



**KEEPIT DAM UPGRADE WORK PACKAGE 1**

**CONSTRUCTION COMPLIANCE  
REPORT FINAL**

**February 2011 to September 2011**

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## Abbreviations

ANZECC	Australia and New Zealand Environment and Conservation Council
EP&A Act 1979	<i>Environmental Planning &amp; Assessment Act 1979</i>
CCR	Construction Compliance Report
CoA	Conditions of Approval
OEH	Office of Environment and Heritage
dB A	decibels (A-weighted) – a unit of sound measurement that has its frequency characteristics modified by a filter (A-weighted) so that it more closely approximates the frequency response of the human ear
SEP	Site Environmental Plan
EEC	Endangered Ecological Community
EMP	Environmental Management Plan
EMR	Environmental Management Representative
EMS	Environmental Management System
EPL	Environmental Protection License
g/m <sup>2</sup> /month	grams per cubic metre per month
HVAS	High Volume Air Sampler
JHG	John Holland Group Pty Ltd
L <sub>MAX</sub>	The highest Root Mean Squared (RMS) sound pressure level within a measuring period
mm/s	millimetres per second
NTU	Nephelometric Turbidity Units
PECOMS	Planning Environmental & Communication System
PER	Project Environmental Representative
PM10	Particle size less than 10 microns
POEO	<i>Protection of the Environment Operations Act 1997</i>
REF	Review of Environmental Factors
SWQMP	Soil and Water Quality Management Sub-plan
TRC	Tamworth Regional Council
TSP	Total Suspended Particulate
TSS	Total Suspended Solids
µg/m <sup>3</sup>	micrograms per cubic metre

# 1 Introduction

This is the final Construction Compliance Report (CCR) for the Keepit Dam Upgrade Works Package 1 Project (The Project), which is part of the State Water Corporation (State Water) Dam Safety Upgrades.

State Water is delivering The Project to ensure the dam meets new safety standards set by the NSW Dams Safety Committee. John Holland has been engaged to undertake works package 1 of the upgrade.

The NSW Dams Safety Committee requires that Keepit Dam be upgraded to be able to safely withstand extreme natural events, including the largest flood that could theoretically occur (known as the probable maximum flood or PMF) and earthquakes. State Water, the owner and operator of Keepit Dam, has explored a number of dam safety upgrade options, subsequently option B1 has been granted Project Approval under Part 3A of the Environmental Planning and Assessment Act. The approval authority is the Minister for Planning.

The main aspects of The Project include:

- Construction of a new fuse plug auxiliary spillway on the right abutment of Keepit Dam;
- Modification to the existing subsidiary dam wall to accommodate a new fuse plug spillway and raising of the remainder of the embankment; and
- Ancillary works including construction of saddle dam No. 3, access road modifications and modifications to State Park facilities.

The Project will increase the dam safety in the event of extreme flooding by increasing the ability to pass more than four times the amount of water (based on the 1955 flood record) into the lower Peel Valley.

John Holland has prepared this CCR to satisfy Condition 4.1 of The Project's Conditions of Approval (April 2009). This report covers the period from February 2011 to the end of September 2011.

The Project Conditions of Approval detail the information to be included in the CCR report. The CCR must include information on:

- Compliance with the CEMP and the Conditions of Approval;
- Compliance with any approvals or licences issued by relevant Government Departments for construction;
- The implementation and effectiveness of environmental controls. The assessment of effectiveness should be based on a comparison of actual impacts against performance criteria identified in the CEMP;
- Environmental monitoring results, presented as a results summary and analysis;
- The number and details of any complaints, including summary of main areas of complaint, action taken, response given and intended strategies to reduce recurring complaints;

- Details of any review and amendments to the CEMP resulting from construction during the reporting period; and
- Any other matter relating to compliance with the Conditions of Approval or as requested by the Director-General.
- The final Construction Compliance Report shall, in addition to the requirements above, assess the accuracy and conclusions of all previous Construction Compliance Reports.

## 2 Contract Details

Title of Contract	Keepit Dam Upgrade Work Package 1
Contractor	John Holland
Construction Manager	Ivan Karaban
Report Date	6/09/11
Period covered	February 1 <sup>st</sup> till September 30 <sup>th</sup> 2011
Description	Excavation, Anchors and foundation grouting, Concrete work, embankment construction, North Access Road & Fuse Plug Construction

## 3 Construction Summary for the Period

Below is a summary of construction works undertaken during the period February 2011 to the end of September 2011.

### 3.1 Earthworks

The following concrete works were undertaken at the right abutment and subsidiary dam spillways;

**Raised Embankments** – The raising of the subsidiary dam flanks included excavation of the existing dam flanks and then construction of the new flanks. The new flanks were constructed in zones with a clay core, fine and coarse filters and rock fill and rip rap on the outside for protection.

**Fuse plugs** – The fuse plugs at both the subsidiary dam and right abutment were constructed in a similar manner to the raised embankments with the same zoned construction of a clay core, fine and coarse filters and rock fill and rip rap on the outside for protection.

**Coffer Dam Removal** – The completion of the project saw the partial removal of coffer dams at both the right abutment and subsidiary dam spillways. The coffer dams were only able to be partially removed due to the constraints of the storage level in the dam being 100%. The right abutment coffer removal was undertaken by blasting the Northern section of the coffer dam and the using a dozer and excavator to remove a portion of the dam down to a set level. The subsidiary dam was removed to a set level using excavators and articulated dump trucks.

**Topsoil and Grass** – All disturbed areas including the compound areas, construction areas and waste stockpiles have been topsoiled and hydromulched and hydroseeded as part of the rehabilitation of the disturbed areas.

### 3.2 Concrete Works

The following concrete works were undertaken at the right abutment and subsidiary dam spillways;

**Slabs** – 300mm thick reinforced concrete slabs were constructed as the floor of the spillways.

**Divider walls** – Divider walls were reinforced concrete, 300mm thick at the top tapering to over 1m thick at the base and were constructed to act as the divider between the fuse plug bays. There were 5 walls constructed in total.

**Abutment walls** – Two abutment walls were constructed at the subsidiary dam to act as the divider between the dam flanks and the fuse plug bays. These walls were constructed as mass concrete walls.

**Shotcrete Side walls** – 300mm thick reinforced walls were constructed against the excavated batters at the right abutment spillway to form the abutments of the fuse plugs. These walls were constructed out of shotcrete.

### 3.3 Other Works

The following other works were undertaken on the Keepit Dam Upgrade Work Package 1;

**Rock fill and Rip Rap Production** – The required rock fill and rip rap for construction of both the raised embankments and fuse plugs was produced on site by screening the blasted/excavated rock at the right abutment.

**North Access Rd** – The access road at the right abutment was completed with addition of 14/7mm two coat spray seal.

**Sealing of Diversion Pipe** – The diversion pipe installed under the slab to control water flow through the right abutment coffer dam was sealed using a flowable grout mix.

## 4 Consents, Licences and Approvals

### 4.1 Project Approval

The Project Approval was issued by the NSW Department of Planning in April 2009 and can be found on the DoP web site under the major project tracking system. This

approval is based on the following documents which detail the proposed construction methodology and design concepts employed during The Project planning and approval phase:

- Keepit Dam Upgrade, Submissions Report and Preferred Project Report;
- Keepit Dam Upgrade Environmental Assessment, Volume 1, Main Report; and
- Keepit Dam Upgrade Environmental Assessment, Volume 2, Technical Papers 1-4

During construction works, constraints are sometimes identified that require minor changes to the construction methodologies and concepts. These changes require assessment to ensure that The Project consent will still be valid if the changes are implemented. The approval of these changes is issued by the Department of Planning as the consent authority under Part 5 of the *EP&A Act 1979*.

## **4.2 Environment Protection Licence Approvals/Variations**

Extraction and crushing aspects of The Project operate under John Holland's Environmental Protection Licence 13224 (found on OEH's website (formally Department of Environment, Climate Change and Water)).

There was one licence variation that required OEH approval for the reporting period. This was a variation to the licensed activities, to remove extraction from the license due to this activity being complete. This was completed on 23/05/11 (see letter attached in appendix) There have also been a few written approvals issued by OEH to John Holland for different matters. These include:

1. An extension of working hours for early morning concrete pours; and
2. Use of the concrete washout bays without need for including these on the EPL.

## **4.3 Construction Environmental Management Plan**

The Construction Environmental Management Plan (CEMP) is a guiding document used as a tool for both compliance and auditing. The CEMP was reviewed and approved by John Holland, State Water and the Department of Planning (DoP). The CEMP contains all the environmentally based management plans for the site.

## **4.4 CEMP Variations and Reviews**

The CEMP was reviewed on the 17<sup>th</sup> May 2010 by JHG, State Water and the Department of Public Works. This review was compiled revision 1 of the CEMP. The revised CEMP document was put into circulation on the 5<sup>th</sup> April 2011.

The original changes for Revision 1 of the CEMP are listed in Table 4.4.1 below.



**Table 4-1 Proposed Changes to the CEMP Including Comments**

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
1	All			Formatting issues with tables throughout	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
2	All			Spelling errors throughout	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
3	All			Remove blank pages	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
4	All			Insert page numbering on all sub-plans	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
5	All			Use licence (noun) instead of license where appropriate	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
6	All			Insert title page for each sub-plan	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
7	All			Need consistency throughout in referring to the Project Environmental Representative (PER)	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
8	TOC		4	Insert Attachments into TOC	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
9	Glossary		5-6	Update Glossary to include PER, PQR, PSA, RSM, REM etc	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
10	2.2.4	Table	8	<p>Change the following:</p> <p>Working hours</p> <ul style="list-style-type: none"> <li>• Monday to Friday 7am to 6pm</li> <li>• Saturday 8am-1pm</li> </ul> <p>to</p> <p>Working hours</p> <ul style="list-style-type: none"> <li>• Monday to Friday 6:30am to 6pm</li> <li>• Saturday and Sunday 6:30am to 4:30pm</li> </ul> <p>Concrete pours from 12:30am.</p> <p>Deliveries of fly ash and cement on a 24hour basis.</p>	JH	<p>More detail will be required regarding the concrete pours and deliveries of fly ash and cement, including any additional monitoring proposed. Will concur with change provided DECCW and Planning approval is obtained.</p>	<p>Written approval for time extensions have been obtained from:</p> <ul style="list-style-type: none"> <li>• Justin Flannery;</li> <li>• John Clarke; and</li> <li>• Keith and Marie Lyne.</li> </ul>	<p>State Water approved times in e-mail dated 25 May 2010 from David Kingston to Shonelle Gleeson-Willey titled 'RE: EXTENSION OF WORKING HOURS'</p>

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
11	2.2.5	Table	8	Change the following: Blasting hours <ul style="list-style-type: none"> <li>Monday to Friday 9am to 3pm</li> <li>Saturday 9am to 1pm</li> </ul> to Blasting hours <ul style="list-style-type: none"> <li>Monday to Friday 9am to 5pm</li> <li>Saturday 9am to 1pm</li> </ul>	JH	Concur with change provided DECCW and Planning approval is obtained.	Written approval for time extensions have been obtained from: <ul style="list-style-type: none"> <li>Justin Flannery;</li> <li>John Clarke; and</li> <li>Keith and Marie Lyne.</li> </ul>	State Water approved times in e-mail dated 25 May 2010 from David Kingston to Shonelle Gleeson-Willey titled 'RE: EXTENSION OF WORKING HOURS'
12	2.2.6	Table	9	JH to update labour resources table	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
13	2.2.7	Table	9	JH to update plant and equipment table	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
14	2.2.9	Table	10	JH to update dates in table	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
15	3.1	Chart	14	JH to update chart	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
16	3.1.1	Table	15	JH to update personnel in table	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
17	3.2.1	Table	17-18	JH to review Table and include all forms in Appendix B	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
18	3.4	3	21	Add to last paragraph 'Future meeting times will be agreed to during the CCLG meetings'	EMR	CCLG meeting times have been changed already	Concurred at 17 May meeting	Concurred at 17 May meeting
19	5.1.1	Table	25	JH to update table	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
20	5.1.3	Table	26	JH to update table	EMR		Concurred at 17 May meeting	Concurred at 17 May meeting
21	5.1.4	Table	27	JH to remove reference to 'from spoil stockpile' from 'Uncontrolled dust discharge from spoil stockpile'	EMR, JH	This appears to be an error	Concurred at 17 May meeting	Concurred at 17 May meeting

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
22	6.1	Table	33	Monitoring summary missing air blast and vibration monitoring, and numbers are incorrect/ inconsistent with sub-plans.	EMR	Information in the sub-plans should take precedence	Concurred at 17 May meeting	Concurred at 17 May meeting
23	7.2	2	38	Change sentence 'If the amendment is significant and warrants immediate address, then the EMR can convene the CEMP committee.' to 'If the amendment is significant and warrants immediate address, then the EMR in consultation with members of the CEMP committee may consent to the immediate implementation of the amendment'	JH, EMR			Concur
24	Appendix C		122-133	Drawings in Appendix C need to be updated	EMR	There have been a few revisions in the drawings to date	Concurred at 17 May meeting	Concurred at 17 May meeting
25	Attachment 1	Section 1	199	Reference to 'fauna fencing' needs to be checked with PB.	EMR, JH, SW	Best if David Kingston could ask PB for clarification. Appears to be included by error		David Kingston concurred that 'fauna fencing' is probably in the report by error, and would most likely be impractical and ineffective on the work site.
26	Attachment 1	Section 5.1.1.3	212	Tree climber involvement to be checked with PB	EMR, JH, SW	Best if David Kingston could ask PB for clarification. Timing is not specified for internal inspection of nest boxes by a tree climber		David Kingston received an e-mail from Dr Martin Predavec of PB, who made suggestions such as using a ladder (height and OHS considerations) and a camera on a pole.

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
27	Attachment 1	Table 4.1	206	<p>Change sentence 'Where appropriate the Contractor's ecologist will advise where self-supporting barrier fences are to be erected by the Contractor around areas of native vegetation to be retained including threatened floral species identified in the pre-clearing surveys. Verification of these areas is required by the EMR'</p> <p>to</p> <p>'Where appropriate the Contractor's ecologist will advise where self-supporting barrier fences are to be erected by the Contractor around isolated areas of native vegetation to be retained including threatened floral species identified in the pre-clearing surveys. This will not include clearing boundaries. Clearing boundaries will be established through the use of ribbon, marker posts and signage.'</p>	JH	<p>Include sentence at end of proposed revision 'Verification of these areas is required by the EMR'</p>	<p>During clearing activities all personnel were inducted daily into the areas to be cleared and provided with clearing boundary maps. Blue ribbon and white marker posts were erected around the clearing boundary as per standard RTA specifications. With the conclusion of mass clearing activities 'no clearing' signage is to be erected around the clearing boundary.</p>	Concur with EMR
28	Attachment 1	Table 4.1	207	<p>Change sentence 'Dead wood and suitable hollow bearing trees that are to be removed within construction areas will be placed in adjacent areas (&gt;50m but not more than 1 km from construction area) to minimize loss of habitat. EMR and ecologist to confirm suitable habitat where the material is to be relocated'</p> <p>to</p> <p>'Dead wood and suitable hollow bearing trees that are to be removed within construction areas will be placed in adjacent areas/edge of stockpile to minimize loss of habitat. EMR and ecologist to confirm suitable habitat where the material is to be relocated'</p>	JH	<p>Remove 'where practical' from proposed revision. JHG has demonstrated that all hollow trees are able to be moved by the transport of a significant number of hollow trees to the chipping stockpile.</p>	<p>JHG is intending to move the dead wood and hollow bearing trees. Our objection is to the clause for &gt;50m but not more than 1km. To achieve this JHG will have to do substantially more clearing to place the logs this far into wooded areas.</p>	Concur with EMR
29	Attachment 1	Table 4.1	207	<p>Change sentence 'All other cleared native vegetation that is not salvaged or used for habitat resources is to be managed through chipping and mulching and re-distributed into appropriate areas of native vegetation or used in landscaping and rehabilitation areas.'</p> <p>to</p> <p>'All other cleared native vegetation that is not salvaged or used for habitat resources is to be taken off-site. Refer to contract documents'</p>	JH	<p>Proposed change should read 'All other cleared native vegetation that is not salvaged or used for habitat resources is to be taken off-site'</p>	<p>The original conditions of re-distributing the mulched wood into native vegetation were changed by the client.</p>	Concur with EMR

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
30	Attachment 1	Table 4.1	207	Change sentence 'The ecologist to monitor nest boxes monthly' to 'The ecologist to conduct the initial inspection of nest boxes one month after installation. The ecologist to train the PER in nest box inspections, and the PER to undertake monthly ground based inspections thereafter, with closer inspections when required.'	JH	The approval in the letter titled 'Changes to nest box monitoring/ contract no: 4072' was subject to the ecologist signing off on inspections by the PER. As the ecologist has refused to sign off, the EMR expects monthly nest box inspections to continue as per the CEMP, with results to be provided with the Monthly Environmental Reports. The EMR in consultation with State Water may recommended 6 monthly inspections by the ecologist, and monthly inspections by the PER upon review of the initial inspection results. JHG is also to provide evidence of nest box monitoring training by the PER.	The JHG ecologist has now done two months' worth of inspections and provided the training to the PER. All documentation has been provided to the EMR. JHG proposes monthly inspections of nest boxes by the PER and 6 monthly inspections by the PER.  The EMR should review the ecologist's reports and provide a decision to be included in the CEMP.	Concur with EMR
31	Attachment 1	Section 5.1.1	212	Change sentence 'During Construction – nest box monitoring will be undertaken by the Contractor's qualified ecologist' to 'During Construction – nest box monitoring will be undertaken by the Contractor's PER, once trained by a qualified ecologist.'	JH	As above.	As above.	Concur with EMR

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
32	Attachment 1	Table 4.1	208	<p>Change sentence 'Vehicles, foot wear and clothing should be weed free before accessing and exiting the construction areas. This will involve washing down vehicles prior to entering the site and cleaning boots and clothing to ensure they are weed free.'</p> <p>to</p> <p>'A Weed Management Plan and SEP is to be developed, designating the weed free and no go zones. Construction vehicles to only operate in weed free areas. Any vehicles needing to access weed areas will require the management plan to be put into place'</p>	JH	<p>Include the following sentence to the proposed revision 'Vehicles, foot wear and clothing should be weed free before leaving weed infested areas. This will involve washing down vehicles prior to leaving the site and cleaning boots and clothing to ensure they are weed free.'</p> <p>JHG must ensure that the construction areas remain weed free. Occurrences of weeds within construction areas will result in the issue of site instructions etc.</p>	<p>JHG objects to the use of "JHG must ensure that the construction areas remain weed free"</p> <p>This is not practical. The site should be treated for weed infestations if they occur and managed to prevent infestations as per ecologist suggestions and 'recommended weed control techniques' in PB Appendix C: Weed Management Plan.</p>	Concur with EMR
33	Attachment 1	Section 5.1.3.2	213	<p>Change sentence 'No specific threshold values are included in this Program. The monthly reporting of fauna mortality must be assessed by the project ecologist and the EMR and suitable responses taken depending on the cause of the mortality.'</p> <p>to</p> <p>'No specific threshold values are included in this Program. The monthly reporting of fauna mortality must be assessed by the PER and the EMR and suitable responses taken depending on the cause of the mortality.'</p>	JH	<p>Review by an ecologist 6 monthly and during high incidents of fauna mortality may be warranted.</p>	<p>The project ecologist was on-site during clearing to monitor fauna fatalities. The PER is suitably qualified to determine a preventative course of action, or engage an ecologist if excessive fatalities occur.</p>	Concur with EMR
34	Attachment 1	Appendix C	238-250	JH to provide review of Weed Management Plan	EMR	<p>This may need updating to suit site conditions and ecological reporting to date.</p>		Concur with EMR

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
35	Attachment 4	Sections 5.1 and 5.2	266-267	Overpressure and vibration monitoring are different between CEMP and contract i.e. CEMP - Overpressure at residence only. Vibration at residence and dam wall only. Contract - Overpressure and vibration at residence, dam wall and power station	JH	The CEMP should include all monitoring requirements.	The CEMP calls for overpressure at the residence and vibration at both the dam wall and residence. This will be followed up with DECCW as it is an EPL requirement.	Concur with EMR
36	Attachment 4	Table 5.1	266	Change background levels	JH	Background levels were determined through a process of negotiation with sensitive receivers and by DECCW and Planning approval. These should not be changed without consent from affected residents and DECCW and Planning approval	Background levels are not able to be consistently met with JHG background measuring	Concur with EMR
37	Attachment 4	Section 5.2	267	Change sentence 'The blasting design is to be presented to the EMR prior to blasting. The EMR will advise when blasting can commence.' to 'The Blasting Design Plan is to be presented to the client and EMR prior to blasting for their review.'	JH	Concur with proposed change. The EMR is not a blasting expert and blasting should be able to commence without EMR consent. However, if noise, overpressure and vibration limits are being exceeded, then the Blasting Design Plan will need to be appropriately modified.	The blasting design plan is prepared a maximum of 48 hours prior to blast occurring and is based on the BDP.	Concur with EMR

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
38	Attachment 4	Table 6	269	Remove sentence 'Enclosing or shrouding conveyor systems'	JH	This condition appears to have been placed by DECCW, and should not be changed without DECCW concurrence. If the conveyor system proves to be noisy, then mitigation measures will be required.	This will provide negligible noise and dust reduction and is not standard practice for portable crushing or batch plant plants. This will be followed up with DECCW.	Concur with EMR
39	Attachment 4	Table 6	269	Remove sentence 'Residential class mufflers and engine shrouds to be used where applicable'	JH	This may be a legitimate last resort mitigation measure and should not be removed.	It is not appropriate to this project. The job location is rural not urban.	Concur with EMR
40	Attachment 4	Table 6	269	Change sentence 'A speed limit of 50km/hr to be adopted for heavy vehicles operating on haul roads' to 'A speed limit of 60km/hr to be generally adopted for all vehicles operating on haul roads except where specifically designated haul routes are being used only by single unit haul fleets.'	JH	Concur	Current approved speed limit	Concur
41	Attachment 4	Table 6	270	Change sentence 'At the joining of unsealed and sealed roads, the area will be routinely swept by the Contractor to remove deposited material that could generate dust.' to 'At the joining of unsealed and sealed roads, any deposited material will be removed as needed by the Contractor on a regular basis.'	JH	Concur. Note that the Traffic Management Plan is to include dust suppression on public gravel roads as per Gunnedah Council's requirements.	Sweeping is not needed on a routine basis. Removal is only needed when mud or dust is being excessively tracked off site. Wheel shakers have been installed. The Traffic Management Plan calls for dust suppression 100 metres either side of the intersection.	Concur with EMR



Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
42	Attachment 4	Table 6	271	Change sentence 'Vehicles transporting spoil and materials will be covered immediately after loading to prevent windblown dust emissions and spillages' to 'Vehicles transporting spoil and materials along public roads will be covered immediately after loading to prevent windblown dust emissions and spillages'	JH	Concur. Note that other appropriate dust mitigation measures may be required if dust becomes an issue.	Off highway construction equipment does not have provision for load covering.	Concur with EMR
43	Attachment	Section 7.2	272	Change the following: Noise and blasting monitoring will be undertaken at/near the following receptors <ul style="list-style-type: none"> <li>• Mostyn vale</li> <li>• Illawong</li> <li>• Caravan park</li> </ul> to Noise monitoring will be undertaken at/near the following receptors. <ul style="list-style-type: none"> <li>• Mostyn vale</li> <li>• Illawong</li> <li>• Caravan park</li> </ul> Blast monitoring will be undertaken at 1521 Bulga Rd only.	JH	Proposed change should read: Noise monitoring will be undertaken at/near the following receptors. <ul style="list-style-type: none"> <li>• Mostyn vale</li> <li>• Illawong</li> <li>• Caravan park</li> <li>• 1521 Bulga Rd</li> <li>• Caravan Park</li> </ul> Blast monitoring will be undertaken at 1521 Bulga Rd only.	As per the vibration and over blast criteria within the CEMP This comment by EMR is inconsistent with EMR comment on Change No. 35. Blast monitoring is vibration and overpressure.	Concur with EMR
44	Attachment 4	Section 7.3	273	Dust gauges will be erected at the following receptors: <ul style="list-style-type: none"> <li>• Mostyn Vale</li> <li>• Illawong</li> <li>• Residential Property A</li> <li>• 1521 Bulga Rd</li> <li>• Caravan Park</li> </ul>	JH	The EPL was applied for separately by JH. The EPL only refers to four locations for dust gauges.	Differs to the EPL requirements	Concur with EMR

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
45	Attachment 5	Table 6	278	Change sentence 'The parking of vehicles, and stockpiling/storage of equipment will be prohibited in order to avoid compaction of soil.' to 'The parking of vehicles, and stockpiling/storage of equipment will be prohibited within the drip zone of trees in order to avoid compaction of soil.'	JH	Concur	Clarification is needed.	Concur
46	▪ Attachment 5	▪ Table 6	▪ 281	▪ Change sentence 'Refuelling of plant and equipment will be undertaken in an adequately bunded area' to ▪ 'Refuelling of plant and equipment will be undertaken according to the Contractors refuelling procedure which utilises fully self bunded equipment.'	▪ JH	▪ The refuelling procedure will still require EMR review and concurrence.	▪ Procedure has now been developed and submitted. ▪ JHG awaiting EMR comment.	▪ Concur with EMR

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
▪	▪ Attachment 5	▪ Table 6	▪ 281	<ul style="list-style-type: none"> <li>▪ Change sentence 'Following completion of construction works, the site will be rehabilitated to a condition resembling that prior to the commencement of works'</li> <li>▪ to</li> <li>▪ 'Following completion of construction works, the site will be rehabilitated by the Contractor to a suitable condition for revegetation work to occur. State Water will carry out any revegetation/other rehabilitation works.'</li> </ul>	▪ JH	<ul style="list-style-type: none"> <li>▪ Areas disturbed outside of the construction footprint and contract specification should still be rehabilitated to a condition resembling that prior to commencement of the works.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rehabilitation to original condition is not part of the contract. JHG are only required to do the work in our contract scope i.e. topsoiling and grassing.</li> <li>▪ John Holland will not be doing any work outside the scope of the contract i.e. contract area. Any deviation with work outside the construction footprint and contract spec will require prior State Water approval and will then come under the conditions of our contract.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Concur with EMR</li> </ul>

Change No.	Section	Paragraph	Page	Proposed Change	Proponent	EMR Comments	JH Comments	State Water Comments
▪	▪ Attachment 7	▪ Section 6 of 'Clearing and Revegetation'	▪ 296	▪ All seeded vegetation must achieve 60% soil-surface coverage within one month of sowing.	▪ JH	▪ This condition is not unreasonable.	▪ JHG will submit soil samples for analysis as per the project spec and get expert advice on the suitability of the seed mix and soil ameliorants. If the advice given differs from the spec we would like to submit this advice to the EMR and State water for approval. If the spec mix or another approved mix is used and does not achieve 60% soil surface coverage within one month of sowing, JHG considers that this should not be a NCR as all possible methods to achieve this will have been followed.	▪ Minimum soil coverage is required to achieve erosion and dust control objectives. The tender specifications provide details on revegetation. JH should provide evidence that they are meeting the specification requirements.

## 4.5 Other Approvals

The Project has the following additional approvals in place:

- Exemption during a total fire ban TOBEX0000599.

There are no environmental conditions attached to this approval. DECCW cancelled the JHG Water Supply Works Approvals (90WA812885, 90WA812889 and 90WA813019) after discussions between the PER and DECCW representative regarding the exemption for water supply works under the *Water Management Act* 2000. Water use for concrete batching is recorded as a per cubic meter amount, and the purchase of 7.00ML in the Upper Namoi catchment is still in place.

## 5 Auditing

Auditing of the John Holland Keepit Dam project has been carried out according to the CEMP throughout the works to date. The initial internal audit was carried out on the 26<sup>th</sup>/27<sup>th</sup> May 2010. The second internal audit was carried out on the 3<sup>rd</sup> December 2010, generally in keeping with the 6 monthly audit schedule. External audits conducted on The Project include four audits, the first on the 16<sup>th</sup> April 2010 the second on the 15<sup>th</sup> October 2010, the third on the 7<sup>th</sup> April 2011 and the fourth on the 11<sup>th</sup> of August 2011. John Holland has also taken part in several other audits which comprised an environmental section. These are as follows;

- ISO14001-2004 audit;
- State Water Audits; and
- OEH audits.

## 6 Planning for Effective Environmental Controls

John Holland Group has certification to the Environmental Management System (EMS) ISO14001-2004 and this system provides the guide for environmental administration. The plans written for The Project must comply with the EMS and The Project Conditions of Approval (CoA).

The Construction Environmental Management Plan (CEMP) is the overarching plan, prepared to the ISO140001 standard, which documents the manner in which environmental risks are managed on site.

The CEMP is revised on occasion when instances are identified where site management procedures, sub-plans and the like can be improved. Planning for environmental management on this project has included the preparation of an overarching CEMP supported by ten Sub-plans.

As discussed previously in section 3.3, John Holland holds an EPL from OEH which provides the limits for which The Project has to adhere. Compliance to the EPL limits is reported to the Environmental Management Representative (EMR) and State Water every month in a monthly environmental report. Compliance was reported annually to the OEH in February 2011.

Area specific Site Environmental Plans (SEP) are designed for easy reference whilst on-site to the major of environmental issues. The SEPs are designed as work instructions for the Supervisors and subcontractors to use on site. Five SEP's were prepared during this time period as listed below.

JH-KD-SEP-002  
JH-KD-SEP-003  
JH-KD-SEP-005  
JH-KD-SEP-E  
JH-KD-SEP-D

These plans were revised during November 2010 (Rev 6) and April 2011 (Rev 7).

The environmental training on site is provided initially at the project induction for all personnel and continues through the project in formal planned training sessions and informally through daily pre-start meetings and weekly toolbox meetings.

## **7 Implementation and the Observed Effectiveness of Controls**

Appendix 1a is a summary of some of the primary mitigation measures employed on the site with commentary on the observed effectiveness of the measures and any additional mitigation procedures that have been applied. The following sections offer more detail on the various environmental aspects encountered on site.

### **7.1 Site Inspections**

The John Holland Project Environmental Representative (PER) conducted a formal weekly site inspection across the project site to ensure effective environmental controls are implemented. This inspection is carried out with the EMR and Superintendent when possible. The inspection monitors all in-situ environmental controls for damage and effectiveness, as well as designing new or upgrading controls where required. Following the inspection, a checklist of environmental action items is created and provided internally.

The PER conducts less formal, inspections and monitoring operations daily, such as during monitoring work, site inspections and following rain events.

The weekly site inspection ensured that John Holland met the EPL requirements and The Project Conditions of Approval. The monitoring notes are recorded and can be viewed in the appendices. Labourers were allocated to the environmental group on an as needs basis to assist with the environmental management requirements.

### **7.2 Environmental Management Representative**

John Holland appointed a Project Environmental Representative (PER) for The Project. State Water appointed an Environmental Management Representative (EMR) as required by CoA 6.1. The EMR acted as an independent verifier of environmental management procedures; the role included overseeing the implementation of all

environmental management plans and monitoring programs, advising on compliance with the EPL, CEMP and other approval documents, overseeing environmental auditing and recommending actions to avoid or minimise unintended or adverse environmental impacts.

The EMR also conducted a daily inspection of the environmental controls across the site.

### **7.3 Compliance Records**

Project environmental performance is reported monthly to State Water and the Department of Planning via the EMR, while environmental compliance is reported every six months through the Construction Compliance Report.

The Project has 192-recorded conditions and commitments. The conditions in the CEMP reflect The Project approval conditions, the EPL conditions and any other conditions.

This CCR report covers the monthly reports from February 2011 to September 2011. There are monthly reports for all months during this time period.

## **8 Environmental Site Monitoring**

### **8.1 Dust Gauges**

Five dust gauges were installed across The Project in April 2010 in compliance with Condition P1.1 of the EPL. The dust gauges at 1521 Bulga Rd, Illawong, Residential Property A and Mostyn vale have been in operation since this date. The Caravan park dust gauge has been in operation since late May 2010 these were routinely collected and replaced on a monthly cycle. The dust bottles are sent to a NATA approved laboratory under chain of custody conditions for analysis.

Figure 8-1 (Table M8.1 from the EPL) provides the criteria for background dust levels, maximum allowable increase and maximum total dust levels. The results of the dust monitoring are summarised in Appendix 1b.i – Depositional Results.

## Figure 8-1 Dust Requirements from the EPL

M2 Requirement to monitor concentration of pollutants discharged.

Pollutant	Averaging Period	Goal
Total Suspended Particulates	Annual Mean	90um/m3
PM10	24-hour	50ug/m3
Dust Deposition	Annual Mean	30ug/m3
	Annual Average (monthly)	2g/m2/month max increase
	Annual Average (monthly)	4g/m2/month total

## 8.2 Dust Gauge Results

The averaged dust gauge results show no exceedance above the 4g/m<sup>2</sup>/month guideline (annual average) at any locations. A complete list of the monthly elevated results can be seen in Table 8-2. The dust results were sent to OEHL in February 2011 for the EPL annual report.

**Table 8-1 Dust Gauge Averages**

Section	2010-2011 MONTHLY AVERAGE (over 12 months)
DDG#1	0.55
DDG#2	1.74
DDG#3	1.80
DDG#4	0.52
DDG#5	1.15
<b>OVERALL AVERAGE</b>	1.152

**Table 8-2 List of Elevated Results for Dust Gauge**

Month	Location	Elevated Result (g/m <sup>2</sup> /month)	Reason
April 2010	DDG#2	5.1	Sample contaminated by being in close proximity to dirt road.
May 2010	DDG#2	7.3	Sample contaminated by being in close proximity to dirt road.
June 2010	DDG#2	4.2	Sample reported bird droppings.
June 2010	DDG#4	6.3	Sample contaminated by being in close proximity to construction of Bypass Road.
January 2011	DDG#2	4.9	Sample contaminated by bugs and monitoring period not in compliance with maximum number of days.

## 8.3 High Volume Air Sampler

One PM10 machine was operational on-site for 24-hours after each blast. The machine was located at the property identified as 1521 Bulga Rd and the same location as DDG#1. The PM10 was removed from the property following the final blast.



The PM10 operates for 24 hours following each blast on-site. The monitoring location is the closest sensitive receptor.

The 24-hour performance guideline for PM10 is 50 µg/m<sup>3</sup>.

The results of the PM10 Air Sampler monitoring are displayed in Appendix 8.b.ii–PM10 Results.

The results indicate that The Project was within acceptable levels for annual averages for the reporting period for PM10, as seen in the Table 8-3.

**Table 8-3 HVAS Results for Reporting Period**

<b>Blast Date</b>	<b>Result (ug/m<sup>3</sup>)</b>
25/05/2010	ND
02/06/2010	ND
10/6/10	2
23/6/10	<1
30/6/10	ND
14/7/10	0
16/7/10	10
21/7/10	2
28/7/10	ND
5/8/10	<1
11/8/10	1
17/8/10	6
26/8/10	1
3/9/10	4
9/9/10	5
16/9/10	5
23/9/10	11
29/9/10	4
30/9/10	13
13/10/10	8
20/10/10	7
21/10/10	5
27/10/10	8
28/10/10	6
10/11/10	3
11/11/10	2
17/11/10	<1
18/11/10	1
24/11/10	6
01/09/11	ND

ND – No Data

ND has been reported due to failure to install the monitoring equipment in time, power failure, the filter paper not being received by the laboratory due to a postal problem, and by damage to the filter paper in order listed.

## 8.4 Water and Soil Management

### 8.4.1 Erosion and Sedimentation Control

The Project has a Soil and Water Quality Management Sub-plan (SWQMP) which outlines the project requirements to ensure that water leaving the site meets the OEH requirements and the ANZECC guidelines for Protection of Aquatic Ecosystems. The SWQMP provides a summary of the parameters and sampling/analytical methods which are shown in Table 8-4.

**Table 8-4 Water Quality Parameters**

Parameter (Including EPA limits)	Sampling Method	Analytical Method
pH (6.5 –8.5)	Probe	Field Analysis
TSS (50mg/L)	Grab Sample	Field Analysis
Oil and Grease (no visible)	Inspection	Field Analysis and confirmed as required with lab assessment

Design of erosion and sedimentation controls is provided through the Site Environmental Plans (SEP) However *in-situ* controls may differ as the controls are regularly manipulated to be most effective to ground conditions. Implementation and maintenance of controls is monitored in the weekly site inspections, during rain events and 24-hours after a rain event. Erosion and sedimentation controls across the site were designed using the Landcom Blue Book.

The erosion and sedimentation controls were sometimes damaged following storm events and John Holland maintained the controls as required.

### 8.4.2 Dewatering

The SWQMP ensures appropriate management of dewatering across the site. When an excavated area required dewatering the supervisor responsible for that area contacted the PER. The PER responds by arriving at site and testing the water for pH and Total Suspended Solids (TSS).

It is John Holland's preference that all water is discharged on-site for dust suppression. If the water has unacceptable pH or TSS levels, and is to be discharged off site then the water is treated. This may occur through physical or chemical means.

Small pits and trenches that have elevated pH or turbidity levels may be pumped into a water truck and used on site only for dust suppression.

### 8.4.3 Summary of Discharges

Water discharged from the site was via a rock lined drain at the Subsidiary Dam. This water was monitored and treated for high TSS as needed. The water was discharged to the down slope side of the bypass road where the cattle paddock acted as a natural filter before the water reached a water course. Concrete batch wash out water was sprayed on the road for dust suppression.

There have been five requests for dewatering during this reporting period. The initial three requests were from the Subsidiary Dam and approval was not granted. Results

from test number 1 indicate that the water sample was within the water quality parameters, however this sample was taken from a potable water supply line which had been struck by heavy machinery, and therefore the PER considered the amount of water, the intent to repair the pipe imminently and considered that a discharge approval was not necessary. Results for sample 3 have not been recorded in the JHG Project Pack. These results can be viewed in Table 8-5 below. The remaining requests were for the Right Hand Abutment seepage water to be pumped back over the coffer dam into Lake Keepit on 10/11/10. This approval was granted based on the presence a silt curtains and some additional checks and controls. The second approval was sought for ongoing direction of seepage water from the Right Hand Abutment into the plunge pool on the downstream side of the Keepit main dam wall. This approval was granted on 20/12/10 based on water test results and additional environmental controls being in place.

**Table 8-5 Summary of Approval Water Test Results**

	Location	Date	TSS	pH
<b>No Approval 1</b>		<b>18/5/10</b>		
Test 1	Potable water from pipeline		15	7.7
<b>No Approval 2</b>		<b>31/5/10</b>		
Test 2	Bypass Rd low point, rain water KD-DW-002		2800	7.1
<b>No Approval 3</b>		<b>27/07/10</b>		
Test 3	Concrete washout basin		14	10.9
<b>Approval 1</b>		<b>10/11/10</b>		
Test 1 (S1)	area inside double silt curtain where seepage water is to be discharged.	10/11/10	25	8.38
Test 2 (S2)	Between the two silt curtains in Lake Keepit at the Right abutment.	10/11/10	22	8.58
Test 3 (S3)	Area of Lake Keepit between the second silt curtain and tough boom at the right abutment	10/11/10	23.2	8.67
Sump	Sump at the end of Collection channel for seepage water, on site.	10/11/10	14	8.00

<b>Approval 2</b>		<b>20/12/10</b>		
Test 1	Seepage water discharge pipe RHA		48	8.02

Due to work being conducted in or near trenches at the Right Abutment, there was one incident related to water with high TSS discharging into the River. This incident was acted on immediately and OEH was notified within 24 hours. As a corrective action, a pipe plug was ordered for any future work and daily monitoring carried out whilst trenching work was being done.

The plug arrived on-site several weeks later and was utilised for all subsequent trench work where there was the risk of sediment entering the pipe and subsequently the river. All water monitoring results can be viewed in Appendix 1.e Water Monitoring Results.

## **8.5 Noise and Vibration**

### **8.5.1 Noise**

Project noise has been managed in compliance with the Noise, Vibration and Air quality Management Sub-plan (NVAMS). This included routinely monitoring noise at five specific locations weekly during the first month, monthly during the next three months then quarterly thereafter. Reporting for this report includes noise monitoring to the June round of monitoring, conducted every three months.

### **8.5.2 Noise Monitoring Results**

Monthly noise monitoring data and brief explanations of the observations made during monitoring are provided in Appendix 1.c.i.

Noise monitoring was undertaken during general and high noise generating activities. These results were collated and used to plan for future works and provided a basis for future noise and vibration impact assessment.

Prior to construction commencing State Water negotiated agreements with the owners of the properties 1521 Bulga Rd and Residential Property A. These agreements were for an increase of the noise limit of 35dB(A) to 45dB (Aeq) to be applied for the life of The Project.

Based on exceedances of the noise limit of 35dB(A) at both Illawong and Mostyn Vale during May 2010, the residents were consulted to find out if these exceedances had caused any problems. The residents were asked to sign an approval for a noise limit increase to 45dB (A) if they were happy with the current level of noise. The resident of Mostyn Vale signed and returned the letter. The property of Illawong changed ownership during January 2011. The new residents were contacted by both State Water and John Holland to inform them on routine monitoring and that any concerns could be raised in the Community Construction Liaison Group meeting (CCLG). The new residents didn't attend any of the CCLG meetings and didn't raise any concerns with John Holland.

Monthly noise monitoring ceased in June 2010 and was replaced with quarterly monitoring as per the CEMP. Since June 2010 there have been four monitoring rounds, September 2010, December 2010, March 2011 and June 2011.

### 8.5.3 Vibration

Certain activities within the project works, such as blasting had the potential to create significant vibration levels. To ensure no cosmetic or structural damage to residential properties and the dam wall occurs, vibration monitoring was performed during every blast.

Permissible vibration limits with respect to structural damage is provided in Table 8-6.

**Table 8-6 Vibration Criteria**

Max level for ground vibration	Allowable Exceedance (12 month period)
5mm/s ppv	5% of the total number of blasts over a 12 month period
10mm/s ppv	0
25mm/s ppv	For existing dam wall and new structures

### 8.5.4 Vibration Results

All monitoring results in this period have been below the limits with the exception of air blast overpressure at the resident's house during the blast on 25<sup>th</sup> May, 23<sup>rd</sup> June, 11<sup>th</sup> August and the 3<sup>rd</sup> September. Vibration results on the 11<sup>th</sup> August 2010 exceeded the criteria at the Main Dam Wall. Appendix 1 d, titled Vibration Monitoring Results provides the complete range of results.

Vibration monitoring during the reporting period was undertaken thirty times in the period in response to blasting activities taking place.

No data was reported during the blast undertaken on the 14<sup>th</sup> July at the main dam wall because the monitor was not triggered during the blast due to the trigger level not being reached. No data was reported during the blast undertaken on the 26<sup>th</sup> August or 20<sup>th</sup> October at 1521 Bulga Road due to a malfunction with the monitor. No data was reported at the main dam wall during the blast on 1<sup>st</sup> September due to the monitor not being triggered, however data was collected for the southern batter and 1521 Bulga Rd.

**Table 8-7 Summary of Vibration Monitoring**

**Table 1: Blast Results Final Construction Compliance report Feb 2011-Sep 2011**

Location: 1521 Bulga Rd				
Date	Criteria air blast overpressure	Criteria vibration	Air blast overpressure (dB)	Vibration result mm/s ppv
25/05/2010	115	5	117.6	0.22
02/06/2010			103.5	0.783
10/06/2010			105.5	0.823
23/06/2010			116.9*	0.0953
30/06/2010			106.0	1.1
14/07/2010			106	0.826
16/07/2010			109.5	3.29
21/07/2010			106	0.857
28/07/2010			114	1.33
05/08/2010			106	0.635
11/08/2010			106	0.445
17/08/2010			106	0.508
26/08/2010			ND	ND
03/09/2010			115.6	1.27
09/09/2010			109.5	0.508
16/09/2010			112.0	0.826
23/09/2010			109.5	1.52
29/09/2010			100.0	0.635
30/09/2010			106	0.508
13/10/2010			1.06	1.02
20/10/2010			ND	ND
21/10/2010			109.5	0.508
27/10/2010			106	0.445
28/10/2010			109.5	0.857
10/11/2010			109.5	0.826
11/11/2010			109.5	0.826
17/11/2010			112	0.445
18/11/2010			109.5	0.492
24/11/2010			114	0.381
01/09/2011			97.3	0.543
Location: Main Dam Wall				
25/05/2010	140	25	121.6	1.71
02/06/2010			119.1	1.52
10/06/2010			105.5	0.823
23/06/2010			116.4	3.75
30/06/2010			115.6	7.73
14/07/2010			ND	ND

16/07/2010			121	7.58
21/07/2010			115.2	1.88
28/07/2010			121.6	0.22
05/08/2010			121.7	17.8
11/08/2010			122.1	26
17/08/2010			122.7	19.6
26/08/2010			121.9	19
03/09/2010			120.9	2.41
09/09/2010			118.6	1.27
16/09/2010			120.4	1.52
23/09/2010			122.8	24.9
29/09/2010			117.5	6.86
30/09/2010			115.0	4.44
13/10/2010			122.8	9.52
20/10/2010			119.8	1.9
21/10/2010			122.8	3.3
27/10/2010			116.7	1.27
28/10/2010			118.2	1.9
10/11/2010			116.9	1.52
11/11/2010			119.0	12.7
17/11/2010			94	1.14
18/11/2010			120.5	0.889
24/11/2010			115.9	1.65
01/09/2011			ND	ND
Location: Southern Batter				
01/09/2011	140	25	118.9	6.256

 Exceedance

ND – No Data

Work near heritage structures required particular care and protection from the effects of structural vibration and accordingly the Project had a requirement to monitor vibration when works were likely to impact the structural integrity of structure (such as Keepit main dam wall).

## 8.6 Fauna

As part of the Keepit Dam upgrade Parsons Brinkerhoff (PB) developed a Construction Flora and Fauna Management Sub-plan (FFMP). During the initial stages of The Project John Holland contracted an external ecologist who conducted a pre-clearing study. As a result of this study significant and noxious weeds were identified and mapped, significant fauna habitat features were identified and mapped, and 103 hollow bearing trees were identified.

The ecologist carried out pre-clearing surveys for the sediment basin, and the proposed widening of the northern access road and Stockpile No.2 northern batter toe during the initial six months of The Project. There were no additional areas surveyed by the ecologist during the remainder of the project.

The EMR and PER conducted one pre-clearing inspection of an area with hollow bearing trees that was agreed by both to not require an ecologist present. The additional area included;

15/9/11 – Saddle Dam footprint, access tracks and stockpile area;

As part of the Parsons Brinkerhoff (PB) FFMP a Weed Management Sub-plan was developed prior to any work commencing on-site. The ecologist used this report as a guide to identifying the location of weeds. Based on the ecologists pre-clearing report weed location maps were developed and spraying for noxious weeds undertaken on 2<sup>nd</sup> November 2010.

Nest boxes were installed on a ratio of 1:1 hollow bearing trees, with 100 nest boxes installed over a four day period. The nest boxes were installed by qualified tree climbers. Locations of installation and type of box were as per the PB FFMP.

Our ecologist developed a work method statement for vegetation clearing operations and procedures which was based largely on the PB report. Once all the major clearing had ceased applications for minor clearing were made through the PER and EMR. Since the beginning of the project there have been eleven applications for tree removal. In these instances the EMR and PER did pre-clearing inspections.

Nest box inspections were done during the first two months by a qualified ecologist who trained the PER in effective inspections. The PER has undertaken monthly inspections from July 2010 onwards. In August 2010 the PER received approval from the client and EMR to conduct monitoring of the nest boxes at a rate of 50% of boxes per month. Inspections have revealed no native fauna in the nest boxes, however there is evidence that fauna are making use of some of the boxes. Evidence includes scratch marks, droppings and hair snagged on the entrance to the box.

Injured wildlife and road kill are reported to the PER as they occur. Table 8.8 below details all reported road kills and fauna injuries.



**Table 8-8 Fauna road kill and injuries**



Fauna Incident Register.								
Date	Location	Reported by	Fauna type	Reason	Action followed	By whom	Outcome	Any follow up required ?
10/05/2010	Bulga Rd	Paul Trembath	Kangaroo	Hit by truck	Contacted WIRES	Shonelle Gleeson-Willey	WIRES to advise the police	Nil
20/05/2010	Keepit Dam Rd	James Yuen	Kangaroo	Hit by light vehicle on way home from work	Kangaroo hopped away.	NA	Kangaroo appeared uninjured	Nil
21/05/2010	Subsidiary Dam bypass road	Steve Weakley	Blue tongue lizard	in area that scraper working, tail run over	Contacted WIRES and Lizard delivered to South Tamworth animal hospital	Shonelle Gleeson-Willey	Lizard euthanized	Nil

25/05/2010	Right Abutment land spur SP1	John Fuller	Kangaroo	during pre-split blast it was noticed that there were many kangaroos on this spur of land which is surrounded by a fence	PER inspected fence line and identified area where kangaroos can and are getting under.	Shonelle Gleeson-Willey	Kangaroos are not trapped	Nil
18/06/2010	Keepit Dam Road	James Barraclough	Owl	Hit on way to work	Picked up and disposed of at site.	James Barraclough	Owl disposed in garbage bin	Nil
29/06/2010	Caravan park main road near boat ramp	Ryan	Kangaroo	Hit early morning on drive to right abutment	Kangaroo hopped away.	NA	NA	Nil
30/06/2010	Keepit Dam Road	Paul Trembath	Kangaroo	Hit on way to work	Kangaroo hopped away.	NA	NA	Nil
18/08/2010	Subsidiary Dam	Peter Newton	2 x Plover Birds	hit by articulated dump truck	Birds flew/jumped away	NA	NA	Nil
28/09/2010	Subsidiary Dam	Peter Newton	Wallaby	stuck in cut off trench	removed and released into paddock behind subsidiary dam	Peter Newton	Kangaroo not injured	Nil

28/09/2010	Subsidiary Dam	Peter Newton	Water Dragon	sunning on stockpile where trucks were working	picked up and removed off-site	Peter Newton	Not injured	Nil
29/09/2010	Subsidiary Dam	Peter Newton	Water Dragon	sunning on stockpile where trucks were working	picked up and removed off-site	Peter Newton	Not injured	Nil
08/09/2010	Subsidiary Dam	Peter Newton	Cormorant	Injured and sitting on the western side of the borrow pit for 3 hours.	Caught and took into South Tamworth Veterinary hospital	Shonelle Gleeson-Willey	WIRES to look after	Nil
08/09/2010	Subsidiary Dam	Peter Newton	2 x Water Dragons	On stockpiles	ran off-site	Shonelle Gleeson-Willey	NA	Nil
18/10/2010	Subsidiary Dam	Peter Newton	5 x Turtles	Caught in trenches	scooped out with net and put over coffer dam wall	Shonelle Gleeson-Willey	NA	Nil
20/10/2010	Subsidiary Dam	Peter Newton	3 x Turtles	Caught in trenches	scooped out with net and put over coffer dam wall	Shonelle Gleeson-Willey	NA	Nil
11/10/2010	Subsidiary Dam	Peter Newton	Bearded Dragon	In the middle of the road to the concrete shed	ran off-site	Shonelle Gleeson-Willey	NA	Nil
01/11/2010	Subsidiary Dam Trench	Shonelle Gleeson-Willey	snake	caught in outside trench	collected in net and placed on grassed stockpile off road	Shonelle Gleeson-Willey	NA	Nil

17/11/2010	Subsidiary Dam Pump house	Tony Jamieson	Juvenile Magpie	jumped out of the nest and was running around where water truck getting filled up	PER inspected area and saw that Magpie was sitting in tree and other magpies were close by.	Shonelle Gleeson-Willey	NA	Nil
29/11/2010	Subsidiary Dam Trench anchor bar hole	James Barraclough	Juvenile Wood Duck	Stuck in trench , in hole around anchor bar	PER and project engineer rescued the duck from the trench and tried looking for other similar size ducklings with ducks. No success	Shonelle Gleeson-Willey	Simon Flannery looking after duckling till it is old enough to be released back into Keepit Dam.	Simon and family to care for duckling.
29/11/2010	Subsidiary Dam	Peter Newton	Cow	loose in Sub Dam	ran out of site	Shonelle Gleeson-Willey	cow left site	NA
03/12/2010	Caravan Park	Ben Kirkbride	Grass Parrot	Picked up by grounds keeper whilst mowing	taken to WIRES rep	Shonelle Gleeson-Willey	WIRES to care for	Nil
24/01/2011	Subsidiary Dam	Peter Newton	Wood Duckling	Found alone in work area	PER picked up that evening from Supervisors house.	Shonelle Gleeson-Willey	Call WIRES after Australia	Duckling died on Australia Day due to heat stress.

06/01/2011	Gate 2	Shonelle Gleeson-Willey	Galah	Hit by car	PER picked up, took home and cared for.	Shonelle Gleeson-Willey	Galah re-released successfully in late January	Nil
29/2/11	Keepit Dam Road	Peter Newton	Kangaroo	Hit by car	PER checked for signs of life. None found	Shonelle Gleeson-Willey	dragged to the side of the road and left	Nil
15/03/2011	Bulga Rd	Paul Trembath	Kangaroo	Hit by car	Kangaroo hopped away.	Shonelle Gleeson-Willey	NA	Nil
15/04/2011	Bulga Rd	Shonelle Gleeson-Willey	Kangaroo	Hit by car	PER took joey to WIRES representative in Tamworth	Shonelle Gleeson-Willey	WIRES to care for	Nil
30/06/2011	Bulga Rd	Alex Biscan	Kangaroo	Hit by car	Kangaroo was killed	Alex Biscan	Kangaroo left in scrub	Nil

## **8.7 Flora**

John Holland's subcontracted ecologist developed a Vegetation Clearing Works Method Statement for The Project to guide clearing operations. This was largely based on requirements detailed in Parsons Brinkerhoff (2010). To date, clearing in the following areas has been completed:

- Waste Stockpile 1;
- Waste Stockpile 2;
- Right Abutment Spillway;
- North Access Road;
- Subsidiary Dam;
- Bypass Road;
- Saddle Dam.
- RHA Seepage Water line;

## **8.8 Indigenous Heritage**

Prior to project commencement one indigenous heritage site was identified by the client (State Water). This area was fenced off and is included in the general induction for all new employees.

Since the beginning of The Project there has been no identification of any indigenous heritage items.

## **8.9 Non-Indigenous Heritage**

The Project includes works within close proximity of several non-indigenous heritage items, such as the Keepit Dam Main Wall and a workshop within the equipment yard of State Water. Measures to protect these items include vibration monitoring at the dam wall during blasts and site-specific induction training. There are no specific mitigation measures for the identified heritage items.

No non-indigenous heritage items or structures were found within this reporting period. There was no impact on existing Heritage Structures during the project life time.

## **8.10 Waste Management**

The Waste Management and Reuse Sub-plan outline's the management of waste during The Project. Where it is appropriate, bins are provided to separate the waste.

John Holland retained the services of Gunnedah Trade Waste for the supply and disposal of skip-bins. Gunnedah Trade Waste delivered the general garbage and recycling to Gunnedah Council Landfill where the recycling was sorted and then

transported to the Challenge sheltered workshop, a local charity organisation for people with a disability.

The waste quantities were reported to John Holland head office, the EMR and State Water on a monthly basis.

From August 2010 The Project has generated 150,408kg of total waste. Of this 38,244.6kg has been liquid waste.

## **9 Consultation**

Throughout the project John Holland was committed to keeping all local residents informed of upcoming work, out of hours work and blasting schedules.

This scope of consultation included mail notification to residents to inform them of any changes to work schedules or submissions for an extension of working hours as well as telephone notification 24 hours prior to any blasting. Community notification posters were posted around the Caravan Park advertising the dates of night time pours, and nearby residents were contacted regularly to update them on the schedule.

### **9.1 Agency Consultation**

Our works have the potential to impact several government and agency groups. These groups include the following:

- Tamworth Regional Council
- Gunnedah Shire Council
- NSW Roads and Traffic Authority
- NSW Department of Environment, Climate Change and Water
- NSW Department of Planning
- State Water

Throughout The Project, John Holland representatives have met with the stakeholders regularly so as to maintain effective working relationships and to ensure stakeholder concerns are addressed.

#### **9.1.1 Community Construction Liaison Group**

State Water manages the Community Construction Liaison Group (CCLG). John Holland representatives attended these meetings to ensure that any concerns from residents were addressed.

The CCLG has been running since the start of The Project and comprises representatives of the State Park Trust, local fishing and recreational groups, Gunnedah and Tamworth Councils, DECCW, State Water, John Holland, the EMR and local landowners.

At the commencement of the project CCLG meetings were held once a month. The frequency was reduced to once every two months during early 2011. The decision was made by State Water after the March 2011 meeting, to only hold meetings on an as

needs basis till the end of the project based on lack of attendance by any local stakeholders.

## **9.2 Complaints Management**

A 24hr complaints hotline (1300 662 077) was set up by State Water for the life of the project. No complaints received through this number were passed onto John Holland for action.

Complaints were generally received via email and/or direct contact from the public.

As per the project conditions of approval State Water maintained a telephone number, postal address and email address throughout the life of the project for community complaints.

No formal complaints have been recorded against The Project. However, three enquiries into the noise generated during night time works were raised by campers with Mr Scott Taylor, the Lake Keepit State Park Manager. These enquiries were dealt with by Mr Taylor and John Holland on the night they were raised. Mr Taylor did not wish to elevate the enquiry further.

## **9.1 Non-Conformance Management**

During the reporting period the John Holland project was issued with two non-conformances and two site instruction letters containing seven site instructions each.

The first non-conformance related to the clearing of vegetation at Gate 12. The second non-conformance related to discharge of turbid contaminated water from the discharge pipe at the Right Hand Abutment. All site instructions were actioned. This was recorded as an incident and Non-conformance report and reported to DECCW. No further action was taken by DECCW.

## **9.2 Incident Management**

Incidents on-site were reported directly to either the PER, Supervisor or Superintendent. Once an incident was reported the emergency management procedure was followed by the individuals involved in clean-up. Incidents are then recorded in the John Holland Project pack database and a report is generated and forwarded to the Regional Environmental Manager, Project Manager, the EMR and DECCW if needed. Within this reporting period the following incidents were reported in Table 9-1.



**Table 9-1 Summary of Incident Reports**

	Inv No	Incident Date	Incident Description	Was OEH notified	Actions Taken	Location	Classification (24hrs)	Business Unit	Impact Type	Est Cost
C663 - Keepit Dam Upgrade - Civil	12	30/08/2011	The PTO cover plate on the automatic transmission became loose, causing a loss of approximately 15L of automatic transmission fluid. This occurred whilst watering the haul road between gate 6 and the downstream spillway apron.	No	Immediate action was to clean up the spill site using the absorbent pads and sprinkle the area with the absorbent saw dust from the spill kit. The EMR has since been notified. The water cart should be repaired and operational by Wednesday afternoon 31/08/11	Between Gate 6 and the Downstream apron at the subsidiary dam on the haul road	3	NSW/ACT REGION	C	100
C663 - Keepit Dam Upgrade - Civil	11	18/08/2011	Diversion pipe plug was not installed and the diversion bund to catch grout was not effective in containing grout causing some minor discharge of grout into the surrounding bushland	No	As soon as the incident was made aware to the Project Engineer and Superintendent, the plug was installed and the bund was modified to ensure grout was effectively caught and not discharged into bushland.		3	NSW/ACT REGION	C	500

C663 - Keepit Dam Upgrade - Civil	10	21/03/2011	A hose spilt on the Hyatt drill rig late on Monday afternoon. Approximately 1 Litre of hydraulic oil was leaked onto the rock on the west side of the sill beam. The Hyatt drill rig driver did not alert the site supervisor to the spill or the John Holland PER and did not clean up the spill with the spill kit provided.	No	The PAPD noticed the spill and reported it to the site supervisor the following day. The site supervisor did not report the spill to the PER and did not clean up the spill until Thursday 24/3/11. The EMR was alerted to the spill on Thursday 24/3/11 and told the PER on the Thursday afternoon. On Thursday 24/3/11 the PER rang the supervisor at 4pm to ask about the incident. The PER requested that the spill be cleaned up with the sorbent material in the spill kit, a spill kit usage form be filled in and that the contaminated soil be removed, stored in a contaminated waste bag and the pit left open for the PER to inspect. The incident	Right Hand Abutmen t	3	NSW/ACT REGION	C	200
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				<p>was tool boxed the following morning by the supervisor.</p> <p>On Tuesday 29/3/11 the PER inspected the area of the spill. The oil had been cleaned up with sorbent material from the spill kit but no soil removed because the spill had been on rock and had not soaked in. Hyatt had not filled in a spill kit usage notification slip.</p>				
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C663 - Keepit Dam Upgrade - Civil	9	06/01/2011	<p>At 3:54pm on Wednesday 6/1/11 the EMR rang the PER to notify that the water being discharged out of the water pipe was greyish in colour, with low to moderate turbidity and that he suspected that there was concrete in the water because concreting was being carried out in the upper part of the water collection trench. The PER arrived on site at approximately 4:10pm at which time a second board and sand bags were put in the culvert at the top of the spillway cut. This action reduced the flow by approximately 3/4. As the water level slowly rose over approximately 10 minutes the pressure caused more water to</p>	Yes	<p>The pump remained pumping until the concrete work was complete, the site had been cleaned and the water was running clear. At this time the pump was turned off and the board removed to allow the clear water to run freely into the plunge pool.</p> <p>Samples collected showed the following results;  Sample 1:  TSS-57mg  pH-11.5</p> <p>Sample 2:  TSS-5630  pH-8.88</p> <p>The natural background level of pH of the water is between 8 and 9 based on previous monitoring at the discharge point.</p>	Plunge pool at point of discharge of site water. Plunge pool leads into the Namoi River	2	NSW/ACT REGION	B	1000
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		<p>escape around the sandbags and board. A pump was installed in the culvert to pump the water out of the culvert and into a drainage line that redirected the water to the sediment basin.</p> <p>After approximately 20minutes the flow of water into the plunge pool ceased completely, bar a very minor trickle.</p>	<p>At approximately 9am on the morning of the 7/1/11 the remaining sandbags were removed from the pipe and the pipe beneath the concrete was cleared to run freely. The 6inch pump and the small pump were used to reduce the flow and redirect as much 'dirty' water to the sediment basin as possible. This action caused some sediment to be stirred up both in the water being discharged and in the base of the plunge pool causing some discolouration for approximately 15minutes.</p>					
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C663 - Keepit Dam Upgrade - Civil	8	18/10/2010	<p>The EMR noticed that there was an unacceptable amount of water still in the bund around the fuel truck which had the potential to spill out and cause soil or water contamination. The EMR did not think that any of the contaminated water had spill out as yet.</p> <p>Over the preceding weekend 18mm of rain had fallen at the Keepit Dam site. The fuel cart driver had covered the tank and bund with a tarp to prevent water collecting in the bund.</p> <p>The tarp has no substantial holes in it, leading to the conclusion that water entered the bund because the high winds were flapping the tarp sides up. As an action item from the last fuel</p>	No	<p>The EMR spoke with the area supervisor and the site superintendent. The area supervisor told the fuel cart driver to pump out the bund and monitored him to ensure it was done. The PER spoke with the fuel cart driver to reiterate the need to pump out any collected water and asked why this action from the previous incident had not been followed. The fuel cart driver was not receptive to this discussion so the PER approached the area supervisor to request support on this issue. The Supervisor was happy to provide this support.</p>	Gums Caravan park Car park, Lake Keepit	3	NSW/ACT REGION	C	0
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			<p>related incident the fuel cart driver had been tool boxed in the need to cover the tank and bund with the tarp in times of rain and over weekends, as well being told that all water collected in the bund needs to be pumped out immediately before driving around the site.</p>							
C663 - Keepit Dam Upgrade - Civil	7	15/09/2010	EMR was leaving the Right Abutment area in the site vehicle and observed liquid sloshing out of the back of the refuelling truck as it came in	No	The EMR met the Area Supervisor Right Abutment outside Gate 7 and showed him the spillage locations. The Area Supervisor Right Abutment advised that	Side of road at Gate 7, Right Abutment	3	NSW/ACT REGION	C	500

		<p>through Gate 7 along the access road. EMR notice a strong diesel odour as he drove past the areas where the spillage occurred. EMR then parked outside of Gate 7 and walked back to investigate the spillage. The following were observed:</p> <p>Spillage of diesel contaminated water adjacent to the sediment control measure closes to Gate 7 and on the east side of the access road. Contaminated water was observed in the drain leading to the silt fencing.</p> <p>A number of spillages on the access road surface extending about 100m from the first observed spillage towards Gate 8.</p>	<p>he had organised a small excavator to dig out the contaminated material, and that he was getting black plastic to put the contaminated material on. He also advised that the PER had asked him to take a soil sample from the excavated area once the contaminated material was removed.</p>					
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			<p>A diesel odour was observed at all the spillages.</p> <p>The quantity of spillage was at least 20 litres.</p> <p>The EMR took photos and immediately called Jason Jones (Area Supervisor Right Abutment)</p>							
C663 - Keepit Dam Upgrade - Civil	6	03/09/2010	Overpressure at the resident's house recorded 115.6dB which is an exceedance of the EPL requirement by 0.6dB.	Yes	Discussion with resident to confirm if overpressure, had caused any problem. Resident was not concerned by the amount of noise, vibration or overpressure.	1521 Bulga Rd	3	NSW/ACT REGION	E	1
C663 - Keepit Dam Upgrade - Civil	5	11/08/2010	Collected stormwater with TSS 814mg/L being discharged off-site at the Bypass road culvert.	No	Samples of water taken from Keepit Dam Rd Culvert and Peel river. Supervisor alerted and Superintendent informed of the need to install more controls and assess if the water	Bypass road culvert	3	NSW/ACT REGION	B	200

					is getting into the Peel River. PER and superintendent decided to install rock in the drain area of the Bypass road.					
C663 - Keepit Dam Upgrade - Civil	4	09/08/2010	PER was inspecting area to close out investigation and incident 3. PER noticed a 0.5m x 1.5m area of gravel with staining beneath the wheel of an articulated dump truck. On closer inspection this appears to be from oil. The PER approached the articulated dump truck driver who stated that the stain was there prior to him parking his vehicle there.	No	PER alerted supervisor and requested that the soil be removed and stockpiled on plastic and covered in plastic for removal to a licensed waste facility when a skip bin could be ordered. The PER was to be notified once the soil had been removed so that the hole could be inspected. PER requested that Supervisor toolbox the need to carefully inspect all vehicles and machinery for leaks prior to each day and report any leaks to the supervisor and PER.	Machinery parking area Subsidiary Dam near Concrete Batch Plant	3	NSW/ACT REGION	C	150

C663 - Keepit Dam Upgrade - Civil	3	30/07/2010	Fuel nozzle locked on when refuelling dump truck. Approximately 40L of Diesel fuel leaked onto ground. The nozzle was always attended by the refuelling person, it was the automatic shut off of the pump when the tank is full that malfunctioned	Yes	Fuel nozzle put into bund around tank on truck and driver turned off fuel valve. Absorbent boom was placed downhill from spill, absorbent pads were used to mop up spill, kitty litter was spread over the spill to immobilise and the entire area was covered with a tarp to prevent rain from dispersing the spill.	Machinery parking area near Concrete batch plant	3		C	400
C663 - Keepit Dam Upgrade - Civil	2	23/06/2010	Sewerage pipe broken by scraper. Sewerage diverted into former holding ponds till road level finished and pipes fixed.	No	State Parks consulted and sewerage diverted into old sewerage holding ponds in accordance with Work Cover 'Work near underground Assets' Guide.	North side of Bypass road, Subsidiary Dam	3		F	2000
C663 - Keepit Dam Upgrade - Civil	1	23/06/2010	Sewerage pipe broken by excavator.	No	Sewerage diverted into holding pond previously used for sewerage storage. Inspection done 24 hours after then after the weekend to make sure level of	Subsidiary Dam Bypass Road	3		F	200

					sewerage was not going to be a potential problem with rain.					
<b>Key:</b>										
B=Controlled and Uncontrolled Discharges to Water										
C=Contamination of Land										
E=Noise, Dust, Vibration and Odour										
F=Solids and Other Wastes										

## **10 Conclusion and Discussion**

Keepit Dam Upgrade Work Package 1 – Construction of Spillways and Ancillary Works is now complete. The only outstanding item is to relinquish the Environmental Protection Licence once all disturbed areas have been sufficiently rehabilitated.

All environmental monitoring and reporting was done as per the Construction Environmental Management Plan and the project specification.

During the course of The Project, limits set in noise, vibration and dust were exceeded during monitoring. All instances were investigated at the time and found to be either non project related, being affected by external sources or one off incidents. Where a one off instance was found to be the cause of a limit being exceeded, the project environmental representative investigated the incident and ensured measures were put in place to stop this from recurring.

Overall the project maintained a very high level of environmental integrity throughout all works. This is demonstrated by zero official complaints received and the general acceptance of site work and related construction vehicles by all local residents and stakeholders.

Future improvements which will be taken on as lessons learnt are; the importance of blocking off water pipes with no controls prior to any working being done in or around the area, the minimal use of nest boxes installed as part of the hollow bearing tree clearing and the importance of installing static dust gauges away from roadways.

## **11 Appendices**

Appendix 1.a	Mitigation Measures and Effectiveness
Appendix 1.b.i	Depositional Dust Results
Appendix 1.b.ii	HVAS Results
Appendix 1.c.i.	Monthly Noise Monitoring Data
Appendix 1.d.	Vibration Monitoring Results
Appendix 1.e	Water Monitoring Results

## **12 Attachments**

Attachment A	Compliance Conditions Table
Attachment B	Compliance Tracking System

## 13 References

Australia and New Zealand Environment and Conservation Council, 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, October 2000

Parsons Brinckerhoff, 2010, *Keepit Dam Upgrade Construction Flora and Fauna Management Sub Plan*, Prepared for State Water January 2010

Landcom, 2006, *The Blue Book: Managing Urban Stormwater* Vol. 1, 4<sup>th</sup> Edition, July 2006

John Holland 2010, *Construction Environmental Management Plan*, Version 0, 24<sup>th</sup> February 2010.

Department of Environment Climate Change and Water 2010, *Environment Protection Licence*, 22<sup>nd</sup> February 2010.

## Appendix 1a Mitigation Measures and Effectiveness (Note the performance criteria is detailed in the body of the report) Water and Soil

**Documentation:** Construction Soil and Water Quality Management Plan & Site Environmental Plans (SEP).

### Mitigation Measure:

Diversion of off-site runoff water around site where possible.  
Control measures close to the potential source of sediment.  
Control measure type and location indicated on the site environmental plans.  
Daily weather recording at site.  
Progressive rehabilitation of bare surfaces i.e. hydro seeding/mulch for rapid revegetation.  
Installation of sediment fences, hay bales, silt socks and silt curtains.  
Geotextile inlet filters,  
Rock lines drains  
Grass filtration  
Diversion pipeline  
Wheel shakers at site access to stop tracking soil from site.  
Fuel and chemical storage in impervious bund.  
Provide water discharge permits

### Effectiveness:

Since the beginning of the project sediment and erosion controls have been progressively installed in work areas as required. All erosion and sediment controls were in place prior to clearing and grubbing with the exclusion of the sediment basin at the right abutment. Minor clearing work for roads and stockpiles had commenced prior to installation of the sediment basin.

Labourers are sourced as needed from the general workforce. The PER is also equipped with basic equipment to correct easily fixed problems on regular inspections.





## Noise and Vibration

**Documentation:** Noise, Vibration and Air Quality Management Plan

**Mitigation Measure:**

Adequate liaison and notification of community prior to potentially noisy works or out of hours work.  
All subcontractors and staff undergo noise awareness training through the induction process.  
Out of hours noise monitoring for background levels and levels during work.  
Acoustic shielding through the strategic positioning of embankments, materials and stockpiles.  
Establishment of buffer zones for vibration intensive works.  
Machinery to be directed away from sensitive receivers where possible.  
Addressing of noise complaints in a timely manner.  
Weekly then monthly noise monitoring to determine if actual noise generated exceeds limits.  
Monthly dust monitoring  
Periodic inspections for excessive dust generation

**Effectiveness:**

Noise, vibration and dust monitoring during works have shown a general compliance with limits as per the EPL. During periods of high noise generating activity John Holland has kept regular communication with affected residents to ensure noise is not adversely impacting them.  
Several exceedances in dust levels have been attributed to insect interference. Local residents have been informally consulted to ensure that dust levels are not causing a problem.

## Non-Indigenous Heritage

**Documentation:** Non – Indigenous Heritage Management Plan

**Mitigation Measure:**

Implementation of heritage awareness program as part of the site induction and ongoing toolbox talks.

Identification of significant non-indigenous heritage places prior to construction.

Show heritage items on SEPs.

Work will stop when any potential heritage items are discovered and notify EMR and State Water.

**Effectiveness:**

Heritage awareness has been high with no recorded damage to listed heritage items near site.

There have been no heritage or potential heritage items uncovered during this period.

## Flora and Fauna

**Documentation:** Construction Flora and Fauna Management Sub-plan

**Mitigation Measure:**

Removal of large established trees is avoided where possible.

Protective fencing is used to delineate limits of clearing.

Regular spraying for weed infestation is occurring.

Weed exclusion zones are mapped

Hollow bearing trees are checked by an ecologist or the PER and EMR for the presence of fauna before removal

Hollow bearing trees and logs are retained on-site as habitat logs where possible

Permanent batters are revegetated as soon as practicable after the 1 hectare limit is reached to ensure protection from erosion.

Revegetation of disturbed areas was conducted using weed spraying prior to hydro mulch and hydro seed in accordance with project contract specifications

**Effectiveness:**

Within this period the Construction Flora and Fauna Management Sub-plan has been followed resulting in minimal disturbance to areas outside clearing lines.



## Waste

**Documentation:** Waste Management and Reuse Plan

**Mitigation Measure:**

Paper and cardboard Recycling skip bins are provided for the site office.

General recycling skip was provided at the Right Abutment until February 2011

Contaminated soil waste disposed of off-site to a licenced landfill.

Construction waste and materials have been reused where possible.

Waste management awareness as part of the site induction.

Any empty fuels, lubricants or chemicals containers are stored in a bunded area for collection by a drum recycler.

Clean-Up Australia Day initiative run on-site.

**Effectiveness:**

Waste and recycling are collected by Gunnedah Trade Waste and disposed at Gunnedah Council licensed landfill. Recycling includes paper and cardboard mainly from the main site office, wood products and some scrap metal. Waste minimisation measures in place include reuse of concrete batch plant water and use of recycled materials to build certain structures as needed in various areas of the site.

During the period of August 2010 to June 2011 the waste generated on site increased as the type of work being done changed from mainly excavation to building structures. The percentage of this that was recycled increased from 15% to almost 50% of waste generated.



## Air Quality

**Documentation:** Noise, Vibration and Air Quality Management Plan

### Mitigation Measure:

Background dust monitoring undertaken at identified sensitive receivers.  
Consultation with community regarding construction activities likely to generate dust.  
Ongoing dust monitoring at sensitive receivers.  
Use of water sprays and carts used to dampening exposed surfaces to control dust.  
Site vehicle speeds are limited reducing dust generation.  
Dirt tracked onto public roads is removed using brooms or a water cart.  
Earth mounds and site contours used to obscure noise where possible.  
Fine particulate dust monitoring conducted 24 hours after each blast at 1521 Bulga rd.

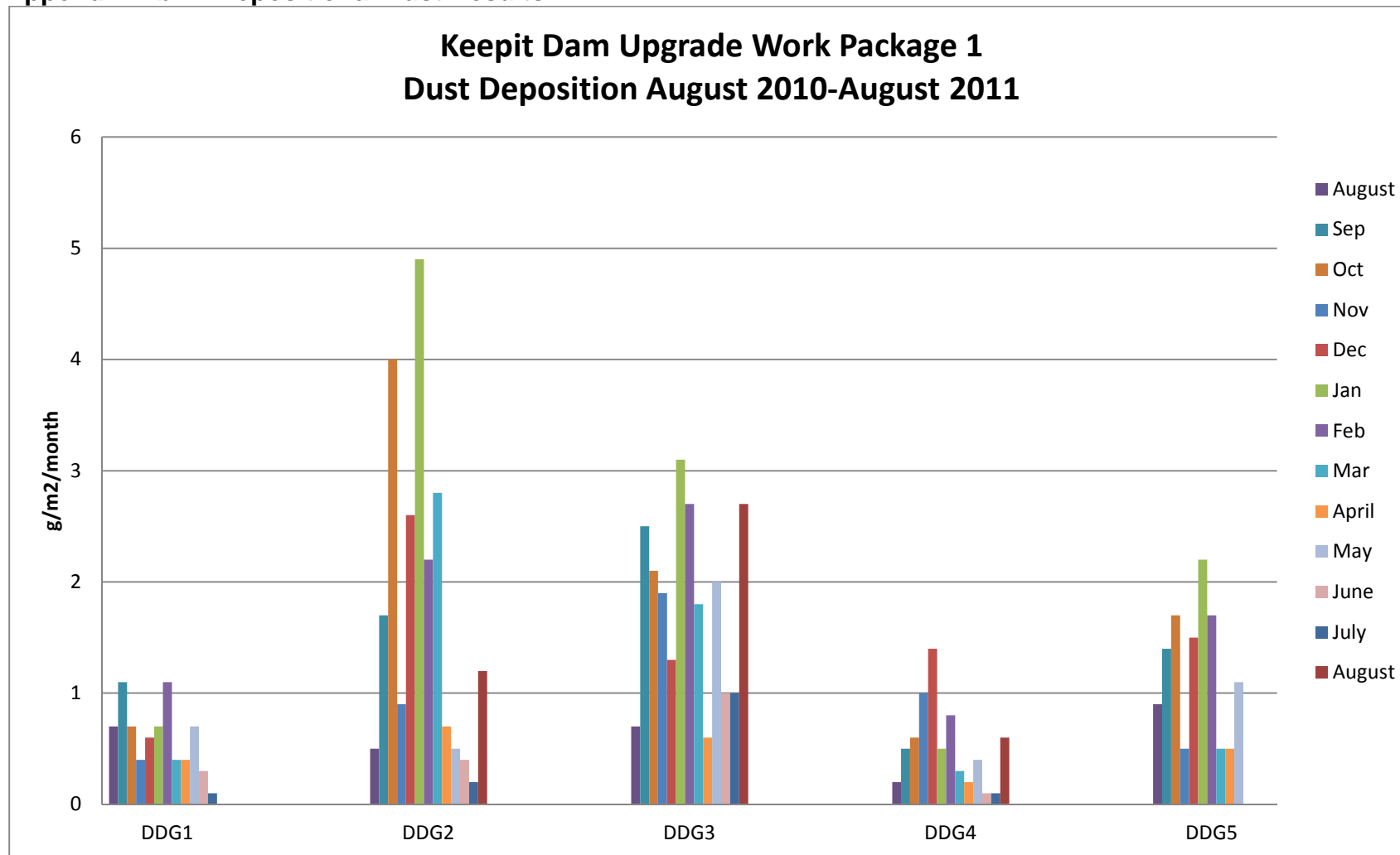
### Effectiveness:

The Project acknowledges the potential for dust to be generated from site and has engaged the full-time use of water trucks to address the issue. The months of August 2010 and January 2011 reported an exceedance of dust criteria within gauge 2. The exceedances were attributed to unusually high levels of combustible matter in the gauge.

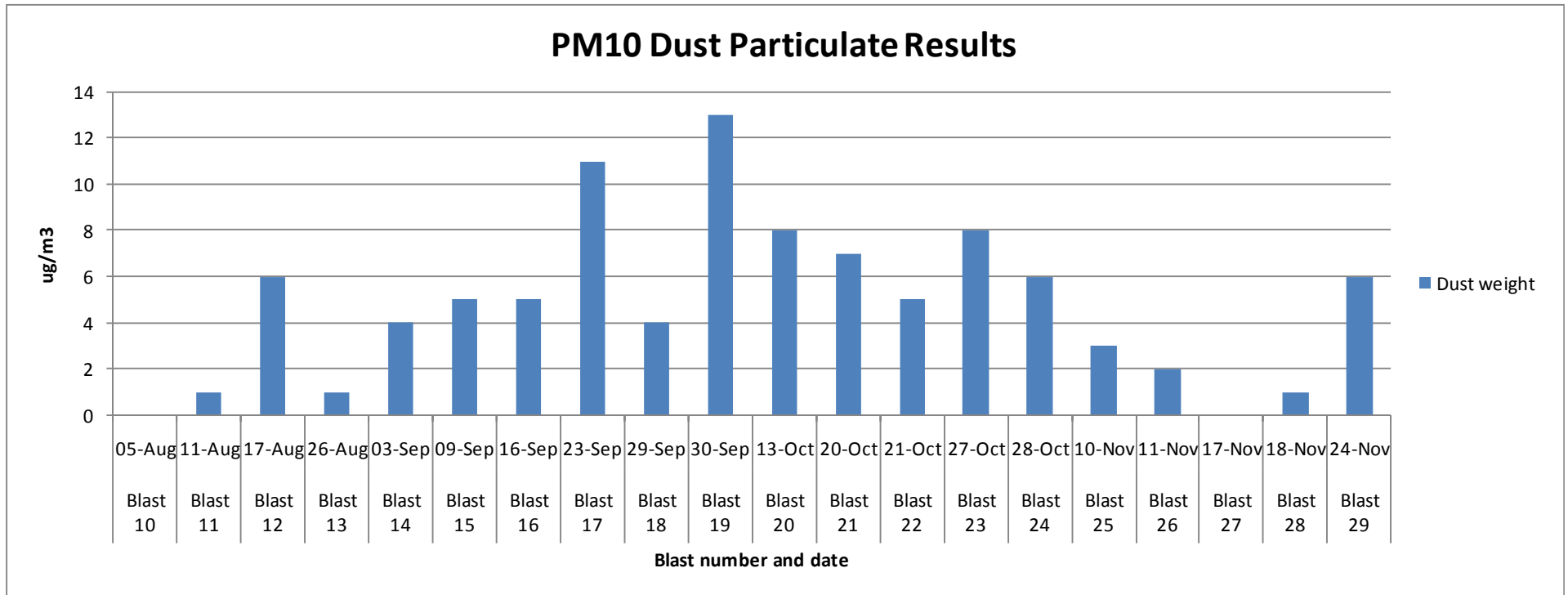
With the installation of a water fill point at the Right Hand Abutment, the water carts are able to more effectively spray the public roads between the site office and RHA. This made it possible to keep dust to an acceptable level during the summer months.



Appendix 1.b.i – Depositional Dust Results



**Appendix 1.b.ii– PM10 Results**



Appendix 1.c.i. Monthly Noise Monitoring Data

Date of Reading	Time of Reading	Monitored By	Description	Owned By	Noise Reading (dB)	Noise Criteria	Background / Production Reading	Distance from Source	Wind Speed	Surrounding Activities
<b>Background monitoring</b>										
19/04/2010	1:15:00 PM	Shonelle Gleeson-Willey	Mostyn Vale, SoundPro DL Type 1	hire equipment	47.4 dB(Aeq) 15min	35dB(A)	Background	2.57km	2.06	Cars travelling past on dirt road 10 metres away. Birds in nearby trees.
19/04/2010	1:00:00 PM	Shonelle Gleeson-Willey	Caravan Park, SoundPro DL type 1	hire equipment	55.2 dB(Aeq) 15min	40 dB(A)	Background	0.7km	2.06	No works, during lunch break. Cars travelling past on road within 15 metres. Birds chirping in tree nearby.
20/04/2010	1:15:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd, SoundPro DL Type 1	Hire equipment	38.2 dB(Aeq) 15min	45 dB(Aeq) 15min	Background	0.7km	2.06	No works being undertaken, lunch break. Small number of birds in general area. 1.5 metres off ground on property boundary.
18/05/2010	8:47:00 AM	Shonelle Gleeson-Willey	Illawong Background	Hire Equipment	26.5 dB Aeq (15min)	35dB Aeq (15min)	Background	1.26km	1.5	Background Monitoring
14/05/2010	5:28:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd Background	Hire Equipment	27.9dB Aeq (15min)	45dB Aeq (15min)	Background	0.7km	1.4	No construction (after hours)
Date of Reading	Time of Reading	Monitored By	Description	Owned By	Noise Reading (dB)	Noise Criteria	Background / Production Reading	Distance from Source	Wind Speed	Surrounding Activities
<b>Production monitoring</b>										
19/04/2010	4:00:00 PM	Shonelle Gleeson-Willey	Illawong, SoundPro DL Type 1	Hire equipment	46.6 dB(Aeq) 15min	35dB(Aeq) 15min	Production	1.26km	1.3	General earthworks, truck movement on haul roads, two cars and one bus drove past on the dirt road within 20 metres.
19/04/2010	2:30:00 PM	Shonelle Gleeson-Willey	1521 Bulga road, SoundPro DL Type 1	Hire equipment	41.5 dB(Aeq) 15min	45 dB(Aeq) 15min	Production	0.7km	1.5	General earthworks on right abutment and truck movement on haul roads.
19/04/2010	2:15:00 PM	Shonelle Gleeson-Willey	1521 Bulga Road, SoundPro DL type 1	Hire equipment	43.9 dB(Aeq) 15min	45 dB(Aeq) 15min	Production	0.7km	1.5	General earthworks on right abutment and movement of trucks on haul roads.
20/04/2010	1:45:00 PM	Shonelle Gleeson-Willey	Illawong, SoundPro DL type 1	Hire equipment	46.1 dB(Aeq) 15min	35dB(Aeq) 15min	Production	1.26km	1.9	General earthworks. Two cars drove past on road (20m) whilst monitoring.
21/04/2010	1:50:00 PM	Shonelle Gleeson-Willey	Caravan Park SoundPro DL type 1, Southern boundary near cabins	Hire equipment	41.6 dB(Aeq) 15min	40 dB(Aeq) 15min	Production	0.7km	1.8	John Holland machinery working on subsidiary dam. Soil conservation vehicles working on haul road. A magpie landed and was singing less than 2 metres from the unit.
21/04/2010	1:35:00 PM	Shonelle Gleeson-Willey	Caravan Park, Prosound DL type 1	Hire Equipment	36.5dB(A)	40 dB(Aeq) 15min	Production	0.7km	1.8	Excavation works on subsidiary dam. Fuel tank delivered
21/04/2010	1:00:00 PM	Shonelle Gleeson-Willey	Caravan Park SoundPro DL Type 1. Southern boundary near cabins	Hire Equipment	51.0 dB(Aeq) 15min	40 dB(Aeq) 15min	Production	0.7km	1.8	JH equipment was on lunch, Soil Conservation equipment was operational. 1 x ADT, 2 x water carts, 1 x utility.
21/04/2010	1:00:00 PM	Shonelle Gleeson-Willey	Mostyn Vale, Prosound DL noise monitor	Hire equipment	53.1dB(A)	35dB(Aeq) 15min	Production	2.57km	1.8	Excavation and carting on right abutment. Level beneath criteria until cows started to moo. This record will be discarded as non-



											representative.
28/04/2010	4:45:00 PM	Shonelle Gleeson-Willey	Residential Property A	Hire Equipment	38.9dB(A)	45dB(Aeq) 15min	Production	297m	3.5	Excavation on subsidiary dam. No access to property, so noise monitoring is greater than 30m from residence.	
28/04/2010	4:30:00 PM	Shonelle Gleeson-Willey	Residential property A	Hire Equipment	35.7dB(A)	45dB(Aeq) 15min	Production	297m	3.5	Excavation on subsidiary dam. Monitoring location is greater than 30m from residence due to no access.	
28/04/2010	4:00:00 PM	Shonelle Gleeson-Willey	Residential property A, Prosound DL noise logger	Hire equipment	43.0dB(A)	45dB(Aeq) 15min	Production	297m	3.5	Excavation on subsidiary dam. Monitoring cut short due to aero plane flying overhead, distorting results.	
30/04/2010	11:56:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd, Prosound DL noise monitor	Hire equipment	40.2dB(A)	45 dB(Aeq) 15min	Production	0.7km	2.2	Excavation and carting on right abutment	
30/04/2010	3:30:00 PM	Shonelle Gleeson-Willey	Caravan Park, Prosound DL noise monitor	hire equipment	36.2dB(A)	40 dB(Aeq) 15min	Production	0.7km	1.7	Excavation at subsidiary dam.	
30/04/2010	3:11:00 PM	Shonelle Gleeson-Willey	Caravan Park, Prosound DL noise monitor	Hire equipment	33.5dB(A)	40 dB(Aeq) 15min	Production	0.7km	1.7	Excavation at subsidiary dam.	
30/04/2010	1:56:00 PM	Shonelle Gleeson-Willey	Mostyn vale, Prosound DL noise monitor	Hire equipment	26.3dB(A)	35dB(Aeq) 15min	Production	2.57km	1.4	Excavation and carting on right abutment	
30/04/2010	1:38:00 PM	Shonelle Gleeson-Willey	Mostyn Vale, Prosound DL noise monitor	Hire equipment	34.7dB(A)	35dB(Aeq) 15min	Production	2.57km	1.7	Excavation and carting at right abutment	
30/04/2010	1:23:00 PM	Shonelle Gleeson-Willey	Mostyn vale, Prosound DL noise monitor	Hire equipment	29.8dB(A)	35dB(Aeq) 15min	Production	2.57km	1.7	Excavation and carting on right abutment	
30/04/2010	12:11:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd, Prosound DL noise monitoring	Hire equipment	43.2db(A)	45 dB(Aeq) 15min	Production	0.7km	2.2	Excavation and carting on right abutment	
30/04/2010	11:15:00 AM	Shonelle Gleeson-Willey	Illawong, Prosound DL noise monitor	Hire equipment	21.0dB(A)	35dB(Aeq) 15min	Production	1.26km	2	Excavation and carting on Right Abutment	
30/04/2010	11:00:00 AM	Shonelle Gleeson-Willey	Illawong, Prosound DL noise monitor	Hire equipment	29.8dB(A)	35dB(Aeq) 15min	Production	1.26km	2	Excavation and carting on the Right Abutment	
18/05/2010	9:47:00 AM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 2	Hire Equipment	29.6 dB Aeq (15min)	45 dB Aeq (15min)	Production	0.7km	2	General Construction, Drilling	
18/05/2010	9:30:00 AM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 1	Hire Equipment	33.9 dB Aeq (15min)	45 dB Aeq (15min)	Production	0.7km	1.5	General Construction, Drilling	
18/05/2010	9:06:00 AM	Shonelle Gleeson-Willey	Illawong Session 2	Hire Equipment	23.6 dB Aeq (15min)	35 dB Aeq (15min)	Production	1.26km	1.5	General Construction, Drilling	
18/05/2010	8:31:00 AM	Shonelle Gleeson-Willey	Illawong Session 1	Hire Equipment	44.5 dB Aeq (15min)	35 dB Aeq (15min)	Production	1.26km	2	General Construction, drilling	

17/05/2010	4:58:00 PM	Shonelle Gleeson-Willey	Mostyn Vale Session 2	Hire Equipment	32.6 dB Aeq (15min)	35 dB Aeq (15min)	Production	2.57km	4.5	General Construction, Drilling
17/05/2010	4:41:00 PM	Shonelle Gleeson-Willey	Mostyn vale Session 1	Hire Equipment	25.5 dB Aeq (15min)	35 dB Aeq (15min)	Production	2.57km	4.5	General Construction, Drilling
17/05/2010	4:19:00 PM	Shonelle Gleeson-Willey	Caravan park Session 2	Hire Equipment	35.9 dB Aeq (15min)	40 dB Aeq (15min)	Production	0.7km	2.1	General Construction
17/05/2010	7:56:00 AM	Shonelle Gleeson-Willey	Caravan park Session 1	Hire Equipment	32.6dB Aeq (15min)	40 dB Aeq (15min)	Production	0.7km	3.4	General Construction
14/05/2010	4:22:00 PM	Shonelle Gleeson-Willey	Residential property A Session 2	Hire Equipment	39.7 dB Aeq (15min)	45 dB Aeq (15min)	Production	297 m	2.6	General Construction
14/05/2010	4:04:00 PM	Shonelle Gleeson-Willey	Residential Property A Session 1	Hire Equipment	41 dB Aeq (15min)	45 dB Aeq (15min)	Production	297 m	2.6	General Construction
12/05/2010	10:52:00 AM	Shonelle Gleeson-Willey	Illawong Session 1	Hire Equipment	31.8dB Aeq (15min)	35 dB Aeq (15min)	Production	1.26km	3.9	General Construction
12/05/2010	10:12:00 AM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 2	Hire Equipment	30dB Aeq (15min)	45 dB Aeq (15min)	Production	0.7km	3.9	General Construction
12/05/2010	9:55:00 AM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 1	Hire Equipment	28.5dB Aeq (15min)	45 dB Aeq (15min)	Production	0.7km	4	General Construction
12/05/2010	9:15:00 AM	Shonelle Gleeson-Willey	Mostyn Vale Session 2	Hire Equipment	32.8dB Aeq (15min)	35 dB Aeq (15min)	Production	2.57km	2.7	General Construction
12/05/2010	8:59:00 AM	Shonelle Gleeson-Willey	Mostyn Vale Session 1	Hire Equipment	33dB Aeq (15min)	35 dB Aeq (15min)	Production	2.57km	2.7	General Construction
11/05/2010	2:12:00 PM	Shonelle Gleeson-Willey	Illawong Prosound DL noise monitor	Hire equipment	46.8dB(Aeq)15 min	35 dB Aeq (15min)	Production	1.26km	5.5	Wind has picked up and has skewed the results. These results will not be counted and another reading will be taken tomorrow.
11/05/2010	1:55:00 PM	Shonelle Gleeson-Willey	Illawong, Prosound DL noise monitor	Hire Equipment	29.1dB(Aeq) 15min	35dB(Aeq) 15min	Production	1.26km	5.5	work on the right abutment
11/05/2010	1:34:00 PM	Shonelle Gleeson-Willey	Mostyn Vale, ProSound DL noise monitor	Hire Equipment	45.2dB(Aeq) 15min	35dB(Aeq) 15min	Production	2.57km	5.5	Wind has increased since the last measurement was taken. These results will be discounted due to the interference.
11/05/2010	1:13:00 PM	Shonelle Gleeson-Willey	Mostyn Vale, SoundPro DL noise monitor	Hire Equipment	36.9dB(Aeq) 15min	35dB(Aeq) 15min	Production	2.57km	5.5	It was a windy day and the wind appeared to be affecting the reading. Another reading will be taken tomorrow, provided the wind drops, to clarify.
18/06/2010	2:36:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 3	Hire Equipment - ProSound DL noise monitor	36.8 dB (Aeq)	45 dB (Aeq)	Production	0.7km	2.1	Drilling and carting at the Right Abutment

18/06/2010	2:19:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 2	Hire Equipment - ProSound DL noise Monitor	37.6 dB (Aeq)	45 dB(Aeq)	Production	0.7km	2.1	Small birds chirping in nearby bushes. No other interference.
17/06/2010	11:08:00 PM	Shonelle Gleeson-Willey	Illawong Session 3	Hire Equipment - ProSound DL noise monitor	38.3 dB (Aeq)	35 dB (Aeq)	Production	1.26km	3.925	Day is overcast and rain started whilst recording this session.
17/06/2010	11:39:00 AM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 1	Hire Equipment - ProSound DL noise monitor	43.7 dB (Aeq)	45 dB (Aeq)	Production	0.7km	3.925	The day was overcast and there was some light spitting of rain during this session. Gusts of wind died down temporarily
17/06/2010	10:51:00 AM	Shonelle Gleeson-Willey	Illawong Session 2	Hire Equipment - ProSound DL noise monitor	37.6 dB (Aeq)	35 dB (Aeq)	Production	1.26km	4.803	Drilling and excavation at Right Abutment
17/06/2010	10:33:00 AM	Shonelle Gleeson-Willey	Illawong Session 1	Hire Equipment - ProSound DL noise monitor	43.5 dB (Aeq)	35 dB (Aeq)	Production	1.26km	4.803	Plane flying around towards the end of the session. This record will not be used due to this interference.
17/06/2010	9:59:00 AM	Shonelle Gleeson-Willey	Mostyn Vale Session 4	Hire Equipment - ProSound DL noise monitor	39.7 dB (Aeq)	35 dB (Aeq)	Production	2.57km	5.781	Recording paused several times during session when flocks of cockatoos flew over. Drill, excavation and carting on Right Abutment
17/06/2010	9:38:00 AM	Shonelle Gleeson-Willey	Mostyn Vale Session 3	Hire Equipment - ProSound DL noise monitor	35 dB (Aeq)	35 dB (Aeq)	Production	2.57km	5.781	No unusual interference. Drill, excavation and carting on Right abutment. Gusts of wind died down temporarily
17/06/2010	9:14:00 AM	Shonelle Gleeson-Willey	Mostyn Vale Session 2	Hire Equipment - ProSound DL noise monitor	43.5 dB (Aeq)	35 dB (Aeq)	Production	4.5km	5.781	Birds nearby (Cockatoos) caused interference with the reading. Drilling, excavation and carting continue on the right abutment.
17/06/2010	8:56:00 AM	Shonelle Gleeson-Willey	Mostyn Vale Session 1	Hire Equipment - ProSound DL noise monitor	41.7 dB (Aeq)	35 dB (Aeq)	Production	4.5km	4.62	Interference from dog barking and birds in the trees
17/06/2010	11:08:00 PM	Shonelle Gleeson-Willey	Illawong Session 4	Hire Equipment - ProSound DL noise monitor	38.3 dB (Aeq)	35 dB (Aeq)	Production	1.26km	3.925	Day is overcast and rain started whilst recording this session.

16/06/2010	4:20:00 PM	Shonelle Gleeson-Willey	Residential Property A Session 4	Hire Equipment - ProSound DL noise monitor	41.4 dB (Aeq)	45 dB (Aeq)	Production	297m	1.09	Scraper working on bypass road. Articulated dump truck and excavator on Subsidiary Dam.
16/06/2010	4:04:00 PM	Shonelle Gleeson-Willey	Residential Property A Session 3	Hire Equipment - ProSound DL noise monitor	40.5 dB (Aeq)	45 dB (Aeq)	Production	297m	1.09	Plane is no longer flying around and the wind dropped down.
16/06/2010	3:43:00 PM	Shonelle Gleeson-Willey	Residential Property A Session 2	Hire Equipment - ProSound DL noise monitor	45.6 dB (Aeq)	45 dB (Aeq)	Production	297m	1.3	Plane interference during session, wind has picked up to a strong breeze.
16/06/2010	3:23:00 PM	Shonelle Gleeson-Willey	Residential Property A Session 1	Hire Equipment - ProSound DL noise monitor	42.6 dB (Aeq)	45 dB (Aeq)	Production	297m	1.3	Scraper working on bypass road. Articulated dump truck and excavator on Subsidiary Dam. Wind picked up during session, to a strong breeze, rustling the long grass.
23/06/2010	3:44:00 PM	Shonelle Gleeson-Willey	Mostyn Vale Session 2	Hire Equipment - ProSound DL noise monitor	36.2 dB(A)	35 dB (Aeq)	Production	2.57km	4.3	Drilling and general earthworks with carting
23/06/2010	3:26:00 PM	Shonelle Gleeson-Willey	Mostyn Vale Session 1	Hire Equipment - ProSound DL noise monitor	37 dB(A)	35 dB (Aeq)	Production	2.57km	4.3	Drilling and general earthworks
23/06/2010	2:42:00 PM	Shonelle Gleeson-Willey	Illawong Session 2	Hire Equipment - ProSound DL noise monitor	35.4 dB(A)	35 dB (Aeq)	Production	1.26km	4	Drilling and general earthworks
23/06/2010	2:26:00 PM	Shonelle Gleeson-Willey	Illawong Session 1	Hire Equipment - ProSound DL noise monitor	38.6 dB(A)	35 dB (Aeq)	Production	1.26km	4	Drilling and general earthworks
23/06/2010	2:08:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 2	Hire Equipment - ProSound DL noise monitor	37.9 dB(A)	45 dB (Aeq)	Production	0.7km	4	Blast carried out at 1pm. drilling and carting has recommenced.
23/06/2010	1:46:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 1	Hire Equipment - ProSound DL noise monitor	39 dB(A)	45 dB (Aeq)	Production	0.7km	4.8	Blast carried out at 1pm. Carting and drilling has commenced.

21/06/2010	4:12:00 PM	Shonelle Gleeson-Willey	Caravan Park Session 4	Hire Equipment - ProSound DL noise monitor	46.7 dB(A)	40 dB(Aeq)	Production	0.7km	1.3	Birds in trees chirping, Scraper operating along Bypass Rd, excavator and articulated dump trucks working on Sub Dam wall.
21/06/2010	3:54:00 PM	Shonelle Gleeson-Willey	Caravan Park Session 3	Hire Equipment - ProSound DL noise monitor	45.9 dB(A)	40 dB(Aeq)	Production	0.7km	1.3	Birds chirping in trees. Scraper operating along bypass road, excavator and articulated dump trucks working on sub dam wall.
21/06/2010	3:35:00 PM	Shonelle Gleeson-Willey	Caravan Park Session 2	Hire Equipment - ProSound DL noise monitor	43.6 dB(A)	40 dB(Aeq)	Production	0.7km	1.4	Interference from birds, general earthworks on Subsidiary Dam. Dam wall being prepared for removal.
21/06/2010	3:16:00 PM	Shonelle Gleeson-Willey	Caravan Park Session 1	Hire Equipment - ProSound DL noise monitor	44.1 dB(A)	40 dB(Aeq)	Production	0.7km	1.4	Vegetation scraping on wall, carting from subsidiary wall.
13/09/2010	5:04:00 PM	Shonelle Gleeson-Willey	Location 4 (Illawong) Session 3	Hire Equipment - ProSound DL noise monitor	34.6 dB	35 dB	Production	-	1.5	Wind has picked up, general bulking out.
13/09/2010	5:04:00 PM	Shonelle Gleeson-Willey	Location 4 (Illawong) session 5	Hire Equipment - ProSound DL noise monitor	43.7dB	35dB	Production	-	1.5	General bulking out on right abutment
13/09/2010	4:47:00 PM	Shonelle Gleeson-Willey	Location 5 (Bulga Rd) Session 3	Hire Equipment - ProSound DL noise monitor	34.5dB	45dB	Production	-	1.5	General bulking out
13/09/2010	4:30:00 PM	Shonelle Gleeson-Willey	Location 5 (Bulga Rd) Session 2	Hire Equipment - ProSound DL noise monitor	63.4dB	45dB	Production	-	1.5	Bulking out at the right abutment. Birds chirping nearby and car drove down driveway.
13/09/2010	4:12:00 PM	Shonelle Gleeson-Willey	Location 5 (Bulga Rd) Session 1	Hire Equipment - ProSound DL noise monitor	48.9dB	45dB	Production	-	1.5	car drove up driveway
10/09/2010	12:41:00 PM	Shonelle Gleeson-Willey	Location 4 (Illawong) Session 4	Hire Equipment - ProSound DL noise monitor	57.1 dB	35 dB	Production	-	3.08	Bulking out at right abutment, traffic on road, birds and wind picked up.

	10/09/2010	12:25:00 PM	Shonelle Gleeson-Willey	Location 4 (Illawong) Session 3	Hire Equipment - ProSound DL noise monitor	34.6 dB	35dB	Production	-	3.08	Bulking out at right abutment
	10/09/2010	12:11:00 PM	Shonelle Gleeson-Willey	Location 4 (Illawong) Session 2	Hire Equipment - ProSound DL noise monitor	42.8 dB	35dB	Production	-	3.08	Bulking out at right abutment
	10/09/2010	11:30:00 AM	Shonelle Gleeson-Willey	Location 3 (Mostyn vale) Session 3	Hire Equipment - ProSound DL noise monitor	45.8dB	45dB	Production	-	3.08	Bulking out at the right abutment
	10/09/2010	11:30:00 AM	Shonelle Gleeson-Willey	Location 4 (Illawong) Session 1	Hire Equipment - ProSound DL noise monitor	45.8dB	45dB	Production	-	3.08	Bulking out at the right abutment
	10/09/2010	11:08:00 AM	Shonelle Gleeson-Willey	Location 3 (Mostyn Vale) session 2	Hire Equipment - ProSound DL noise monitor	45.2 dB	45 dB	Production	-	3.08	Bulking out at the right abutment
	10/09/2010	10:36:00 AM	Shonelle Gleeson-Willey	Location 3 (Mostyn Vale) Session 1	Hire Equipment - ProSound DL noise monitor	44dB L	45 dB L	Production	-	3.08	bulking out at the right abutment
	10/09/2010	10:13:00 AM	Shonelle Gleeson-Willey	Location 2 (Caravan park) Session 2	Hire Equipment - ProSound DL noise monitor	42.7 dB L	40 dB L	Production	-	3.08	birds chirping and people talking close by
	10/09/2010	9:57:00 AM	Shonelle Gleeson-Willey	Location 2 (Caravan park) Session 1	Hire Equipment - ProSound DL noise monitor	50.7dB L	40dB L	Production	-	3.08	State park subcontracted electricians driving around immediate area and birds chirping.
	10/09/2010	9:30:00 AM	Shonelle Gleeson-Willey	Location 1 (Residential Property A) Session 2	Hire Equipment - ProSound DL noise monitor	42.1 dB L	45 dB L	Production	-	3.08	Installation of cut off trenches at Subsidiary Dam
	10/09/2010	9:14:00 AM	Shonelle Gleeson-Willey	Location 1 (Residential Property A) Session 1	Hire Equipment - ProSound DL noise monitor	43.4dB L	45dB L	Production	-	3.08	general construction at Subsidiary Dam

16/12/2010	4:57:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 3	Hire Equipment - ProSound DL noise monitor	40 dB	45 dB	Production	-	2.78	Production
16/12/2010	4:40:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 2	Hire Equipment - ProSound DL noise monitor	38.6 dB	45 dB	Production	-	2.78	Production
16/12/2010	4:24:00 PM	Shonelle Gleeson-Willey	1521 Bulga Rd Session 1	Hire Equipment - ProSound DL noise monitor	43 dB	45 dB	Production	-	2.78	Production
16/12/2010	3:53:00 PM	Shonelle Gleeson-Willey	Illawong Session 2	Hire Equipment - ProSound DL noise monitor	38 dB	40 dB	Production	-	2.78	Production
16/12/2010	3:36:00 PM	Shonelle Gleeson-Willey	Illawong Session 1	Hire Equipment - ProSound DL noise monitor	38.9 dB	40 dB	Production	-	2.78	Production
16/12/2010	1:05:00 PM	Shonelle Gleeson-Willey	Mostyn Vale Session 2	Hire Equipment - ProSound DL noise monitor	39.3 dB	45 dB	Production	-	2.78	Production
16/12/2010	12:48:00 PM	Shonelle Gleeson-Willey	Mostyn Vale Session 1	Hire Equipment - ProSound DL noise monitor	47.3 dB	45 dB	Production	-	2.78	Production
16/12/2010	12:24:00 PM	Shonelle Gleeson-Willey	Residential property A Session 2	Hire Equipment - ProSound DL noise monitor	42.3 dB	45 dB	Production	-	2.78	Production
16/12/2010	12:05:00 PM	Shonelle Gleeson-Willey	Residential property A Session 1	Hire Equipment - ProSound DL noise monitor	44.3 dB	45 dB	Production	-	2.78	Production
16/12/2010	10:46:00 AM	Shonelle Gleeson-Willey	BBQ Shelter Session 2	Hire Equipment - ProSound DL noise monitor	57.7 dB	40 dB	Production	-	2.78	Production

	16/12/2010	10:28:00 AM	Shonelle Gleeson-Willey	BBQ Shelter 1	Hire Equipment - ProSound DL noise monitor	51.2 dB	40 dB	Production	-	2.78	Production
	15/12/2010	11:39:00 AM	Shonelle Gleeson-Willey	State park Managers House Session 3	Hire Equipment - ProSound DL noise monitor	44.7 dB	40 dB	Production	-	3.79	Production
	15/12/2010	11:22:00 AM	Shonelle Gleeson-Willey	State Park Managers House Session 2	Hire Equipment - ProSound DL noise monitor	54.1 dB	40 dB	Production	-	3.79	Production
	15/12/2010	11:05:00 AM	Shonelle Gleeson-Willey	State Park Managers House	Hire Equipment - ProSound DL noise monitor	54.5 dB	40 dB	Production	-	3.79	Production
	24/03/2011	11:40:00 AM	Shonelle Gleeson-Willey	1521 Bulga Road	Hire Equipment - ProSound DL noise monitor	42.6 dB A	45 dB A	Production	-	-	concrete pour
	24/03/2011	11:11:00 AM	Shonelle Gleeson-Willey	1521 Bulga Road	Hire Equipment - ProSound DL noise monitor	38.1 dB A	45 dB A	Production	-	-	Pouring concrete.
	24/03/2011	10:47:00 AM	Shonelle Gleeson-Willey	Illawong Session 2	Hire Equipment - ProSound DL noise monitor	46.1 dB A	45 dB A	Production	-	-	Windy
	24/03/2011	10:20:00 AM	Shonelle Gleeson-Willey	Illawong Session 1	Hire Equipment - ProSound DL noise monitor	36.2 dB A	45 dB A	Production	-	-	Windy
	23/03/2011	10:52:00 AM	Shonelle Gleeson-Willey	Mostyn Vale Session 2	Hire Equipment - ProSound DL noise monitor	36.5 dB A	35 dB A	Production	-	-	Same as previous
	23/03/2011	10:33:00 AM	Shonelle Gleeson-Willey	Mostyn Vale Session 1	Hire Equipment - ProSound DL noise monitor	37.7 dB A	35 dB A	Production	-	-	Cockatoo's in surrounding trees, lots of flies, no construction noise. Magpies in surrounding trees, Car door slammed.




21/03/2011	1:02:00 PM	Shonelle Gleeson-Willey	Residential Property A Session 2	Hire Equipment - ProSound DL noise monitor	49.1 dB A	45 dB A	Production	-	-	Erecting shutters and carting soil
21/03/2011	12:43:00 PM	Shonelle Gleeson-Willey	Residential Property A Session 1	Hire Equipment - ProSound DL noise monitor	49.5 dB A	45 dB A	Production	-	-	Erecting shutters, carting soil.
21/03/2011	11:53:00 AM	Shonelle Gleeson-Willey	Caravan park Session 3	Hire Equipment - ProSound DL noise monitor	51.57 dB A	40 dB A	Production	-	-	Same as previous
21/03/2011	11:38:00 AM	Shonelle Gleeson-Willey	Caravan park Session 1	Hire Equipment - ProSound DL noise monitor	51.6 dB A	40 dB A	Production	-	-	Birds chirping in nearby trees. Moderate breeze. Motor boats on Lake. No audible construction noise from Subsidiary Dam. Current work is erecting shutters and pouring concrete.
22/06/2011	9:03:51 AM	James Barraclough	1521 Bulga Road 1	Hire Equipment - ProSound DL noise monitor	47.7 dB A	45 dB A	Production	-	-	Windy and barking dogs
22/06/2011	9:19:09 AM	James Barraclough	1521 Bulga Road 2	Hire Equipment - ProSound DL noise monitor	48 dB A	45 dB A	Production	-	-	Windy and barking dogs
22/06/2011	8:23:14 AM	James Barraclough	Illawong Session 1	Hire Equipment - ProSound DL noise monitor	45.6 dB A	45 dB A	Production	-	-	Windy and overhead plane from soaring club
22/06/2011	8:40:45 AM	James Barraclough	Illawong Session 2	Hire Equipment - ProSound DL noise monitor	51.2 dB A	45 dB A	Production	-	-	Windy and overhead plane from soaring club
22/06/2011	9:42:10 AM	James Barraclough	Mostyn Vale Session 1	Hire Equipment - ProSound DL noise monitor	33.2 dB A	35 dB A	Production	-	-	
22/06/2011	9:57:33 AM	James Barraclough	Mostyn Vale Session 2	Hire Equipment - ProSound DL noise monitor	46 dB A	35 dB A	Production	-	-	Overhead plane from soaring club

	21/06/2011	10:35:28 AM	James Barraclough	Residential Property A Combined	Hire Equipment - ProSound DL noise monitor	52.7 dB A	45 dB A	Production	-	-	Overhead plane from soaring club
	22/06/2011	7:27:17 AM	James Barraclough	Caravan park Session 1	Hire Equipment - ProSound DL noise monitor	42.5 dB A	40 dB A	Production	-	-	Birds chirping in nearby trees and motor vehicles passing by
	22/06/2011	7:49:19 AM	James Barraclough	Caravan park Session 2	Hire Equipment - ProSound DL noise monitor	45 dB A	40 dB A	Production	-	-	Birds chirping in nearby trees and motor vehicles passing by
Location	Date of Reading	Time of Reading	Monitored By	Description	Owned By	Noise Reading (dB)	Noise Criteria	Background / Production Reading	Distance from Source	Wind Speed	Surrounding Activities
<b>Night-time monitoring</b>											
1	08/09/2010	8:32:00 PM	Shonelle Gleeson-Willey	Night time monitoring, Location 1 (residential property A) Session 1	Hire Equipment - ProSound DL noise monitor	26.1dB Aeq	NA	Background	-	-	No work, insects and slight breeze
	08/09/2010	10:37:00 PM	Shonelle Gleeson-Willey	Location 1 (Residential Property A) Session 2	Hire Equipment - ProSound DL noise monitor	26.8dB Aeq	NA	Background	-	-	No work, insects and slight breeze
	09/09/2010	12:36:00 AM	Shonelle Gleeson-Willey	Location 1 (Residential property A) Session 3	Hire Equipment - ProSound DL noise monitor	29.2dB Aeq	NA	Background	-	-	No work, insects
	09/09/2010	2:51:00 AM	Shonelle Gleeson-Willey	Location 1 (Residential Property A) Session 4	Hire Equipment - ProSound DL noise monitor	35.7dB Aeq	NA	Background	-	-	No work, insects
	09/09/2010	5:11:00 AM	Shonelle Gleeson-Willey	Location 1 (Residential Property A) Session 5	Hire Equipment - ProSound DL noise monitor	39.3dB Aeq	NA	Background	-	-	No work, insects and some birds chirping
2	08/09/2010	8:57:00 PM	Shonelle Gleeson-Willey	Location 2 (Caravan park BBQ shelter) Session 1	Hire Equipment - ProSound DL noise	28.6dB Aeq	NA	Background	-	-	No Work, insect noises

					monitor						
	08/09/2010	10:58:00 PM	Shonelle Gleeson-Willey	Location 2 (Caravan park BBQ Shelter) Session 2	Hire Equipment - ProSound DL noise monitor	27.1dB Aeq	NA	Background	-	-	No Work, insect noises
	09/09/2010	12:58:00 AM	Shonelle Gleeson-Willey	Location 2 (Caravan park BBQ shelter) Session 3	Hire Equipment - ProSound DL noise monitor	33.6dB Aeq	NA	Background	-	-	No Work, insect noises
	09/09/2010	3:12:00 AM	Shonelle Gleeson-Willey	Location 2 (Caravan park BBQ shelter) Session 4	Hire Equipment - ProSound DL noise monitor	38.2dB Aeq	NA	Background	-	-	No Work, insect noises, a few bird calls
	09/09/2010	5:30:00 AM	Shonelle Gleeson-Willey	Location 2 (Caravan park BBQ shelter) Session 5	Hire Equipment - ProSound DL noise monitor	53.4dB Aeq	NA	Background	-	-	No Work, cars travelling, birds chirping
3	08/09/2010	9:15:00 PM	Shonelle Gleeson-Willey	Location 3 Session 1 (State Parks Residence)	Hire Equipment - ProSound DL noise monitor	27.1dB Aeq	NA	Background	-	-	No work, insect noises, slight breeze
	08/09/2010	11:16:00 PM	Shonelle Gleeson-Willey	Location 3 Session 2 (State Parks Residence)	Hire Equipment - ProSound DL noise monitor	27.8 dB Aeq	NA	Background	-	-	No work, insect noises
	09/09/2010	1:16:00 AM	Shonelle Gleeson-Willey	Location 3 Session 3 (State Parks Residence)	Hire Equipment - ProSound DL noise monitor	36.2dB Aeq	NA	Background	-	-	No work, insect noises
	09/09/2010	3:29:00 AM	Shonelle Gleeson-Willey	Location 3 Session 4 (State Parks Residence)	Hire Equipment - ProSound DL noise monitor	32.1 dB Aeq	NA	Background	-	-	No work, insect noises
	09/09/2010	5:49:00 AM	Shonelle Gleeson-Willey	Location 3 Session 5 (State Parks Residence)	Hire Equipment - ProSound DL noise monitor	48.2dB Aeq	NA	Background	-	-	No Work, cars travelling, birds chirping

Interference

 Exceedance  
Wind excludes  
result

## Appendix 1.d Vibration Monitoring Data

**Table 1: Blast Results Final Construction Compliance report Feb 2011-Sep 2011**

Location: 1521 Bulga Rd				
Date	Criteria air blast overpressure	Criteria vibration	Air blast overpressure (dB)	Vibration result mm/s ppv
25/05/2010	115	5	117.6	0.22
02/06/2010			103.5	0.783
10/06/2010			105.5	0.823
23/06/2010			116.9*	0.0953
30/06/2010			106.0	1.1
14/07/2010			106	0.826
16/07/2010			109.5	3.29
21/07/2010			106	0.857
28/07/2010			114	1.33
05/08/2010			106	0.635
11/08/2010			106	0.445
17/08/2010			106	0.508
26/08/2010			ND	ND
03/09/2010			115.6	1.27
09/09/2010			109.5	0.508
16/09/2010			112.0	0.826
23/09/2010			109.5	1.52
29/09/2010			100.0	0.635
30/09/2010			106	0.508
13/10/2010			1.06	1.02
20/10/2010			ND	ND
21/10/2010			109.5	0.508
27/10/2010			106	0.445
28/10/2010			109.5	0.857
10/11/2010			109.5	0.826
11/11/2010			109.5	0.826
17/11/2010			112	0.445
18/11/2010			109.5	0.492
24/11/2010			114	0.381
01/09/2011			97.3	0.543
Location: Main Dam Wall				
25/05/2010	140	25	121.6	1.71
02/06/2010			119.1	1.52
10/06/2010			105.5	0.823
23/06/2010			116.4	3.75

30/06/2010			115.6	7.73
14/07/2010			ND	ND
16/07/2010			121	7.58
21/07/2010			115.2	1.88
28/07/2010			121.6	0.22
05/08/2010			121.7	17.8
11/08/2010			122.1	26
17/08/2010			122.7	19.6
26/08/2010			121.9	19
03/09/2010			120.9	2.41
09/09/2010			118.6	1.27
16/09/2010			120.4	1.52
23/09/2010			122.8	24.9
29/09/2010			117.5	6.86
30/09/2010			115.0	4.44
13/10/2010			122.8	9.52
20/10/2010			119.8	1.9
21/10/2010			122.8	3.3
27/10/2010			116.7	1.27
28/10/2010			118.2	1.9
10/11/2010			116.9	1.52
11/11/2010			119.0	12.7
17/11/2010			94	1.14
18/11/2010			120.5	0.889
24/11/2010			115.9	1.65
01/09/2011			ND	ND
Location: Southern Batter				
01/09/2011	140	25	118.9	6.256

 Exceedance

## Appendix 1.e Water Monitoring Data

Table 2: Water Monitoring Results Final Construction Compliance report Feb 2011-Sep 2011

Date of Reading	Monitored By	Description of Sampling location	Sampling Time	Remarks/Observations	Weather Conditions	Flow	Turbidity	Temp	pH
14/02/2011	Shonelle Gleeson-Willey	Discharge water RHA	12:00	Turbine letting out a large amount of water. The discharge water is clear and has no odour.	Overcast	F			
10/02/2011	Shonelle Gleeson-Willey	Discharge water pipe RHA	9:00am	Discharge water is clear and has reduced in flow from previous visits	sunny	M			
24/01/2011	Shonelle Gleeson-Willey	Discharge pipe water RHA	2:30pm	Clear, no odour	sunny and very hot	F	TSS-3.5mg/L	24.1	8.7
06/01/2011	Shonelle Gleeson-Willey	Discharge water RHA	9:00am	Clear with no odour. Several dead fish noted in the plunge pool. These were attributed to the turbine. A large school of smaller fish (non-carp) are present around where the discharge water hits the plunge pool.	Sunny	F			
21/12/2010	Shonelle Gleeson-Willey	Discharge water pipe at Right Abutment	1:30pm	last day at work for 2010		M	TSS-3mg/L	23.2	8.6
20/12/2010	Shonelle Gleeson-Willey	Seepage water in drain at base of coffer dam	10:10am				TSS-4mg/L	22.5	8.18
20/12/2010	Shonelle Gleeson-Willey	Discharge water pipe, Right Hand abutment	11:00am			M		22.3	8.17
20/12/2010	Shonelle Gleeson-Willey	Seepage water discharge pipe RHA	1:00pm			M	TSS-48	22.2	8.02
20/12/2010	Shonelle Gleeson-Willey	Seepage water at culvert (spillway)	10:30am			M		22.5	8.2
20/12/2010	Shonelle Gleeson-Willey	Discharge water pipe at Right Hand Abutment	10:00			M	TSS- 145mg/L	20.1	9.15
20/12/2010	Shonelle Gleeson-Willey	Seepage water at culvert 1 (spillway)						22.5	8.2
17/11/2010	Shonelle Gleeson-Willey	Seepage water sump	9:00am	clear		M	TSS-7		
04/11/2010	Shonelle Gleeson-Willey	Discharge Point RHA	12:30pm	13mm of rain in previous 24 hours		N	TSS-216		8.8
02/11/2010	Shonelle Gleeson-Willey	Concrete Washout Basin	12:30pm	Sunny	1 bag Alum added	N	TSS-58mg/L		5.8
02/11/2010	Shonelle Gleeson-Willey	Rock Trench, Subsidiary Dam	8am	13mm of rain Monday	Sunny	S	2300 mg/L TSS		7.6
02/11/2010	Shonelle Gleeson-Willey	Concrete washout overflow basin	12:30pm	Low water level, no overflow out discharge point	Sunny, 13mm rain in previous 24 hours	N	TSS-34mg/L		10.3
10/10/2010	Shonelle Gleeson-Willey	S2 - Between the two silt curtains in Lake Keepit at the Right abutment.	10:05am	clear with weed and grass litter on top	Sunny	N	TSS-22mg/L	22.9	8.58
10/10/2010	Shonelle Gleeson-Willey	S3- Area of Lake Keepit between the second silt curtain and tough boom at the right abutment	10:10	Clear with some weed and grass litter on top	Sunny	N	TSS-22mg/L	23.2	8.67
10/10/2010	Shonelle Gleeson-Willey	S1-area inside double silt curtain where seepage water is to be discharged.	10:00am	Clear	sunny	N	TSS-25mg/L	22.8	8.38
10/10/2010	Shonelle Gleeson-Willey	Sump for seepage water at Right abutment	9:45am	Clear but with fine silt very easily stirred up. There is a coating of fine silt on the rocks on the bottom.	Sunny	M	TSS-14mg/L	20.7	8
11/08/2010	Shonelle Gleeson-Willey	Keepit Dam Road culvert	5pm	raining	raining	M	TSS - 403		
11/08/2010	Shonelle Gleeson-Willey	Bypass Road culvert	4:00pm	cloudy	overcast	M	TSS - 814 mg/L		
11/08/2010	Shonelle Gleeson-Willey	Peel River at Keepit Dam road bridge	5:05pm	cloudy	raining	M	TSS - 131mg/L		
27/07/2010	Shonelle Gleeson-Willey	Concrete washout basin	3:00pm	overcast	overcast	N	TSS 14mg/L	15.8	10.9
04/06/2010	Shonelle Gleeson-Willey	Concrete washout basin KD-BPS-003	9:00am	No odour, no sheen	sunny	N		16.2	7.39
31/05/2010	Shonelle Gleeson-Willey	Bypass Rd low point, KD-DW-002	4:00pm	Collected rainwater	overcast	N	TSS - 2800		7.1
31/05/2010	Shonelle Gleeson-Willey	Bypass Road	3:00pm	Water has settled at the low point on the road.	overcast/clearing	N			
31/05/2010	Shonelle Gleeson-Willey	Subsidiary Dam grassed area near apron on Lake side. KD-S-1	2:00pm	Burst water pipe. Potable for aero	Sunny	N	TSS - 15mg/L	-	7.7

				club.					
18/05/2010	Shonelle Gleeson-Willey	Keepit Dam Subsidiary Dam	10:00am	Potable water from pipeline	Sunny	N	TSS - 15		7.7



**Attachment A    Compliance Conditions Table**

Commitment No.	Objective	Commitment	Due	CEMP Reference
		<b>Activity</b>		
1		Activity carried out consistent with:		
1.a		description of Activity contained in Chapter 4 of Keepit Dam Upgrade dated Dec 2007		Not Applicable
1.b		procedures, safeguards and mitigation measures identified in the Keepit Dam Upgrade EA		Captured in the CEMP
1.c		final Statement of Commitments		Captured in the CEMP
2		Final Statement of Commitments does not relieve State Water of obligations under any other act		Information only
		<b>Compliance - Construction Compliance Reports</b>		
10		Construction Compliance reports to be provided to Director-General, Relevant Councils and any other Gov Depts nominated by Director-General. EMR to review reports before submitted		3.2.2 Reports
10		report on first six months and maximum six weeks after expiry of that period. Following at maximum intervals of six months from date of submission of first report		3.2.2 Reports
		Construction Compliance reports will include information on:		3.2.2 Reports
10.a		Compliance with CEMP and final Statement of Commitments		3.2.2 Reports
10.b		compliance with any approvals or licenses issued by relevant Gov Dept, Councils for construction phase		3.2.2 Reports
10.c		implementation and effectiveness of environmental controls		3.2.2 Reports
10.d		environmental monitoring results		3.2.2 Reports
10.e		number and details of any complaints		3.2.2 Reports
10.f		details of any review and amendments to CEMP from construction during reporting period		3.2.2 Reports
10.g		any other matter related to compliance with final Statement of Commitments or requested by Director-General		3.2.2 Reports
		<b>Environmental Impact Audits - Environmental Impact Report - Construction</b>		
11		Environmental Impact Report - Construction prepared and submitted to Director-General max three months after construction complete. Also to relevant councils and other Gov Depts upon request by Director-General		State Water to Complete
		report will include:		
11.a		identify major environmental controls used during construction and assess effectiveness		3.2.2 Reports
11.b		main environmental management plans and processes during construction and assess effectiveness		3.2.2 Reports
11.c		innovations in construction methodology used to improve environmental management		3.2.2 Reports
11.d		discuss lessons learnt and include recommendations		3.2.2 Reports
		<b>Environmental Impact Audit Report - Operation</b>		3.2.2 Reports
12		Environmental Impact Audit Report - Operation submitted to Director-General max 24 months after activity begins and any subsequent periods required. Also to relevant Gov Depts, etc		State Water to Complete
		report will:		
12.a		certified by independent person at State Water's expense		3.2.2 Reports
12.b		assess effectiveness of implemented mitigation measures and safeguards		3.2.2 Reports
12.c		assess compliance with the systems for maintenance and monitoring		3.2.2 Reports
12.d		discuss results of consultation with local community		3.2.2 Reports
12.e		be publicly available		3.2.2 Reports
		<b>Construction Environmental Management Plan</b>		
13		Prepared and implemented in accordance with Final Statement of Commitments		4.1.1 Matrix of Statement of Commitments Conditions
		Director-General's approval will be obtained before construction commences (or within agreed time)		Approval pending
		CEMP reviewed by EMR pre State Water seeking Director-General Approval		State Water to comply
		mitigation measures identified in EA incorporated into CEMP		CEMP and Management Plans
		CEMP will:		
13.a		incorporate mitigation measures for:		
13.a.i		flora and fauna		Flora and Fauna Management Plan
13.a.ii		heritage		Historical Heritage Management Plan and Cultural Heritage Management Plan
13.a.iii		noise and vibration		Noise, Vibration and Air Quality Management Plan
13.a.iv		soil and water quality management		Soil and Water Quality Management Plan
13.a.v		air quality		Noise, Vibration and Air Quality Management Plan
13.a.vi		greenhouse gases and sustainable energy		Sustainable Energy Management Plan
13.a.vii		traffic		Traffic Management Plan
13.a.viii		visual impact and landscaping		Visual Impact, Landscaping and Revegetation Plan
13.a.ix		hazards and risk management		Hazards and Risk Management Management Plan, Project Emergency Response Plan, Workplace Risk Assessment
13.a.x		waste management		Waste Management and Reuse Plan
13.a.xi		utilities and services		Not applicable to Construction

Commitment No.	Objective	Commitment	Due	CEMP Reference
13.b		include construction program, identifying activities, location and timing		2.2 Project Description
13.c		cover relevant environmental elements covered in environmental due diligence investigations		6.2 Environmental Auditing
13.d		contain construction sub plans		Attachemnts : Management Plans
13.e		be prepared following consultation with relevant councils and gov depts		2.3.2 CEMP Consultation
13.f		publicly available		State Water to Comply
13.g		include community consultation and notification strategy		3.3 Community Notification
13.h		include environmental management details such as:		
13.h.i		identification of statutory obligations which state water is required to fulfil during construction including all approvals and licenses		4.1 Legislative, Approval and Licensing Requirements
13.h.ii		environmental management structure		3. Responsibility and Reporting
13.h.iii		role of EMR and identification of activities requiring EMR attendance		3.1.2 Environmental Management Representative
13.h.iv		details of construction personnel induction and training program		5.3 Environmental Training
13.h.v		emergency response procedures		5.4 Emergency Response Training
13.i		include implementation details such as:		
13.i.i		identification of relevant environmental elements		2.5 Key Risks, Management Plans
13.i.ii		measures to avoid and/or control environmental elements		5 Implementation
13.i.iii		tools to be used to implement the CEMP such as plans, schedules and work instructions		5 Implementation
13.j		include monitoring and review details such as:		
13.j.i		performance criteria		6. Environmental Monitoring
13.j.ii		performance monitoring methods		6. Environmental Monitoring
13.j.iii		auditing and corrective actions procedures		6.2 Environmental Auditing, 6.3 Corrective Action
13.j.iv		CEMP review procedures		7. CEMP Review
<b>Operational Environmental Management Plans....</b>				
				Not Applicable
<b>Environmental Management Representative (EMR)</b>				
18		EMR is authorised to:		
18.a		consider and advise Director-General and State Water on matter specified in Statement of Commitments		3.1.2 Environmental Management Representative
18.b		determine whether work falls within definition of construction where clarification is requested		3.1.2 Environmental Management Representative
18.c		review CEMP		3.1.2 Environmental Management Representative
18.d		periodically monitor state water's activities to evaluate compliance with CEMP		3.1.2 Environmental Management Representative
18.e		provide written report to State Water of any non-compliance with CEMP or observed by EMER. Non-Compliance managed as identified in CEMP		3.1.2 Environmental Management Representative
18.f		issue recommendation to stop work immediately		3.1.2 Environmental Management Representative
18.g		review corrective and preventative actions ro monitor implementation of recommendations from site audits and inspections		3.1.2 Environmental Management Representative
18.h		certify that minor revisions from CEMP or consistent with the approved CEMP		3.1.2 Environmental Management Representative
18.i		Provide regular reports on matters relevant to carrying out EMR role		3.1.2 Environmental Management Representative
<b>Issue Specific Commitments</b>				
<b>Communication and Consultation</b>				
19.1	Inform the local community of upcoming construction activities	newspaper advertisements:	Before construction commences and then at max three monthly intervals during construction	3.3 Community Notification
a		nature of works for next three months		3.3 Community Notification
b		areas proposed		3.3 Community Notification
c		construction hours		3.3 Community Notification
d		contact telephone number		3.3 Community Notification
19.2		local community and business advised of activities that could cause disruption	During	3.3 Community Notification
a,b,c		including: details of traffic disruptions and controls, construction of temporary detours, work approved to be undertaken outside construction hours		3.3 Community Notification
20.1.a,b,c,d,e	Make Construction information publicly available	activity internet site to be established; to include listed items	Before construction commences	3.3 Community Notification
20.2		site to be maintained until constructions ends	During	3.3 Community Notification
<b>Community Liason Group</b>				
21.1	Engage and consult with community representatives during construction	Establishment of community liason group	During detailed design and construction	3.4 Community Construction Liason Group

Commitment No.	Objective	Commitment	Due	CEMP Reference
21.2		running of community liaison group	During detailed design and construction	3.4 Community Construction Liaison Group
21.3		issues for discussion by community liaison group	During detailed design and construction	3.4 Community Construction Liaison Group
21.4		review of CLG memberships	During detailed design and construction	3.4 Community Construction Liaison Group
21.5		disputes between state water and community liaison groups	During detailed design and construction	3.4 Community Construction Liaison Group
22.1	Consult property owners directly affected by the mitigation measures	consultation with property owners affected by mitigation measures	During Construction	3.3 Community Notification and 3.4 Community Construction Liaison Group
<b>Construction Complaints Management System</b>				
23.1	Have a system for managing community complaints regarding construction	Preparation and implementation of Construction Complaints Management System	Before Construction commences	5.2 Complaints Procedures
23.2		the maintenance of the Construction Complaints Management System throughout construction period	During	5.2 Complaints Procedures
23.3		inclusion of complaints details on construction compliance reports	During	5.2 Complaints Procedures
<b>Biodiversity - Construction</b>				
24.1	Manage and minimise construction impacts to flora and fauna	preparation of Flora and Fauna Management Sub Plan as part of CEMP	Before Construction	Flora and Fauna Management Plan
24.1a		plans to show:		
24.1.a.i		terrestrial vegetation communities; important flora and fauna habitat areas; locations where threatened species, populations or ecological communities were recorded; and areas to be cleared.		Flora and Fauna Management Plan
24.1.a.ii		identify vegetation adjoining activity containing important habitat areas and/or threatened species, populations or ecological communities		Flora and Fauna Management Plan
24.1.a.iii		aquatic vegetation communities; important habitat areas; locations threatened species, populations of ecological communities recorded, areas to be cleared.		Flora and Fauna Management Plan
24.1.a.iv		identify vegetation adjoining activity containing important habitat areas and/or threatened species, populations or ecological communities		Flora and Fauna Management Plan
24.1.b		methods to manage flora and fauna (and habitats) directly or indirectly affected by construction. To include as listed		Flora and Fauna Management Plan
24.1.c		Rehabilitation details including:		
24.1.c.i		identification of locally native species to be used in rehab and landscaping works		Flora and Fauna Management Plan
24.1.c.ii		methods to remediate affected aquatic habitats and fish passages		Flora and Fauna Management Plan
24.1.c.iii		source of all seed or tube stock to be used in rehab and landscaping works		Flora and Fauna Management Plan
24.1.d		weed management strategy including items listed		Flora and Fauna Management Plan
24.1.e		program for reporting on the effectiveness of terrestrial and aquatic flora and fauna management measures		Flora and Fauna Management Plan
<b>Biodiversity Offset Strategy</b>				
25.1	Offset the biodiversity impacts of the activity	Biodiversity Offset Strategy designed for Activity in accordance with principles in section 5 of Environmental Assessment and section 5.1.6 of submissions report	Prior to clearing threatened species	State Water to comply
25.2		Biodiversity Offset Strategy developed in conjunction with NSW Department of Environment and Climate Change and the Commonwealth Department of the Environment, Water, Heritage and the Arts. Details to be provided to the the NSW Director-General of the Department of Planning	Prior to clearing threatened species	Approval received, see Appendix D
25.3		State Water will implement biodiversity offset developed from methodology formulated from commitment 25.1 and 25.2	Prior to clearing threatened species	State Water to comply
25.4		no clearing of threatened species conducted prior to receiving approval from Commonwealth Minister under the EPBC Act for the biodiversity offset	Prior to clearing threatened species	Approval received, see Appendix D
25.5		Director-General provided with annual reports on implementation and management of biodiversity offset strategy as part of OEMP for 5 yrs following construction completion	During Operation	State Water to comply
<b>Fish Passage</b>				
26.1	Improve fish passage in the Namoi River	develop concept of fish passage at Mollee, Gunidgera and Weeta weirs in lieu of fish passage at Keepit and Split Rock Dams	part of state water's dam upgrade program	State Water to comply
26.2		implementation of fish passage at Molle, Gunidgera and Weeta weirs, subject to funding availability	part of state water's dam upgrade program	State Water to comply
<b>Indigenous Heritage Management</b>				
27.1	Manage and minimise construction impacts to indigenous heritage items	Indigenous Heritage Sub Plan prepared as part of CEMP. Prepared in consultation with all relevant Aboriginal Groups and DECC.	Before Construction	Indigenous Heritage Management Plan
27.1.a		will include: details of archaeological investigations undertaken, associated licenses or approvals		Indigenous Heritage Management Plan Section 3 Impacts

Commitment No.	Objective	Commitment	Due	CEMP Reference
27.1.b		procedures to be implemented if previously unidentified Aboriginal objects discovered during construction		Indigenous Heritage Management Plan Section 4 Activities to ensure Compliance and Section 5 Notification Procedures
27.1.c		education program for construction personnel on obligations for Aboriginal Cultural materials		Indigenous Heritage Management Plan Section 4 Activities to Ensure Compliance
27.1.d		specific measures to avoid impacts to Aboriginal stone procurement source #20-5-21		Indigenous Heritage Management Plan Section 4 Activities to Secure Compliance
<b>Historical Relics</b>				
28.1	Manage and minimise construction impacts to historical relics	Historical Heritage Management Sub Plan prepared as part of CEMP.  will include:	Before Construction	Historical Heritage Management Plan
28.1.a		procedures implemented if previously unidentified historical relics uncovered during construction		Historical Heritage Management Plan - 5. Notifications Procedures
28.1.b		education program for construction personnel on obligations for historical relics		Historical Heritage Management Plan - 4. Activities to Ensure Compliance
28.1.c		specific measure in relation to main dam wall		Historical Heritage Management Plan - 4. Activities to Ensure Compliance
<b>Construction Noise and Vibration</b>				
29.1	Manage and minimise noise and vibration impacts of activity	Construction Noise and Vibration Management Sub Plan prepared as part of CEMP.  will include:	Before Construction	Noise, Vibration and Air Quality Management Plan
29.1.a		education program for construction personnel		5.3 Environmental Training
29.1.b		identification of each construction activity		Noise, Vibration and Air Quality Management Plan
29.1.c		identification of all potentially affected sensitive receivers		Appendix C, Figure 34
29.1.d		construction noise objective		Noise, Vibration and Air Quality Management Plan - 3.2 Vibration Criteria
29.1.e		construction vibration criteria		Noise, Vibration and Air Quality Management Plan - 3.1 Noise Criteria
29.1.f		objectives for sensitive receivers		Noise, Vibration and Air Quality Management Plan - 3.1 Noise Criteria
29.1.g		monitoring, reporting, response procedures		Noise, Vibration and Air Quality Management Plan - 6. Monitoring of Performance
29.1.h		assessment of potential noise and vibration from construction activities		Noise, Vibration and Air Quality Management Plan - 4. Impacts
29.1.i		management methods, mitigation treatments		Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
29.1.j		justification for works outside construction hours		2.2.4 Working Hours
29.1.k		procedures for notifying residents		Noise, Vibration and Air Quality Management Plan - 7. Notification Procedures
29.1.l		contingency plans in event of non-compliances/complaints		Noise, Vibration and Air Quality Management Plan - 8. Complaints Procedure, 9. Corrective Action Procedure
<b>Construction Hours</b>				
30.1	Minimise noise and vibration disturbance to local community	construction hours specifications and exceptions	During Construction	2.2.4 Working Hours
30.2		notification of residents of work outside construction hours	During	3.3 Community Notification
<b>Construction Noise Objectives and Management</b>				
31.1	Manage construction noise impacts on local community	noise objectives	During Construction	Noise, Vibration and Air Quality Management Plan - 3.1 Noise Criteria
31.2		use of public address systems	During Construction	Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
32.2		rock activities and noise	During Construction	Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
32.3		noise mitigation measures	During Construction	Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
<b>Blasting</b>				
33.1	Minimise blasting annoyance to the local community	blasting hours	During Construction	2.2.5 Blasting
33.2	Achieve industry standards for minimising blasting annoyance	vibration levels, guidelines	During Construction	Noise, Vibration and Air Quality Management Plan - 4.2 Vibration Criteria
33.4	Manage blasting annoyance to local community	contacting occupants of residents located within 500m of blast	During Construction	Noise, Vibration and Air Quality Management Plan - 7. Notification Procedures
33.5	Manage risks associated with blasting	risk assessments of blasting material storage, outlined in CEMP	Before Construction	Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
33.6	Ensure integrity of dam wall	ensure no damage to dam wall from blasting activities	Before Construction	Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance

Commitment No.	Objective	Commitment	Due	CEMP Reference
<b>Soil and Water Quality Management</b>				
34.1	Manage and minimise construction impacts to soil and water	Soil and Water Quality Management Sub Plan will be prepared as part of CEMP.	Before Construction	Soil and Water Quality Management Plan
		will:		
34.1.a		consistent with relevant guidelines		Soil and Water Quality Management Plan - 4. Selection and Installation of Devices
34.1.b		identify activities that could cause soil erosion, discharge sediment or water pollutants		Soil and Water Quality Management Plan - 3. Impacts 4. Selection and Installation of Devices
34.1.c		management methods to minimise soil erosion, discharge sediment or water pollutants including those listed		Soil and Water Quality Management Plan - 5. Erosion and Sediment Control Plans, 6. Control Measures 10. Decommissioning Soil and Water Controls; CEMP Section 5.1 Incident Response Procedures
34.1.d		describe location and capacity of erosion and sediment control measures		Soil and Water Quality Management Plan - 5. Erosion and Sediment Control Plans, 6. Control Measures
34.1.e		identify timing and conditions under which construction stage controls decommissioned		Soil and Water Quality Management Plan - 5. Erosion and Sediment Control Plans, 6. Control Measures
34.1.f		contingency plans for events such as fuel spills		Soil and Water Quality Management Plan - 9. Corrective Action Procedure
34.1.g		monitoring, reporting and updating of sediment and erosion control effectiveness		Soil and Water Quality Management Plan - 7. Monitoring of performance
34.2		consultation with qualified expert	During Construction	Soil and Water Quality Management Plan - 7. Monitoring of Performance
<b>Air Quality</b>				
35.1	Manage and minimise construction impacts to air quality	Dust Management Sub Plan prepared as part of CEMP	Before Construction	Noise, Vibration and Air Quality Management Plan
		will include:		
35.1.a		potential sources of dust		Noise, Vibration and Air Quality Management Plan - 3.2 Potential air Quality Impacts
35.1.b		dust management objectives		Noise, Vibration and Air Quality Management Plan - 2. Objectives
35.1.c		monitoring program		Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance and 6. Monitoring Performance
35.1.d		stabilisation of disturbed areas		Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
35.1.e		mitigation measures		Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
35.1.f		rehab strategies		Noise, Vibration and Air Quality Management Plan - 7. Notification Procedures
35.1.g		blast events - nearest potentially affected receptors notified		Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
35.1.h		monitoring during blast events		Noise, Vibration and Air Quality Management Plan - 6. Monitoring Performance
35.1.i		vehicle measures		Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
35.1.j		pre-construction baseline levels		Noise, Vibration and Air Quality Management Plan - 4.3 Air Quality
35.2		maintenance of construction vehicles and loads	During Construction	Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
35.3		maintenance and operation of plant and equipment	During Construction	Noise, Vibration and Air Quality Management Plan - 5. Activities to ensure Compliance
<b>Energy Efficiency</b>				
36.1	Reduce energy use	procedures to minimise energy use	During detailed design	Sustainable Energy Management Plan
36.2		awareness programs	During	Sustainable Energy Management Plan
36.3		energy audits	During	Sustainable Energy Management Plan
<b>Cold Water Pollution</b>				
37.1	Mitigate Impacts of Keepit Dam on downstream water quality			Not applicable
<b>Social and Economic Issues</b>				
<b>Property Damage, Acquisition and Compensation</b>				
38.1	Identify construction damage to property	property inspections on structures	During Construction	Pre, During and Post Construction Dilapidation monitoring and reports
38.2	rectifying construction damage to property	rectifying damage to structures as a result of construction activities	During Construction	Pre, During and Post Construction Dilapidation monitoring and reports

Commitment No.	Objective	Commitment	Due	CEMP Reference
38.3	compensate for operational damage to property	rectifying damage to structures as a result of construction activities	During Operation	Pre, During and Post Construction Dilapidation monitoring and reports
<b>Traffic</b>				
39.1,39.2	monitor and rectify construction damage to roads	road dilapidation reports	Before Construction	Construction Traffic Management Plan
39.3	manage and minimise construction impacts to traffic	Construction Traffic Management Sub Plan prepared as part of CEMP.	Post Construction	Construction Traffic Management Plan
		will include:		
39.3.c		identification of roads to be used by construction traffic		Construction Traffic Management Plan - 3. Impacts
39.3.d		management methods		Construction Traffic Management Plan - 4. Implementation
39.3.e		identification of road closures		Construction Traffic Management Plan - 4.1 Construction Traffic Route
39.3.f		impacts on all types of existing traffic		Construction Traffic Management Plan - 4.1 Construction Traffic Route
39.3.g		temporary traffic arrangements		Construction Traffic Management Plan - 4.1 Construction Traffic Route
39.3.h		access to construction sites		Construction Traffic Management Plan - 4.1 Construction Traffic Route
39.3.i		response plan for incidents		Construction Traffic Management Plan - 8. Corrective Action Procedure
39.3.j		monitoring, review and amendment mechanisms		CEMP Section 7
<b>Visual Impact and Landscaping</b>				
40.1	minimise the visual impacts of the activity	Visual Impact, Landscaping and Revegetation Sub Plan prepared as part of CEMP.	Before Construction	Visual Impact, Landscaping and Revegetation Plan
		will include design treatments for:		
40.1.a		location and identification of existing vegetation and proposed landscaping and revegetation areas		Visual Impact, Landscaping and Revegetation Plan - 3. Implementation
40.1.b		fixtures		Visual Impact, Landscaping and Revegetation Plan - 3. Implementation
		will include:		
40.1.a		graphics for key elements		State Water to advise
40.1.b		schedule of species to be used in landscaping		State Water to advise
40.1.c		details of timing and progressive implementation of landscape works		State Water to advise
40.1.d		procedures and methods to monitor and maintain landscaped or rehabilitated areas		State Water to advise
<b>Hazards and Risk Management</b>				
41.1	Manage and minimise construction hazards and risks	Hazards and Risk Management Sub Plan prepared as part of CEMP.	Before Construction	Hazards and Risk Management Management Plan
<b>Waste Management and Recycling</b>				
42.1	Manage and minimise construction waste and maximise recycling of waste	Waste Management and Re-Use Sub Plan prepared as part of CEMP.	Before Construction commences	Waste Management and Re-use Plan
		will identify requirements for:		
42.1.a		application of waste minimisation hierarchy principles		Waste Management and Re-use Plan - 3. Waste Storage and Destination Intentions
42.1.b		waste handling and storage		Waste Management and Re-use Plan - 2. Waste Management Criteria
42.1.c		disposal of wastes		Waste Management and Re-use Plan - 2. Waste Management Criteria
42.1.d		any waste material that is unable to be reused, reprocessed or recycled to be disposed at approved facility		Waste Management and Re-use Plan - 2. Waste Management Criteria

**Attachment B    Compliance Tracking System**



### Compliance Tracking System for Works Package 1

No.	Condition	How Addressed	Responsibility	Due			Notes related to 'Before Construction' Requirements	Notes related to 'During Construction' Requirements
				Before Construction	During	After		
1.1	Terms of approval	Works to be undertaken in accordance with the approval	State Water					
1.2	Inconsistency in approval	Approval to prevail over referenced documents	State Water					
1.3	Comply with DG requirements	State Water will comply with requests of the DG	State Water					
1.4	Limits of approval (5 years)	Works due to commence in Jan 2010	State Water					
1.5	D2 and D3 not approved	Detailed design and contract documents based on Option B1	State Water					
1.6	All license, permits and approvals are to be obtained	Contract requires that JHG obtain all licenses, permits, approvals prior to construction	John Holland	√			EPL issued 22 Feb 10	
2.1	Noise - Construction hours	CEMP	John Holland		√			Employee Induction
2.2	Noise - Construction outside specified hours	CEMP	John Holland		√			Employee Induction and toolbox/pre-start held between 6:30am and 7am
2.3	Noise – variation of construction hours	CEMP	John Holland		√			Approval sought through State Water from DoP and DECCW
2.4	Blasting – Blasting hours	CEMP	John Holland		√			Blasts always scheduled for 1pm
2.5	Noise limits and negotiated agreements to exceed noise limits	CEMP	State Water	√			Noise letters contained in the CEMP appendix E	
2.6	Noise contributions – measurements and modification factors	CEMP	John Holland	√			Noise letters contained in the CEMP appendix E	
2.7	Blasting - Air blast overpressure criteria	CEMP	John Holland		√			Monitored at 1521 Bulga Rd
2.8	Blasting – ground vibration criteria	CEMP	John Holland		√			Monitored at 1521 Bulga Rd Via water cart. JH spraying public roads used by our vehicles between work sites.
2.9	Dust management	CEMP	John Holland		√			

2.1	Traffic and transport impacts	CEMP	John Holland		✓		
2.11	Biodiversity offset package	Separate Report	State Water	✓			Approval from DoP received on 9 Nov 09. Approval from DEWHA received 10 Jan 10.
2.12 a	Construction safety study	Separate report	John Holland	✓			Approved from DoP received 23 Dec 09 Right abutment site secured by separate contractor before construction.
2.12 b	Signs and fencing	Separate Contract	Dishers Fencing	✓	✓		
2.12 c	Fire protection works	Requirements of this condition transferred to JHG in Contract Prelims	John Holland		✓		Emergency drills conducted, fire extinguishers situated across the site. Emergency procedure in place
2.12 d	Dangerous goods storage	Requirements of this condition transferred to JHG in Contract Prelims	John Holland		✓		MSDS kept of all dangerous goods. All dangerous goods stored in separate or bonded area.
2.12 e	Explosives and fuel	Requirements of this condition transferred to JHG in Contract Prelims	John Holland		✓	✓	Fuel kept on-site in self bonded tank. Refueling procedure, approved by EMR and in place.
2.13	Maintenance and release plug reconstruction	Not applicable for this contract					
2.14	Water pollution prevention	CEMP	John Holland		✓		Sediment fences, rock lined catch drains and silt curtains all in place. Monitoring of sediment basins conducted as required.
2.15	Soil and water management	CEMP	John Holland		✓		All controls installed as per ESCPs
2.16a	Fence Aboriginal site	To be undertaken by separate contractor overseen by archaeologist	State Water	✓	n/a.		Completed
2.16b	Aboriginal heritage – finds during construction	CEMP	John Holland / State Water		✓		Employee Induction
2.17	Waste management	CEMP	John Holland		✓		Regular waste pick up by local licensed company.
2.18	Treatment, reuse and recycling of waste	CEMP	John Holland		✓		Cardboard and paper separated and taken to Gunnedah landfill.
2.19	Waste receivable	CEMP	John Holland		✓		Waste dockets collected monthly
2.20a	Utility management	Requirements of this condition transferred to JHG in Contract Prelims	John Holland		✓		Utilities delineated using dial before you dig drawings.

2.20b	Utility disruption	Requirements of this condition transferred to JHG in Contract Prelims	John Holland Ecological appointed by State Water to undertake the Ecological Monitoring Program. Pre-construction survey to take place beginning 14 Dec.		✓		organised with State parks	
3.1	Monitoring of flora and fauna before, during and after construction	Separate report		✓	✓	Approved by DoP on 14 Dec 09 Addressed in CEMP, CEMP approved 22 Feb 10	Ecological Monitoring Program underway Continuous dust monitoring and PM10 dust monitoring. This is the first of the during-construction Construction Compliance Reports to be issued for WP1 This report has been reviewed by the EMR prior to issue Periodic reporting by JHG (and review by EMR) under 4.2	
3.2	Air quality monitoring program	CEMP	EMR / John Holland	✓	✓			
4.1	Construction compliance reports	CEMP	John Holland / EMR		✓			
4.2	Construction compliance reports review	CEMP	John Holland / EMR		✓			
4.3	Develop and implement Compliance Tracking Program	This matrix and the matrix of Statement of Commitments	State Water	✓	✓	Issued 10 Dec 09 to DoP		
4.3a	Provisions for periodic review of the Construction compliance tracking program	Matrices are reviewed in fortnightly Keepit Dam Upgrade project team meetings. Reporting on compliance status will be contained within the 6 monthly construction compliance reports, see clause 4.1 above. Non-compliance will be addressed through NCR (non-conformance report) and audit reports instigated by either State Water or the Contractor. State Water will provide any documents required under this approval available to the public on request	State Water					This is the first of the during-construction Construction Compliance Reports to be issued for WP1
4.3b	Provisions for periodic reporting of compliance status		EMR / John Holland		✓			
4.3c	Mechanisms for rectifying non-compliance identified in environmental auditing or reviews.		State Water / John Holland / EMR		✓		Site Instructions and NCR's issued by EMR or John Holland and investigated by PER.	
5.1	Documentation available to the public		State Water					

5.2	Inform potentially affected landholders	Letters sent to potentially affected landholders	State Water	✓		Affected residents downstream were informed through the CLG from 18 June 09 onwards. Upstream affected residents were informed via a letter issued to each of them on 11 November 09.	
5.3	Form Compensation Liaison Group (CLG)	State Water to form CLG	State Water	✓		CLG established 18 June 09 when letters were sent to members, the first meeting was held on 21 August 09.	
5.4	Administration of CLG	State Water to administer CLG	State Water	✓	✓	CLG established 18 June 09 when letters were sent to members, the first meeting was held on 21 August 09.	Ongoing administration of the CLG
5.5	Complaints procedure & methods.	CEMP	State Water	✓		CEMP approved 22 Feb 10	
5.6	Complaints register	CEMP	State Water	✓	✓	CEMP approved 22 Feb 10	Complaints registration system in operation
5.7	Advertising and notification procedures for construction activities	CEMP	State Water	✓	✓	Press release issued 18 Jan 10	Updates to website Feb and March 10
5.8	Project website updates and information	CEMP	State Water	✓	✓	Draft media releases prepared, awaiting DoP approval to commence. Approved by DoP on 19 Jan 10	Updates to website Feb and March 10
6.1	Environmental representative	Letter	State Water	✓			
6.2	Prepare and implement CEMP	CEMP	State Water / John Holland	✓	✓	CEMP approved 22 Feb 10	PER on-going
6.3a	Prepare and implement flora and fauna management plan	CEMP	State Water / John Holland	✓	✓	CEMP approved 22 Feb 10	PER on-going
6.3b	Prepare and implement noise management plan	CEMP	State Water / John Holland	✓	✓	CEMP approved 22 Feb 10	PER on-going
6.3b	Noise monitoring program	CEMP	State Water / John Holland		✓		PER on-going PSA and General Superintendent update as required and implement traffic management procedure.
6.3c	Traffic Management Protocol	CEMP	John Holland		✓		
6.3d	Water Management Plan	CEMP	John Holland		✓		PER on-going
6.4	Operation Environmental Management Plan	State Water to create Operation EMP	State Water			✓	Interim OEMP due June 2011
6.5a	Multi-level off take operational plan	State Water to design Multi level off take and prepare operational plan	State Water			✓	MLO on hold awaiting final IPART determination and funding availability
6.5b	Emergency plan	State Water to prepare Emergency Plan within OEMP	State Water			✓	Interim OEMP due June 2011

7.1	Incident reporting and register	CEMP	John Holland	✓	PER on-going
7.2	Response to DG request on incident management	CEMP	John Holland / EMR	✓	PER on-going

Completed

In Progress

Not commenced



