned and in operation. Year 1 – baseline data. Year 2 – comparison data.	To be conducted only by an experienced fish ecologist.
Independent Environmental Audit	As per Condition 3.1 of Project Approval No. 06-0259	12 months after the commencement of operation	Appointed consultant

Not Compliant

4.0 REHABILITATION

4.1 Rehabilitation schedule

This section details the rehabilitation schedule describing areas to be rehabilitated, rehabilitation methods and maintenance regimes (Consent Condition 6.4 (d)).

Five rehabilitation sectors have been identified at the site (refer Figure 4):

1 Coffer dam and inlet at Hunter River
2 Pipeline corridor
3 Outlet at Plashett Dam
4 Infrastructure
a) Roads
b) Substation
5 Stockpiled materials.

A rehabilitation schedule based on these domains is outlined in Table 7.

4.1	**Table 7: Rehabilitation Schedule**	Rehabilitation works at the Hunter River Pump Station were in poor condition at the time of the audit. Little to no maintenance of the rehabilitation area was evident. Rehabilitation has not occurred in line with the recommendations presented in Table 7.	Not Compliant

Sector	Rehabilitation method	Timing	Maintenance
Coffer dam and inlet at Hunter River	Primary earthworks to ensure stable structure and erosion and sediment controlled. Provenance tubestock and / or direct seeding of native riparian, wetland and floodplain species as per Table 5.1 of the Flora and Fauna Management Plan (ERM 2008) (**Appendix D**) Placement of locally sourced large woody debris within rehabilitation to provide habitat.	Post construction of coffer dam and inlet (June 2009 – June 2010).	Weed control via herbicide application and / or manual removal Supplementary planting to achieve 85% success rate.
Pipeline corridor	Earthworks and rehabilitation of final landform to ensure no erosion, dense non weedy vegetation cover and nil subsidence. Direct seeding of native grass and shrub species as per Table 5.1 of the Flora and Fauna Management Plan (ERM 2008) (**Appendix D**) Placement of locally sourced large woody debris within rehabilitation to provide habitat.	At completion of primary earthworks (June 2009 – June 2010).	Weed control via herbicide application and / or manual removal.
Outlet at Plashett Dam	Primary earthworks to ensure stable structure. Tubestock and / or direct seeding of native grass and shrub species as per Table 5.1 of the Flora and Fauna Management Plan (ERM 2008) (**Appendix D**)	Post construction of outlet and finalization of site stabalising program (June 2009 – June 2010).	Weed control via herbicide application and / or manual removal.

4.1			Not Compliant

Sector	Rehabilitation method	Timing	Maintenance
Infrastructure – Roads -	Dust suppression Batter stabilization Spur drains Rapid rehabilitation or temporary cover on hard stand areas Sediment control Control of additional workspace requirements for pipe layout and access.	Post construction (June 2009).	Weed control via herbicide application and / or manual removal Maintenance of culverts and sediment detention features.
Infrastructure - Substation	Dust suppression Batter stabilization Screening and landscaping.	Post construction (June 2009).	Weed control via herbicide application and / or manual removal Maintenance of culverts and sediment detention features.
Stockpiled materials	Store vegetation and topsoil and subsoil for short periods away from riparian corridors (above high bank). Seed with sterile cover crop (Rye corn in winter and Japanese millet in summer) and native grass and shrub species.	Post construction (June 2009).	Weed control via herbicide application and / or manual removal.

4.2	Rehabilitation Monitoring Table 8 details the rehabilitation monitoring regime for the areas proposed for rehabilitation within each domain at the Site. Two types of monitoring have been recommended: • Initial survival survey for revegetation (% mortality); • Site survey (using the Rehabilitation Monitoring Checklist (Appendix E) which includes: - Photographic monitoring from fixed photo points - Landform Morphological Type (e.g. crest, mid slope, lower slope or flat) - Landform Pattern (e.g. precipitous, steep, gently inclined or gentle) - Vegetation characteristics such as Species diversity- number of overstorey, understorey and ground cover species Key overstorey, understorey and ground cover species - An estimate of weed cover (%) and the key weed species present, including declared noxious weeds - Presence / absence of feral animals - Surface stability and the type and extent of any erosion - The presence of microhabitat such as fallen timber, leaf litter, rocks and water - Data relating to any other disturbance including water turbidity, vegetation and bank disturbance fire, rubbish and unauthorised access.		Not Compliant

4.2	**Table 8: Rehabilitation Monitoring**		Not Compliant

Sector	Monitoring	Method	When	By whom
Coffer dam and inlet at Hunter River	Vegetation survival survey	Visual inspection and quadrat count of survival status and health of tubestock and direct seeding	4 weeks post completion of initial revegetation works and ongoing through rehabilitation.	Macquarie Generation (or appointed consultant)
	Site survey (including weed, pest animal, erosion and subsidence monitoring)	Site inspection checklist (**Appendix E**) and photographic monitoring	Annually (spring)	Macquarie Generation (or appointed consultant)
	Independent Environmental Audit	As per Condition 3.1 of Project Approval No. 06-0259	12 months after the commencement of operation	Appointed consultant
Pipeline corridor	Vegetation survival survey	Visual inspection	4 weeks post completion of initial seeding works and during rehabilitation	Macquarie Generation (or appointed consultant)
	Site survey (including weed, pest animal, erosion and subsidence monitoring)	Site inspection checklist (**Appendix E**) and photographic monitoring	Annually (spring)	Macquarie Generation (or appointed consultant)
	Independent Environmental Audit	As per Condition 3.1 of Project Approval No. 06-0259	12 months after the commencement of operation	Appointed consultant
Outlet at Plashett	Vegetation	Visual inspection	4 weeks post	Macquarie

		Dam	survival survey	and count of survival status and health of each tube stock stem	completion of initial revegetation works	Generation (or appointed consultant)	
			Site survey (including weed, pest animal, erosion and subsidence monitoring)	Site inspection checklist (**Appendix E**) and photographic monitoring	Annually (spring)	Macquarie Generation (or appointed consultant)	
			Independent Environmental Audit	As per Condition 3.1 of Project Approval No. 06-0259	12 months after the commencement of operation	Appointed consultant	

Sector	Monitoring	Method	When	By whom
Infrastructure - Roads	Site survey (including weed, pest animal, erosion and subsidence monitoring)	Site inspection checklist (**Appendix E**) and photographic monitoring	Annually (spring)	Macquarie Generation (or appointed consultant)
	Independent Environmental Audit	As per Condition 3.1 of Project Approval No. 06-0259	12 months after the commencement of operation	Appointed consultant
Infrastructure - Substation	Site survey (including weed, pest animal, erosion and subsidence monitoring)	Site inspection checklist (**Appendix E**) and photographic monitoring	Annually (spring)	Macquarie Generation (or appointed consultant)
	Independent Environmental Audit	As per Condition 3.1 of Project Approval No. 06-	12 months after the commencement of	Appointed consultant

Not Compliant

			0259	operation			
	Stockpiled materials	Site survey (including weed, pest animal, erosion and subsidence monitoring)	Site inspection checklist (**Appendix E**) and photographic monitoring	Annually (spring)	Macquarie Generation (or appointed consultant)		
		Independent Environmental Audit	As per Condition 3.1 of Project Approval No. 06-0259	12 months after the commencement of operation	Appointed consultant		

			Not Compliant
5.0 REPORTING AND REVIEW			
5	The progress of activities related to the Ecology Management Plan will be included in the Bayswater Environmental Management Plan, which is to be updated quarterly by Macquarie Generation. Staff and contractors are to be trained in ecological principals associated with their work activities including methods of least possible disturbance, construction management of flora and fauna, erosion and sediment control and rehabilitation.	The Bayswater Environmental Management plan was unable to be provided to the audit team	Non compliance - Evidence unable to be provided
5	The reports to be prepared as a result of monitoring activities addressed in the Ecology Management Plan include: • Platypus monitoring: - biannual surveys • River Flat Eucalypt Forest monitoring: - riparian condition surveys • Fishway monitoring: - Water quality monitoring - Fish community monitoring • Rehabilitation - Initial survival survey for revegetation - Annual site surveys	Platypus monitoring report provided to the audit team. No other monitoring reports or surveys were able to be produced at the time of the audit.	Non compliance - Evidence unable to be provided
5	The Ecology Management Plan will be reviewed and updated as required following the Independent Environmental Audit, which is to be undertaken 12 months after the commencement of operation of the project (as per Condition 3.1 of Project Approval No. 06-0259).	This Audit. Audit has occurred outside the allocated timeframe. No evidence that the Director-General permitted an extension of time was provided.	Non compliance