Roads & Maritime

Compliance tracking report

Nambucca Heads to Urunga

December 2014 to May 2015

Document control

File name	CTP_N2U_Dec-May2015 final.docx
Report name	Nambucca Heads to Urunga compliance tracking report
Revision number	Rev1

Revision history

Revision	Date	Description	Approval
1	16/06/15	For submission	J. Butler
2			
3			
4			

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Glossary / Abbreviations

Abbreviation	Meaning
ASS	Acid sulfate soils
CEMP	Construction environmental management plan
Compliance audit	Verification of how implementation is proceeding with respect to a construction environmental management plan (CEMP) (which incorporates the relevant approval conditions).
CoA	Conditions of approval
CTP	Compliance Tracking Program
Director-General	Director-General of the NSW Department of Planning and Environment (or delegate)
DP&E	Department of Planning and Environment
EA	Environmental Assessment
Ecological sustainable development	Using, conserving and enhancing the community's resources so that the ecological processes on which life depends are maintained and the total quality of life now and in the future, can be increased (Council of Australian Governments, 1992).
EPA	NSW Environment Protection Authority
ERG	Environmental Review Group – comprising representatives of Roads and Maritime, Environmental Representative, Project delivery team, regulatory authorities (EPA, DPI – Fisheries Conservation and Aquaculture, NOW) and councils (Nambucca Shire Council, Bellingen Shire Council). The ERG will be maintained for the duration of the Project and will meet regularly and undertake environmental inspections. The role the ERG is to provide proactive advice on environmental management issues and review the environmental performance of the Project.
EMS	Environmental management system
Environmental aspect	Defined by AS/NZS ISO 14001:2004 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2004 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment.
Environmental objective	Defined by AS/NZS ISO 14001:2004 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental policy	Statement by an organisation of its intention and principles for environmental performance.

Abbreviation	Meaning
Environmental target	Defined by AS/NZS ISO 14001:2004 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
Environmental Representative	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPL	Environment Protection Licence
Minister, the	Minister for Planning and Infrastructure
Non-compliance	Failure to comply with the requirements of the Project approval or any applicable license, permit or legal requirements.
Non-conformance	Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation.
NOW	NSW Office of Water
OEH	Office of Environment and Heritage
Project, the	The Warrell Creek to Urunga Project
Roads and Maritime	Roads and Maritime Services
SoC	Statement of commitments

1 Introduction

1.1 Background

On behalf of the Australian and NSW governments, Roads and Maritime Services (Roads and Maritime) is progressively upgrading the Pacific Highway to dual carriageway between the Hunter and NSW/Queensland border.

In December 2006 the Warrell Creek to Urunga Project was declared by the Minister for Planning to be a Project to which Part 3A of the *Environmental Planning and Assessment Act 1974* applies. An Environmental Assessment was prepared and placed on public exhibition for 60 days between January and March 2010. Following consideration of submissions made during the exhibition period, the submissions report, including changes to the proposal following consideration of submissions, was submitted to the then Minister for Planning seeking approval. Approval of the Project was granted on 19 July 2011.

1.2 Project description and staging

The Nambucca Heads to Urunga Pacific Highway upgrade Project comprises approximately 22 kilometres of dual carriageway road that would bypass the town of Urunga.

The general features of the Project are:

- A 22 kilometre motorway style (class M) upgrade comprising of four-lane divided carriageways (two lanes each way), with a wide median allowing for the future addition of a third lane in each direction and a 110 kilometre per hour posted speed limit.
- Controlled access to the upgrade from four new grade separated interchanges and an upgrade to the existing Waterfall Way interchange at Raleigh.
- 37 bridges including new major highway bridges across Deep Creek at Valla and the Kalang River at Urunga.
- Retention of the existing highway as a local access road between Nambucca Heads and Urunga.
- Floodplain bridges and culverts across sections of the Kalang floodplain at Urunga.
- Low noise pavements at various locations.
- At residence noise treatments to houses in locations where required.
- Permanent spill containment basins at environmentally significant watercourse crossings.
- Combined fauna underpasses/drainage structures at river and creek crossings and key habitat locations.
- Combined drainage/underpass structures and a wide vegetated median for overhead fauna movement in sections of the Newry State Forest and adjacent to private land north of the Kalang River.
- Ancillary construction facilities, including compound sites, batching plant sites and stockpile sites.
- Public utility and service relocations including power lines, telecommunications, network water and sewer mains.

As described in the Warrell Creek to Urunga Pacific Highway Upgrade Environmental Assessment (the Project EA), the Project is proposed to be delivered in two main stages, being:

- Stage 1: Nambucca Heads to Urunga (Chainage 61,265 to Chainage 82,915), with a ramp and associated connections extending a further 0.5 kilometres north.

- Stage 2: Warrell Creek to Nambucca Heads (Chainage 41,765 to Chainage 61,265).

The split between Stage 1 and 2 is located to the north of the Nambucca interchange as shown on Figure 1-1. The extent of each of the stages is also shown on Figure 1-1. This Compliance Tracking Program provides details of compliance for Stage 1 only.

Construction of Stage 1 commenced on 5th December 2013. Stage 1 design and construction is being completed by Lend Lease (the 'Contractor').

Note, chainage references have been updated since the Project EA where the chainages now reflect the distance north from Kempsey. The number 41,765 can be added to any old chainage referenced in the Project EA and supporting documentation to provide the equivalent chainage currently being used.

1.3 Purpose

The key objective of the Compliance Tracking Program (CTP) is to track compliance with the requirements of the Minister's Conditions of Approval (CoA) during the design and construction of Stage 1 of the Project.

The *Contractor* and Roads and Maritime together are responsible for compliance with the requirements of the CoA.

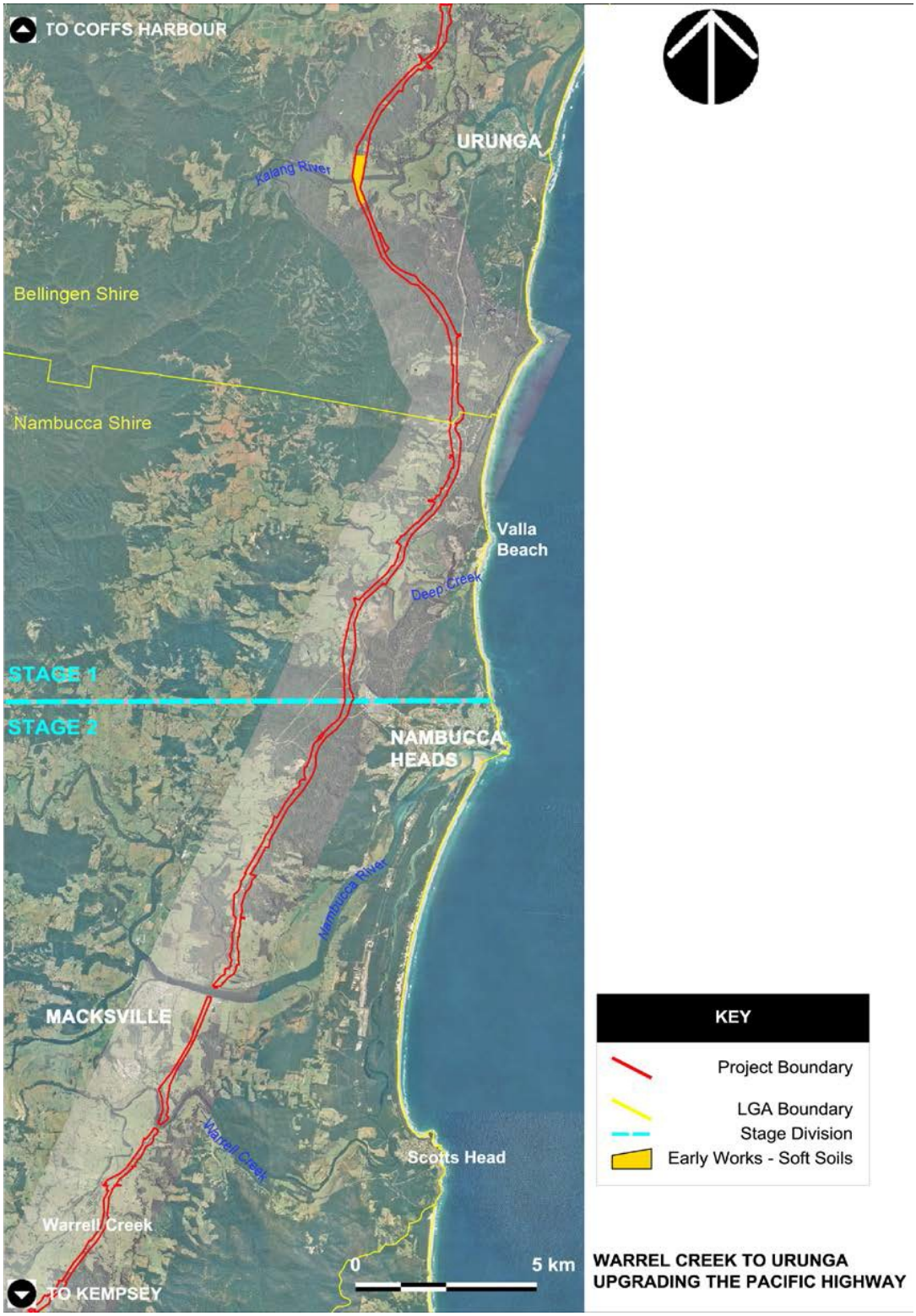
This compliance tracking report documents the review of compliance status for the reporting period December 2014 to May 2015.

1.4 Environmental management system overview

The Construction Environmental Management Plan (CEMP) is the primary system to manage and control the environmental aspects of the Project during pre-construction and construction. It also provides the overall framework for the system and procedures to ensure environmental impacts are minimised and legislative and other requirements are fulfilled. The strategies defined in the CEMP have been developed with consideration of the Project approval requirement, safeguards and mitigation measures presented in the environmental assessment and approval documents. The CEMP establishes the system for implementation, monitoring and continuous improvement to minimise impacts from the Project on the environment.

This CTP is separate to the CEMP, but is part of a suite of environmental management documents prepared for the Project.

Figure 1-1 Location of Warrell Creek to Urunga Project



1.5 Relevant documentation

Documentation relevant to the CTP includes:

- Upgrading the Pacific Highway - Warrell Creek to Urunga - Environmental Assessment (January 2010).
- Upgrading the Pacific Highway - Warrell Creek to Urunga – Environmental Assessment Submissions and Preferred Project Report (November 2010).
- Letter from the NSW Roads and Traffic Authority titled Pacific Highway Upgrade - Warrell Creek to Urunga Upgrade Addendum to Submissions Report - Fauna Crossing Structures, and accompanying attachments (May 2011).
- Letter from the NSW Roads and Traffic Authority titled Pacific Highway Upgrade - Warrell Creek to Urunga Upgrade Addendum to Submissions Report - Fauna Crossing Structures and accompanying attachments (June 2011).
- Minister's conditions of approval (July 2011).

2 Program requirements

The CTP has been prepared as a requirement of CoA B25. The CTP requirements, as stipulated by this CoA, are detailed in Table 1.

Table 1 CoA requirements for CTP

CoA no.		Requirement	Reference
B25		The Proponent shall develop and implement a Compliance Tracking Program to track compliance with the requirements of this approval. The Program shall be submitted to the Director General for approval prior to the commencement of construction and relate to both the construction and operational phases of the project, and include, but not necessarily be limited to:	This document
	(a)	Provisions for the notification of the Director General of the commencement of works prior to the commencement of construction and prior to the commencement of operation of the project (including prior to each stage, where works are being staged).	Section 2.1
	(b)	Provisions for periodic review of project compliance with the requirements of this approval, Statement of Commitments and documents listed under condition A1.	Section 2.2
	(c)	Provisions for periodic reporting of compliance status against the requirements of this approval, Statement of Commitments and documents listed under condition A1 to the Director General including at least one month prior to the commencement of construction and operation of the project and at other intervals during the construction and operation, as identified in the Program.	Section 2.3
	(d)	A program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/ or Environmental Management Systems Auditing.	Section 2.4
	(e)	Mechanisms for reporting and recording incidents and actions taken in response to those incidents.	Section 2.5
	(f)	Provisions for reporting environmental incidents to the Director General during construction and operation.	Section 2.6
	(g)	Procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management.	Section 2.7

2.1 Director-General notification

CoA B25 (a) requirement:

"Provisions for the notification of the Director General of the commencement of works prior to the commencement of construction and prior to the commencement of operation of the project (including prior to each stage, where works are being staged)."

Construction commenced on stage 1 of the Project on the 5th December 2013 following approval by the Director-General of the relevant CEMP, associated environmental plans and other relevant documentation required by the approval. Further information on the staging of the Project is provided in the Warrell Creek to Urunga Pacific Highway Upgrade Staging Report *(Roads and Maritime, 13 May, 2013).*

Notification for the commencement of stage 1 construction was provided to the Director General on the 18-9-2013. Roads and Maritime will advise the Director-General in writing prior to the commencement of operation.

2.2 Period compliance review

CoA B25 (b) requirement:

"Provisions for periodic review of project compliance with the requirements of this approval, periodic review of project compliance with the requirements of this approval,"

The successful contractor, on behalf of Roads and Maritime, will review the status of compliance and submit periodic construction compliance reports to the Director-General for each stage of construction at intervals including:

- Prior to the commencement of construction.
- Six months after the commencement of construction and then at six monthly intervals thereafter.
- Prior to the commencement of operation.

The compliance tracking tables (contained to Appendix A) form an integral part of this periodic review. These tables establish a format for recording compliance and include:

- Description of the environmental obligation.
- The stage of the project to which it relates.
- Status.

2.3 Period compliance reporting

CoA B25 (c) requirement:

"Provisions for periodic reporting of compliance status against the requirements of this approval, Statement of Commitments and documents listed under condition A1 to the Director General including at least one month prior to the commencement of construction and operation of the project and at other intervals during the construction and operation, as identified in the Program."

Appendix A of this CTP documents the last six month review of compliance status.

In addition, at intervals prescribed in Section 2.2, the status of compliance will be reviewed and reported to the Director-General in the form of a compliance tracking report. The successful contractor for each stage of construction will have the responsibility for preparing these reports for the duration of the Project. Compliance tracking reports will typically include:

- Scope of the activities undertaken during the reporting period.
- Compliance with CoA, revised SoCs as recorded in the compliance tracking tables.
- Non-compliances during the reporting period.
- Detail of all incidents recorded and action taken during the reporting period.
- Outcomes of monitoring undertaken over the reporting period and review of compliance against relevant criteria.
- Significant outcomes of audits and ERG inspections undertaken during the reporting period.
- Detail of substantiated environmental complaints received, responses taken and current status (ie open or closed).

2.4 Independent environmental auditing

CoA B25 (d) requirement:

"A program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/ or Environmental Management Systems Auditing."

The successful contractors will ensure that independent audits are undertaken in accordance with ISO 19011:2003 - *Guidelines for Quality and/or Environmental Management Systems Auditing* at six monthly intervals throughout construction. The audits will assess compliance against the CoA and SoCs.

An independent environmental audit was undertaken over the 19 and 20 May 2015 to audit compliance with the requirements of the Project Approval, EPL and Roads and Maritime QA Specifications. A summary of the audit finds is provided in Section 7.

2.5 Incident reporting and response

CoA B25 (e) requirement:

"Mechanisms for reporting and recording incidents and actions taken in response to those incidents."

Roads and Maritime's Environmental Incident Classification and Reporting Procedure will be implemented for all environmental incidents for the Project. The full procedure is provided in Appendix A9 of CEMP.

Typically, environmental incidents will be notified verbally immediately and in writing within 1 hour of any incident occurring to the Roads and Maritime Representative and the Environmental Representative. Incident reports will be provided to Roads and Maritime Representative and the Environmental Representative within 24 hours of the incident occurring, including lessons learnt from each environmental incident and proposed measures to prevent the occurrence of a similar incident. All efforts will be undertaken immediately to avoid and reduce impacts of incidents and suitable controls put in place. Incidents will be close out as quickly as possible, taking all required action to resolve each environmental incident.

The EPA will be notified of any environmental incidents or pollution incidents on or around the site via the EPA Environment Line (telephone 131 555) in accordance with Part 5.7 of the *Protection of the Environment Operations Act 1997* (NSW) (POEO Act). The circumstances where this will take place include:

- If the actual or potential harm to the health or safety of human beings or ecosystems is not trivial.

- If actual or potential loss or property damage (including clean-up costs) associated with an environmental incident exceeds $10,000.

Roads and Maritime Environment Branch and Project team will maintain all records relating to environmental incidents.

A summary of environmental incidents is provided in Section 5.

2.6 Incident reporting to Director-General

CoA B25 (f) requirement:

"Provisions for reporting environmental incidents to the Director General during construction and operation."

The Director-General will be notified of incidents in writing in circumstances where:

- The actual or potential harm to the health or safety of human beings or ecosystems is not trivial.
- The actual or potential loss or property damage (including clean-up costs) associated with an environmental incident exceeds $10,000.

An initial notification to the Director-General will be made verbally within two working days. The written notification will be made within 10 working days.

Where incidents are considered to be minor, ie do not meet the criteria above, they will be reported to the Director-General in accordance with the compliance tracking program at frequencies prescribed in Section 2.2.

2.7 Addressing non-compliance

CoA B25 (g) requirement:

"Procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management."

Section 8.4 and Section 8.6 of CEMP describe in detail the system for tracking compliance prior to and during construction.

Where a non-compliance has been identified, a corrective/preventative action (or actions) will be implemented.

Corrective/preventative actions will be entered into the contractor's quality system database and include detail of the issue, action required and timing and responsibilities. The record will be updated with date of close out and any necessary notes. The database will be reviewed regularly to ensure actions are closed out as required.

The close-out of required actions will be reviewed during forums including Environmental Representative and ERG inspections, and the Environmental Representative will be actively involved in the review and resolution of non-compliances.

A summary of non-compliances for the reporting period is provided in Section 4.

3 Construction Works

The focus for construction works during this reporting period has been:

- Works associated with Pacific Highway intersection upgrades, local road upgrades;
- Project boundary fencing;
- Ancillary Facility establishments;
- Construction of basins;
- Bulk earthworks;
- Blasting, crushing and screening activities;
- Culvert and drainage installations;
- Bridge works including completion of all piling works in April 2015;
- Soft soil foundations and treatments;
- Installation of bridging layers;
- Interchange construction;
- Pavement drainage works;
- Concrete paving works;
- Progressive temporary and permanent revegetation works.

Works completed between Chainage 61265 to 72900 (Nambucca Interchange to north of Ballards Rd) included:

- Intersection upgrades – Ballards Road;
- Bulk earthworks and drainage installation has progressed;
- Extensive bridge works in progress at all bridge locations; Deep Creek rock platform installation and piling works (southern piers) and removal of the northern rock platform;
- Opening of new Ballards Road in January 2015;
- Soft soil treatments at Deep Creek;
- Nambucca Interchange construction;
- Opening of the northern extent of Local Access Road D and closure of the Burkes Lane intersection with the Pacific Highway in April 2015;
- Partial opening of Local Access Road B, north of Boggy Creek Road in April 2015.
- Pavement drainage installation and placement of SMZ materials;
- Sealing and asphalt works;
- Construction access over the following new bridges: Nambucca Rail and Cow Creek.
- Site 12B (batching ancillary facility) site establishment and operation of 2 concrete batch plants;
- Topsoiling of permanent batters and hydromulching;
- Service relocations.

Works completed between chainage 72900 and 77600 (north of Ballards Road to the southern side of the Kalang River):

- Bulk earthworks and drainage installation has progressed;
- Extensive bridge works at all bridge locations;
- Commencement of Kalang River temporary bridge removal;
- Permanent bridge works at the Kalang River, including completion of deck pours;
- Soft soil treatment works on the South of Kalang River, including removal of surcharge material;
- Soft soil treatment works on Fill 31 and Fill 30;
- Blasting, crushing and screening at Cut 26;
- Construction access over the new SB15 bridge;
- Pavement drainage installation and placement of SMZ materials;
- Sealing works;
- Topsoiling of permanent batters and hydromulching;

Works completed between chainage 77750 and 82915 (North of Kalang River to Waterfall Way)

- Bulk earthworks and drainage installation has progressed;
- Extensive bridge works at all bridge locations;
- Soft soil treatment works on the North side of Kalang River;
- Installation of rock bridging layers north of Shortcut Road;
- Waterfall Way Interchange construction in progress.
- Pavement drainage installation and placement of SMZ materials.
- Concrete pavement works north of Access Road G commenced March 2015;
- Sealing works and asphalt works;
- Opening of the new Short Cut Road / South Arm Road in May 2015;
- Construction access over the new SB25 bridge;
- Topsoiling of permanent batters and hydromulching;
- Service relocations.

4 Non Compliances

In response to EPA's concerns raised in September 2014 regarding NH2U's temporary waterway crossings and compliance with the guideline *Managing Urban Stormwater – Soils and Construction Volume 1* (Landcom, 2004) (the Blue Book), Lend Lease engaged a soil conservationist and the designers to review NH2U's temporary crossing design in reference to the Blue Book requirements (including Volume 2D, 2C and 1). Both parties have advised that the temporary crossings implemented on the project are "as good as the Blue Book design". Details of this review were provided to the EPA on the 3/11/2014.

However in light of EPA's concerns, Lend Lease agreed to reconstruct the temporary crossings so that the capping surface is either rock or cement treated material. An email was sent to the EPA advising of the additional management measures on the 09/01/2015. All of the temporary crossings onsite were reconstructed by 30th March 2015. This issue has now been closed with EPA.

On 30/04/15 the project observed sediment basin B79.78L overtopping before the measured rainfall (approximately 41mm at gate 105 manual rain gauge) had exceeded the design rainfall depth of 55.8mm. The Project's immediate response to basin B79.78L included:

- The Project Environment Team inspected the overtopping basin catchment for any obvious environmental control failures; none were detected.
- The Project Environment Team confirmed the basin does not require de-silting (adequate Sediment Storage Zone volume available).
- The Project Environment Team and Project Soil Conservationist reviewed the Progressive Erosion and Sediment Control Plan developed for this basin catchment onsite and confirmed the runoff water is flowing where planned.
- Following the Project Soil Conservationist's review, an opportunity to divert 0.2 hectares (comprising the uncompleted basin access and an area of undisturbed bush land) from the basin catchment through use of alternative controls was identified and has now been implemented.

It is noted that basin B79.78L has been designed and managed in accordance with the Bluebook. With the bulk earthworks phase of the project now transitioning to the pavement and finishing phase, the catchment for basin B79.78L has now evolved to a stage where ground covers differ significantly from the bare earth to which the sediment basin was originally designed. As paving and finishing works create greater areas of hard, stable surfaces, in addition to batters being progressively stabilised, higher runoff volumes and less erosion throughout the catchment are to be expected. The Project Environment Team and Project Soil Conservationist will continue to regularly review PESCPs and basin catchments as catchments continue to transition through to Project completion.

No other non-compliances with the CoA have been identified during this report period.

5 Environmental Incidents

The following environmental incidents were recorded during this reporting period.

Date	*Description*	*Action*	*Status*
11/12/2014	During a heavy thunderstorm, slightly high pH (8.7) runoff occurred from a newly poured concrete clean water drain.	A heavy thunderstorm developed during the works. Works ceased & were covered by plastic & pinned down. Approximately 26mm of rain fell within 1hr, resulting in runoff getting under the plastic and running over the new concrete. All runoff was contained on site. The runoff was treated to reduce the pH levels to less than 8.5.	Closed
28/01/2015	During normal operation a hose separation occurred on Bauer 70T Liebherr Crane, resulting in a minor hydraulic oil spill (~10L).	The crane was operating in an approved location with necessary controls in place. A quantity (Approx 10L) of hydraulic oil spilled onto the ground as a result of the hose failure. The spill did not extend beyond the immediate area or enter any water bodies. The spilt material and contaminated soil was bagged for appropriate disposal. The crane was repaired on site on 29/01/2015.	Closed
12/02/2015	During normal operation a hose separation occurred on Bauer's piling rig's power pack, resulting in a minor hydraulic oil spill (<1L).	The piling rig / power pack was operating in an approved location with necessary controls in place. A very small quantity (<1L) of hydraulic oil spilled onto a steel plate and the ground as a result of the hose failure. The spill did not extend beyond the immediate area or enter any water bodies. The power pack was shut down immediately by the operator, the site spill response procedure was then implemented. The spilt material and contaminated soil was bagged for appropriate disposal. The hose was repaired on site on 12/02/2015.	Closed
13/03/2015	Some minor damage to EEC mapped vegetation outside of the EPL and project boundary as a result of a construction vehicle rolling off a batter.	Vegetation damage was very minor in nature, 1x small shrub damaged and some grass. This incident forms part of a safety incident and additional safety procedures have been put in place onsite. Monitoring of the disturbed area has shown natural regeneration has taken place.	Closed
20/03/2015	Turbid waters generated during removal of downstream diversion bund associated with removal of a temporary	ERSED controls were in place prior to crossing removal including a geofabric lined soil diversion bund downstream of the crossing. A silt curtain was downstream of the bund. After removal of the crossing and completion of permanent works, the downstream diversion	Closed

Date	Description	Action	Status
	waterway crossing and completion of permanent works.	bund was removed. This resulted in the generation of turbid waters which extended slightly outside the project boundary. Upon identification, RMS and Lend Lease environmental representatives were notified and inspected the area. Works had ceased. The work area was then stabilised as agreed with RMS. The area was checked the next day by RMS and Lend Lease environmental representatives with no remaining issues / concerns.	
25/03/2015	During normal operation a hose separation occurred on a Lend Lease franna crane, resulting in a diesel spill (~10L).	The franna crane was driving from Site 12B to SB3 (Boggy Ck). A small quantity (~10L) of diesel spilt onto Ballards Road, Pac Hwy and access track from Gate 10 to SB3 as a result of a loose nut on the fuel injector hose. The spill did not extend beyond the immediate area or enter any water bodies. The franna crane was shut down immediately by the operator, the site spill response procedure was then implemented at various locations. The spilt material and contaminated soil was bagged for appropriate disposal. The nut holding the hose was tightened on site on 25/03/15. Franna crane was taken to the workshop for assessment. All hoses were checked and replaced as required on the plant item and deemed functional.	Closed
25/03/2015	During normal operation a hose separation occurred on a truck and dog, resulting in a minor hydraulic oil spill (~4L).	The truck and dog pack was operating in an approved location with necessary controls in place. A small quantity (~4L) of hydraulic oil spilled onto the ground as a result of the hose failure. The spill did not extend beyond the immediate area or enter any water bodies. The truck and dog was shut down immediately by the operator, the site spill response procedure was then implemented. The spilt material and contaminated soil was bagged for appropriate disposal. The hose was repaired off site on 25/03/2015. All hoses were checked and replaced as required on the plant item and deemed functional.	Closed

Date	Description	Action	Status
30/04/2015	A basin (B79.78L) was observed over-topping prior to the design rain event (55.8mm). Approx 41mm was recorded at the closest rain gauge (Gate 105 rain gauge), 2.3km away. Heavy rainfall continued and subsequent rainfall totals were approx. 254mm.	The Project's response to basin B79.78L included: • The Project Environment Team inspected the overtopping basin catchment for any obvious environmental control failures; none were detected. • The Project Environment Team confirmed the basin does not require de-silting (adequate Sediment Storage Zone volume available). • The Project Environment Team and Project Soil Conservationist have reviewed the Progressive Erosion and Sediment Control Plan developed for this basin catchment onsite and confirmed the runoff water is flowing where planned. • Following the Project Soil Conservationist's review, an opportunity to divert 0.2 hectares (comprising the uncompleted basin access and an area of undisturbed bush land) from the basin catchment through use of alternative controls was identified and has now been implemented. Basin B79.78L has been designed and managed in accordance with condition O5.7 of the EPL and the Bluebook. With the bulk earthworks phase of the project now transitioning to the pavement and finishing phase, the catchment for basin B79.78L has now evolved to a stage where ground covers differ significantly from the bare earth to which the sediment basin was originally designed. As paving and finishing works create greater areas of hard, stable surfaces, in addition to batters being progressively stabilised, higher runoff volumes and less erosion throughout the catchment are to be expected. The Project Environment Team and Project Soil Conservationist will continue to regularly review PESCPs and basin catchments as catchments continue to transition through to Project completion.	Closed

Date	Description	Action	Status
11/05/2015	During normal operation a hose separation occurred on a truck and dog, resulting in a hydraulic oil spill (~40L).	The truck and dog was operating in an approved location with necessary controls in place. A quantity (~40L) of hydraulic oil spilled onto the ground as a result of the hose failure. The spill did not extend beyond the immediate area or enter any water bodies or drainage lines. The truck and dog was shut down immediately by the operator, the site spill response procedure was then implemented. The spilt material and contaminated soil was bagged for appropriate disposal. The truck and dog was sent off-site for repair on 11/05/2015. All hoses were checked and replaced as required on the plant item and deemed functional.	Closed
28/05/2015	During normal operation a hose separation occurred on a positrack bobcat, resulting in a hydraulic oil spill (~2L).	The positrack was operating in an approved location with necessary controls in place. A small quantity (~2L) of hydraulic oil spilled onto the ground as a result of the hose failure. The spill did not extend beyond the immediate area or enter any water bodies or drainage lines. The positrack was shut down immediately by the operator, the site spill response procedure was then implemented. The spilt material and contaminated soil was bagged for appropriate disposal. The positrack was repaired on site on 28/05/2015.	Closed
29/05/2015	During normal operation a hose separation occurred on a Boral tipper truck, resulting in a hydraulic oil spill (~20L).	The tipper truck was operating in an approved location with necessary controls in place. A quantity (~20L) of hydraulic oil spilled onto the ground as a result of the hose failure. The spill did not extend beyond the immediate area or enter any water bodies or drainage lines. The truck was shut down immediately by the operator, the site spill response procedure was then implemented. The spilt material and contaminated soil was bagged for appropriate disposal. The truck and dog was repaired on site on 29/05/2015.	Closed

Regarding the incident that occurred on the 11th September 2014 where approximately 0.5m^3 of fill was inadvertently placed on Cow Creek PAD 3 to provide emergency egress, the following actions have been completed;

- Consultation with the property owner, tenants, RAP's and OEH was carried out and it was agreed sub surface testing would be undertaken on Cow Creek PAD 3.
- Sub surface testing was completed on the 2nd June 2015. Primarily results showed no artefacts were discovered and the report will be forwarded to OEH upon its receipt by the project. Any recommendations made in the report will be enacted by the project.

6 Environmental Review Group Meetings

A summary of the ERG meetings undertaken over the reporting period in provided below:

Date	*Stakeholder Attendees*	*Summary of Items Discussed*
9.12.14	ERG 23 • David Bone (Env Rep) • Shayne Walker, Gerry Ryan, Kris Hinks, Paul Leonard, Mike Cragg (Roads & Maritime) • Craig Dunk, Brian Tolhurst (EPA) • James Sakker (DPI) • James Stagg (PV)	Kalang Bridge Temporary Bridge Pile removal discussion, Approvals Update, Significant Rainfall, Construction Update, Monitoring Update, Blasting Update, OOHW Update, Kalang River & Deep Ck Bridge Update, Community Consultation Update, Site Inspection - positive comments & some minor areas for improvement
20.1.15	ERG 24 • David Bone (Env Rep) • Shayne Walker, Gerry Ryan, Kris Hinks, (Roads & Maritime) • Phil Buchan, John Starr (BSC) • Craig Dunk, Brian Tolhurst (EPA) • James Sakker (DPI) • James Stagg (PV)	Approvals Update, Construction Update, Significant Rainfall, Monitoring Update, Blasting Update, Kalang Bridge Update, Deep Ck Bridge Update, OOHW Update, Community Consultation Update, Site Inspection - positive comments & some minor areas for improvement
18.2.15	ERG 25 • David Bone (Env Rep) • Shayne Walker, Gerry Ryan, Kris Hinks, Paul Leonard, Mike Cragg (Roads & Maritime) • John Starr (BSC) • Brian Tolhurst (EPA) • James Stagg (PV)	Approvals Update, Construction Update, Significant Rainfall, Monitoring Update, Blasting Update, Kalang Bridge update, Deep Ck Bridge Update, Community Consultation Update, Landscaping & Rehab Update, Site Inspection - positive comments & some minor areas for improvement
18.3.15	ERG 26 • David Bone (Env Rep) • Shayne Walker, Gerry Ryan, Kris Hinks, (Roads & Maritime) • Craig Dunk, Brian Tolhurst (EPA) • James Sakker (DPI) • James Stagg (PV)	Approvals Update, Construction Update, Significant Rainfall, Monitoring Update, Blasting Update, Deep Ck & Kalang River Update, OOHW Update, Archaeology and Heritage Update, Community Consultation Update, Site Inspection - positive comments & some minor areas for improvement
22.4.15	ERG 27 • Shayne Walker, Gerry Ryan, Kris Hinks, Paul Leonard, Mike Cragg, Leon Helos (Roads & Maritime) • Stuart Murphy, Peter Higgs (EPA) • James Sakker (DPI) • Chad Bunyan (PV)	Approvals Update, Construction Update, Significant Rainfall, Monitoring Update, Blasting Update, Deep Ck & Kalang River Update, OOHW Update, Mulch Offsite Reuse discussion, Community Consultation Update, Site Inspection - positive comments & some minor areas for improvement

Date	*Stakeholder Attendees*	*Summary of Items Discussed*
20.5.15	ERG 28 • David Bone, Chris Churcher (Env Rep) • Shayne Walker, Gerry Ryan, Paul Leonard (Roads & Maritime) • Craig Dunk, Peter Higgs (EPA) • James Sakker (DPI) • James Stagg (PV)	Approvals Update, Construction Update, Significant Rainfall, Monitoring Update, Blasting Update, Deep Ck & Kalang River Update, Community Consultation Update, Site Inspection - positive comments & some minor areas for improvement

7 Audits

An independent environmental audit was undertaken on 19th and 20th May 2015. Lend Lease were found to be compliant with the requirements of the Project Approval and EPL. The following observation of concern records were raised during the audit in regards to the Roads and Maritime QA Specifications:

- The dewatering environmental work method statement requires updating to meet all the requirements outlined in G36 Specification;
- Fix point photographs for weed management is required as outlined in G40 Specification.

The site inspection indicated that the site environmental controls were well established and maintenance actions were only minor and were already being actioned under Lend Lease's environmental systems.

8 Community Complaints

December 2014

There were no environment related complaints received during December 2014.

January 2015

There was one (1) environmental related complaint received in January 2015 as detailed below.

Date	Source	Issue	Summary	NH2U response	Complaint Status
06/01/2015	Resident (Martells Road)	Flooding	Resident experienced increased flooding during heavy rain events. They believe the issue is related to construction work.	Meeting held with resident. Road design was reviewed. RMS and Lend Lease confirmed that road design does not increase water volume. Agreed to wait until final design is implemented and reassess drainage.	Open

February 2015

There was one (1) environmental related complaint received in February 2015 as detailed below.

Date	Source	Issue	Summary	NH2U response	Complaint Status
03/02/15	Resident (Pacific Highway, Valla)	Water & mud on property	Resident complained that he is getting excess mud and runoff into this property	Lend Lease and RMS met with resident. Additional information was provided regarding water management across the project.	Closed

March 2015

There were two (2) environmental related complaints received in March 2015 as detailed below.

Date	Source	Issue	Summary	NH2U response	Complaint Status
06/03/15	Resident (South Arm Road)	Dust	Complaint from resident regarding dust coming off South Arm Road	Responded immediately with water cart	Closed
11/03/15	Owner (South Arm Road)	Flooding	Complaint from resident regarding pooling of water following rain event	Lend Lease met with resident and used water pump to clear the area.	Closed

April 2015

There were no environmental related complaints received in April 2015.

May 2015

There were five (5) environmental related complaints received in May 2015 as detailed below.

Date	Source	Issue	Summary	NH2U response	Complaint Status
12/05/15	Resident (Acacia Drive)	Dust	Resident complained about levels of dust at property from project work.	Lend Lease held a meeting with the resident and advised of the existing mitigation in place and the additional controls put in place due to the strong winds. At the end of this meeting, resident agreed that the area was now operating better in terms of dust due to action implemented by the team.	Closed

Date	Source	Issue	Summary	NH2U response	Complaint Status
14/05/15	Resident (Wenonah Close)	Noise (night work)	Resident called to complain about truck noise from the highway. The increased noise levels were related to night work that was underway.	Lend Lease monitored the noise levels and adjusted the traffic control measures to minimise the number of times trucks had to stop. The resident acknowledged that this reduced the noise significantly.	Closed
22/05/15	Business (Short Cut Road)	Dust	Business occupant submitted a claim to Lend Lease for cleaning due to increased dust levels.	Lend Lease rejected the claim as it appeared the complaint was regarding dust experienced in November 2014, which had been resolved. The business occupant then submitted a complaint to the EPA. This is currently being reviewed.	Open
27/05/15	Business (Pacific Highway)	Noise	Business operator called to complain about the noise of trucks using Short Cut Road.	Lend Lease responding by explaining that truck drivers associated with the project would be asked to limit compression braking when possible.	Closed
28/05/15	Council	Dust	Council contacted Lend Lease to complain about dust on Alex Pike Drive.	Lend Lease immediately sent a street sweeper to the area.	Closed

9 Environmental Monitoring

Summary tables for noise, vibration, dust and water monitoring are provided in Appendix B.

Noise

There were 8 occasions out of 108 monitoring events where the predicted noise levels were exceeded during this reporting period. In all 8 occasions, no complaints were received and all reasonable and feasible noise mitigation measures were in place. Further information regarding the noise monitoring undertaken is provided in Appendix B.

In April and May 2015, all noise monitoring results were in compliance with the predicted noise levels. In most occasions the construction noise levels were either inaudible or below noise goals.

As detailed above in section 8, there were only 2 noise related complaints received during this reporting period. These complaints were related to truck noise on existing roads and have been addressed.

Vibration and Blasting

Five vibration monitoring events were undertaken during the reporting period. All results were in accordance with the limits outlined in the NVMP and the German Standard DIN 4150-3: 1999.

Nine blasts were undertaken in Cut 26 during the reporting period. Vibration and overpressure monitoring has been conducted for every blast at the nearest affected residence/receiver. All results at the nearest affected residence have been in compliance with the limits in the NVMP and the Conditions of Approval.

Dust

There were nine occasions where the insoluble solid results exceeded the 4 g/m^2/month during this reporting period. These are further explained below:

- Results of 8.5 g/m^2/month and 5.2 g/m^2/month was recorded at DDG03 (2 Auld Close, Valla) during the February and March 2015 monitoring periods respectively. Construction works adjacent to the monitoring location were limited to predominately bridge works and no major issues have been noted nor concerns raised from the residents in this location during these periods. The annual insoluble solids averages remain below the 4 g/m^2/month air quality criteria.
- Results of 4.6 g/m^2/month and 5.3 g/m^2/month was recorded at DDG07B (Oyster Drive, Valla) during the January and April 2015 monitoring periods respectively. A large amount of combustible matter was included in these samples (2.4 & 2.8 g/ m^2/month respectively) which is not attributed to construction works. The construction works adjacent to DDG07B were limited in April 2015 to predominately drainage works and upper zone placement in preparation for sealing. No major issues have been noted nor concerns raised from the residents in this location during these periods. The annual insoluble solids averages remain below the 4 g/m^2/month air quality criteria.
- A result of 4.1 g/m^2/month was recorded at DDG15 (100 Old Pacific Highway, Raleigh) during the February 2015 monitoring period. A high level of organic matter was present in this sample. Organic matter is not from construction works. The annual insoluble solids averages remain below the 4 g/m^2/month air quality criteria.

- Results of 19.4, 8.1, 4.2 and 25 g/m^2/month were recorded at DDG23 (111 Short Cut Road) during December, February, March and April monitoring periods. There have been several potential dust sources at this location including the operation of a private landscape business (including unsealed areas adjacent to the dust gauge), unsealed shoulders of Short Cut Road (adjacent to the dust gauge) and NH2U construction works. Each of the high dust results have been immediately investigated by the project team and also discussed during the ERG's as noted in Appendix B. All reasonable and feasible dust mitigation measures were in place. The other nearby dust gauges, including DDG13 and DDG14, have shown compliance during these periods. The NH2U construction works adjacent to this dust gauge were completed on 18/5/15 with the opening of the new Short Cut Road. As noted in section 8 above, EPA is currently investigating a complaint from this location.

Surface Water

Surface water monitoring results are provided in Appendix B.

Surface water monitoring has continued during this reporting period in accordance with the approved monitoring program. Several of the waterways had no flow or were dry at the time of sampling during the reporting period.

Typically turbidity levels have been elevated during wet events at the downstream monitoring locations particularly due to discharges from sediment basins during above design rain events. These discharges were all in accordance with the EPL. All construction water went through erosion and sediment control measures. Some areas of improvement and maintenance were identified and addressed across site following the rain events.

The pH levels observed in the majority of sampling locations were found to fluctuate greatly with several results less than pH 6.5. No particular concerns were noted during this reporting period in regards to these pH fluctuations. All downstream pH results have been above 5.5.

Some slightly elevated nutrient and heavy metal results have been recorded during the reporting period across many of the sites. However the results show no apparent correlation with construction activities. In many of the cases the upstream values have been higher than the downstream values. The minor fluctuations in the nutrient and heavy metal levels appear to be associated with natural variations rather than impact from construction works.

Groundwater

Groundwater monitoring results are provided in Appendix B.

Groundwater monitoring has continued during this reporting period in accordance with the approved monitoring program. Insufficient water was available to sample at 4 bore locations (21300.1, 30500.1, 33600.2 and 36600.1) as detailed in Appendix B.

As shown in Appendix B there have been several minor fluctuations in the monitoring parameters at each monitoring bore with no apparent link with construction works.

Hydrocarbons were detected in monitoring well 22600.1 in April 2015. This is a control site with no apparent impact from construction activities.

A low level of hydrocarbons was also detected in monitoring well 32500.1 in April 2015. No spills have occurred near this site to impact this bore.

Groundwater has been intercepted in Cut 26 (associated with bore 32500.1) with water flows apparent following rain. The small amount of groundwater intercepted in this cut is being directed to the nearby sediment basin for treatment and release. No other groundwater has

been intercepted by construction works. Groundwater levels have fluctuated across the bores with a general rise noted following rain in February 2015.

The bores will continue to be monitored for any continuing trends.

Flora and Fauna

Flora and Fauna monitoring has occurred in accordance with the requirements detailed in the approved Ecological Monitoring Program. The annual reports for this ecological monitoring will be provided to the DP&E in December 2015.

Heritage

Additional archaeological investigations occurred on 5th March 2015 at Railway Road 1 (PAD) (AHIMS 21-6-0397) in accordance with CoA 16A. The archaeological investigation report has been provided to the DP&E.

The Unexpected Archaeological Finds Procedure has been successfully implemented during this reporting period in regards to large sawn timbers being uncovered during construction works on Boggy Creek Road on 12 February 2015. The project archaeologist inspected and recorded the find and confirmed the timbers did not meet the thresholds for local or state heritage significance. Construction works were able to progress following this confirmation.

Appendix A

Compliance tables

Table 1 Minister for Planning conditions of approval (July 2011, Modification_1 November 2012, Modification_2 December 2012, Modification_3 February 2013, Modification_4 March 2013, Modification_5 December 2013, Modification_6 March 2014, Modification_7 January 2015) .

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
Part A – Administrative conditions					
Terms of approval					
A1	The Proponent shall carry out the project generally in accordance with the: a Major Projects Application 07_0112; b Upgrading the Pacific Highway - Warrell Creek to Urunga - Environmental Assessment (Volumes 1 and 2), prepared by Sinclair Knight Merz Pty Ltd for the NSW Roads and Traffic Authority and dated January 2010; c Upgrading the Pacific Highway - Warrell Creek to Urunga - Environmental Assessment Submissions and Preferred Project Report, prepared by the NSW Roads and Traffic Authority and dated November 2010; d Letter from the NSW Roads and Traffic Authority titled Pacific Highway Upgrade - Warrell Creek to Urunga Upgrade Addendum to Submissions Report - Fauna Crossing Structures, dated 25 May 2011 and accompanying attachments and Letter from the NSW Roads and Traffic Authority titled Pacific Highway Upgrade - Warrell Creek to Urunga Upgrade Addendum to Submissions Report - Fauna Crossing Structures, dated 1 June 2011 and accompanying attachment and e The Roads and Maritime Services modification request and letter dated 23 October 2012 (07_0112 MOD1); f The Roads and Maritime Services modification request and letter dated 23 November 2012 to correct a minor error in condition C28 (07_0112 MOD2); g The Roads and Maritime Services modification request and letter dated 18 January 2013 to correct minor errors in condition A1 (07_0112 MOD3);	Preconstruction, construction and operation	Contractor, Roads and Maritime for retained obligations.	Open	Requirement to be undertaken throughout preconstruction, construction and construction activities with documents a – l forming part of the Project Deed.

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	h The Roads and Maritime Services modification request and letter dated 13 February 2013 to amend the definition of construction in Schedule 1 (07_0112 MOD4); i The Roads and Maritime Services modification request and letter dated 9 September 2013 to amend the heritage management requirements in conditions C16 and C27 (07_0112 MOD5) j The Roads and Maritime Services modification request and letter dated 12 February 2014 to delete reference to 'vegetation group remnant forest' conservation area in condition C15 (07_0112 MOD6); and k The Roads and Maritime Services modification request and letter dated 29 October 2014 to delete reference to four cultural heritage sites in condition C14 (07_0112 MOD7); and l The conditions of this approval.				
A2	In the event of an inconsistency between: a the conditions of this approval and any document listed from condition A1(a) to A1(k) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and b any document listed from condition A1(a) to A1(k) inclusive, and any other document listed from condition A1(a) and A1(k) inclusive, the most recent document shall prevail to the extent of the inconsistency.	Preconstruction, construction and operation	Contractor	Open	Requirement to be undertaken throughout preconstruction, construction and operation activities. No inconsistencies have been reported.
A3	The Proponent shall comply with any reasonable requirement(s) of the Director General arising from the Department's assessment of: c any reports, plans or correspondence that are submitted in accordance with this approval; and d the implementation of any actions or measures contained within these reports, plans or correspondence.	Preconstruction, construction and operation	Contractor	Open	Requirement to be undertaken throughout preconstruction, construction and operation activities. Letters to DP&E and responses from DP&E are stored and any requirements are addressed in the compliance tracking system.

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
A4	Subject to confidentiality, the Proponent shall make all documents required under this approval available for public inspection on request.	Preconstruction, construction and operation	Roads and Maritime	Open	B26 requires documents to be maintained on project website. All documents are available for inspection at the Lend Lease community centre.
Staging					
A5	The Proponent may elect to construct and/ or operate the project in stages. Where staging of the project is proposed, these conditions of approval are only required to be complied with at the relevant time and to the extent that they are relevant to the specific stages of works. Where staging is proposed, the Proponent shall submit a Staging Report to the Director General prior to the commencement of the first proposed stage, which provide details of: a how the project would be staged including general details of work activities associated with each stage and the general timing of when each stage would commence; and b details of the relevant conditions of approval, which would apply to each stage and how these shall be complied with across and between the stages of the project. The Proponent shall ensure that an updated Staging Report (or advice that no changes to staging are proposed) is submitted to the Director General prior to the commencement of each stage, identifying any changes to proposed staging or applicable conditions. The Proponent shall ensure that relevant plans, sub-plans and other management documents required by the conditions of this approval relevant to each stage (as identified in the Staging Report) are submitted to the Director General. no later than one month prior to the commencement of the relevant stages, unless an alternative timeframe is agreed to by the Director General.	Preconstruction	Roads and Maritime	Closed	The project is being constructed in stages 1 and 2. This information was forwarded to DP&E on 12-3-2013. A response from DP&E was received on 11-04-2013, and responded to on 24-05-2013 prior to construction. Staging report updated 16-1-2014 for access track from Old Coast Road. Update accepted by DP&E 19-2-2014.

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
Statutory requirements					
A6	The Proponent shall ensure that all necessary licences, permits and approvals required for the development of the project are obtained and maintained as required throughout the life of the project. No condition of this approval removes the obligation for the Proponent to obtain, renew or comply with such necessary licences, permits or approvals except as provided under Section 75U of the Act. This shall include relevant certification requirements in accordance with section 109R of the Act.	Preconstruction and construction	Contractor and Roads and Maritime for early works.	Open	DP&E approvals and compliance updates are stored in Table 1 Appendix A of the Compliance Tracking Program. Roads and Maritime Decision Report approvals, licences and compliance updates are maintained within the project compliance tracking system. Lend Lease has obtained an Environmental Protection Licence for the NH2U project (no.20321, issued 27 Sept 2013). Water extraction licences have also been obtained for use of ground waters and surface waters.
Limits of approval					
A7	This approval shall lapse ten years after the date on which it is granted, unless construction works the subject of this project approval are physically commenced on or before that date.	Preconstruction	Roads and Maritime	Closed	Construction commenced 5-12-2013. Early works commenced in 2012.
A8	The Proponent shall implement the bridge crossing option (Option 2 in the Environmental Assessment) to traverse the floodplain from the northern bank of the Nambucca River to the existing Pacific Highway.	NA	NA	NA	Requirement applicable to Stage 2.
A9	The proposed trailer exchange facility located in the vicinity of the Nambucca Heads rest area does not form part of this approval.	NA	NA	NA	Requirement applicable to Stage 2.
Part B - Prior to Construction					
Biodiversity – Mitigation measures – Fauna and Waterway Crossings					
B1	The Proponent shall implement the fauna and waterway crossings identified in the documents listed under condition A1(d) at the locations and in accordance with the minimum design dimensions identified in the	Construction	Contractor	Open	Design Refinements made as a result of consultation with DPI & EPA. Report submitted and

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	documents listed under condition A1(d), unless otherwise agreed to by the Director General.				approved by DP&E in accordance with B3 30-1- 2014. Construction of these fauna crossings has commenced.
B2	As part of detailed design, the Proponent shall further investigate design refinements to improve fauna connectivity between Chainages 19150 and 19820.	Preconstruction	Roads and Maritime	Closed	Design Refinements made as a result of consultation with DPI & EPA. Report submitted and approved by DP&E in accordance with B3 30-1- 2014.
B3	All investigations into fauna crossings design undertaken during detailed design (with respect to the crossing design and locations identified in conditions B1 and B2 shall be undertaken with the input of a qualified and experienced ecologist and in consultation with EPA and DPI (Fisheries) through a process of workshops and on-site ground verification. Where detailed design refinements are made, the Proponent shall prior to the commencement of construction of the relevant crossings, submit a report to the Director General identifying the final design of the fauna crossings and demonstrating consistency with the locations and minimum design parameters identified in the documents listed under condition A1(d) or where there have been changes, how the new location and/ or design would result in a better biodiversity outcome. The report shall also clearly identify how the fauna crossings structures will work in conjunction with complementary fauna exclusion fencing measures to be implemented for the project. The report must be accompanied by evidence of consultation with EPA and DPI (Fisheries) in relation to the suitability of any changes to the crossings design.	Preconstruction and construction	Contractor	Closed	Design Refinements made as a result of consultation with DPI & EPA. Report submitted and approved by DP&E in accordance with B3 30-1- 2014.
B4	The Proponent shall in consultation with EPA, ensure that the design of the project as far as feasible and reasonable, incorporates provision for glider crossings (such as widened medians and maintenance or enhancement of habitat within the medians and corresponding carriageway boundaries) where the alignment crosses areas of recognised glider habitat.	Preconstruction and construction	Contractor	Open	2 widened medians provided as part of the detailed design at Ch.72500-74000 & Ch.78900-80700. Design of specific glider crossings has been completed with 8 glider poles to be installed. EPA has been consulted regarding these crossings. The poles will be installed in the near future.
B5	The Proponent shall in consultation with DPI (Fisheries) ensure that all	Preconstruction	Contractor	Open	Waterway crossing design

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	waterway crossings are designed and constructed consistent with the principles of the *Guidelines for Controlled Activities Watercourse Crossings (DWE), Fish Note: Policy and Guidelines for Fish Friendly Waterway Crossings (NSW Fisheries) and Policy and Guidelines for Design and Construction of Bridges, Roads, Causeways, Culverts and Similar Structures (NSl4/ Fisheries)*. As far as feasible and reasonable, culvert replacements as part of the project shall incorporate naturalised bases and where multiple cell culverts are proposed for creek crossings, shall include at least one cell for fish passage, with an invert or bed level that mimics creek flows.	and construction.			refinements undertaken in consultation with DPI (Fisheries) – meetings held 8-5-2013 and 12-4-2013 to ensure design is addressing guideline requirements. Ongoing fish design issues are discussed at ERG meetings and agency site visits to finalise design and construction issues. Note - only culvert requiring fish passage is Oyster Ck. The Oyster Ck culvert has now been constructed and commissioned. Five creek realignments have also been constructed and commissioned incorporating fish passage. DPI (Fisheries) are satisfied with the outcomes.
Biodiversity – Mitigation measures – Nest Boxes					
B6	Prior to the commencement of any construction work that would result in the disturbance of any native vegetation (or as otherwise agreed to by the Director General), the Proponent shall in consultation with EPA prepare and submit for the approval of the Director General a Nest Box Plan to provide replacement hollows for displaced fauna consistent with the requirements of SoC F7. The plan shall detail the number and type of nest boxes to be installed which must be justified based on the number and type of hollows removed (based on detailed pre- construction surveys), the density of hollows in the area to be cleared and adjacent forest, and the availability of adjacent food resources. The plan shall also provide details of maintenance protocols for the nest boxes installed including responsibilities, timing and duration.	Preconstruction	Roads and Maritime	Closed	Nest Box MP approved by DP&E on 20/3/13.
Biodiversity – Mitigation measures – *Amorphospermum whitei* and *Marsdenia longiloba*					
B7	Prior to the commencement of any construction work that would result in the disturbance of *Amorphospermum whitei* and *Marsdenia longiloba*, the	Preconstruction	Roads and Maritime	Closed	Warrell Creek to Urunga Upgrade Threatened Flora Management

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	Proponent shall in consultation with the EPA develop a management plan for these species which: a investigates the potential for the translocation of plants impacted by the project; b if investigation under Condition B7(a) reveals translocation of impacted plants is feasible, includes details of a translocation plan for the plants consistent with the Australian Network for Plant Conservation 2"d Ed 2OO4: Guidelines for the Translocation of Threatened Species in Australia, including details of ongoing maintenance such as responsibilities, timing and duration; c identifies a process for incorporating appropriate compensatory habitat for the impacted plants in the Biodiversity Offset Strategy referred to in Condition B8 should the information obtained during the investigation referred to in Condition B7(a) find that translocation is not feasible or where the monitoring undertaken as part of condition B10 finds that translocation measures have not been successful (as identified through performance criteria); and d includes detail of mitigation measures to be implemented during construction to avoid and minimise impacts to areas identified to contain these species, including excluding construction plant, equipment, materials and unauthorised personnel. Unless otherwise agreed to by the Director General, the Plan shall be submitted for the Director General's approval prior to the commencement of any construction work that would result in the disturbance of *Amorphospermum whitei* and *Marsdenia longiloba*.				Plan (6-3-2013) submitted to DP&E 7-3-2013 and approved 31-5-2013. Biodiversity offset strategy (required under B8) is to address the threatened flora identified within the Threatened Flora Management Plan.
Biodiversity offsets					
B8	The Proponent shall, in consultation with the EPA and DPI (Fisheries), develop a Biodiversity Offset Strategy that identifies available options for offsetting the biodiversity impacts of the project in perpetuity, with consideration to EPA's *Principles for the Use of Biodiversity Offsets in NSW* (EPA Website, June 2011). Unless otherwise agreed to by EPA, offsets shall be provided on a like-for-like basis and at a minimum ratio of 4:1 'for areas of high conservation value (including EEC and threatened species or their habitat identified in the Environmental Assessment to be impacted by the project and poorly conserved vegetation communities	Preconstruction	Roads and Maritime	Open	Planning approved the WC2U Biodiversity Offset Strategy on the 24 November 2014.

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	identified as being more than 75% cleared in the catchment management area) and 2:1 for the remainder of native vegetation areas (including mangroves, seagrass, salt marsh and riparian vegetation). The Strategy shall include, but not necessarily be limited to: a confirmation of the vegetation communities/ habitat (in hectares) to be offset and the size of offsets required (in hectares); b details of the available offset measures that have been identified to compensate for the biodiversity impacts of the project, such as (but not necessarily limited to): suitable compensatory land options and/ or contributions towards biodiversity programs for high conservation value areas on nearby lands (including research programs). Where the use of State Forest land managed in accordance with an Integrated Forestry Operations Approval is proposed to offset biodiversity impacts, the Proponent shall clearly demonstrate how this would provide the biodiversity outcomes required under this condition including any additional offset requirements to cover residual impacts; c the decision-making framework that would be used to select the final suite of offset measures to achieve the aims and objectives of the Strategy, including the ranking of offset measures; d a process for addressing and incorporating offset measures for changes to impact (where these changes are generally consistent with the biodiversity impacts identified for the project in the documents listed under condition A1, including: i. changes to footprint due to design changes; ii. changes to predicted impacts resulting from changes to mitigation measures; iii. identification of additional species/habitat through pre-clearance surveys; and iv. additional impacts associated with ancillary facilities; and e options for the securing of biodiversity options in perpetuity. The Biodiversity Offset Strategy shall be submitted to, and approved by, the Director General prior to the commencement of any construction				

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	work that would result in the disturbance of any native vegetation, unless otherwise agreed by the Director General. Unless otherwise agreed, the Biodiversity Offset Strategy shall be submitted to the Director General for approval no later than 6 weeks prior to the commencement of any construction that would result in the disturbance of any native vegetation. The Proponent may elect to satisfy the requirements of this condition by implementing a suitable offset package which addresses impacts from multiple Pacific Highway Upgrade projects (including the Warrell Creek to Urunga Project) within the North Coast Bio-region. Any such agreement made with the EPA must be made in consultation with the Department and approved by the Director General within a timeframe agreed to by the Director General.				
B9	Within two years of the approval of the Biodiversity Offset Strategy, unless otherwise agreed by the Director General, the Proponent shall prepare and submit a **Biodiversity Offset Package** which identifies the final suite of offset measures to be implemented for the project for the approval of the Director General. The Package shall be developed in consultation with EPA, and shall provide details of: a the final suite of the biodiversity offset measures selected for the project demonstrating how it achieves the requirements and aims of the Biodiversity Offset Strategy (including specified offset ratios); b the final selected means of securing the biodiversity values of the offset package in perpetuity including ongoing management, monitoring and maintenance requirements; and c timing and responsibilities for the implementation of the provisions of the package over time. The requirements of the Package shall be implemented by the responsible parties according to the timeframes set out in the Package.	Construction	Roads and Maritime	Open	RMS is progressing the Biodiversity Offset package in accordance with the approved Biodiversity Offset Strategy
Ecological Monitoring					
B10	Prior to the commencement of any construction work that would result in the disturbance of any native vegetation, the Proponent shall develop an Ecological Monitoring Program to monitor the effectiveness of the mitigation measures implemented as part of the project. The program shall be developed in consultation with EPA and prepared by a suitably	Preconstruction and construction	Roads and Maritime.	Open	Ecological Monitoring Program approved 30-5-2013. Monitoring has been undertaken in accordance with the

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	qualified ecologist and shall include but not necessarily be limited to: a an adaptive monitoring program to assess the effectiveness of the mitigation measures identified in condition B1 to B6, B7(b), B7(d), B21(c) and B31(b)and allow amendment to the measures if necessary. The monitoring program shall nominate appropriate and justified monitoring periods and performance targets against which effectiveness will be measured. The monitoring shall include operational road kill surveys to assess the effectiveness of fauna crossing and exclusion fencing implemented as part of the project; b mechanism for developing additional monitoring protocols to assess the effectiveness of any additional mitigation measures implemented to address additional impacts in the case of design amendments or unexpected threatened species finds during construction (where these additional impacts are generally consistent with the biodiversity impacts identified for the project in the documents listed under condition A1; c monitoring shall be undertaken during construction (for construction-related impacts) and from opening of the project to traffic (for operation/ongoing impacts) until such time as the effectiveness of mitigation measures can be demonstrated to have been achieved over a minimum of five successive monitoring periods (i.e. 5 years) after opening of the project to traffic, unless otherwise agreed to by the Director General. The monitoring period may be reduced with the agreement of the Director General in consultation with EPA, depending on the outcomes of the monitoring; d provision for the assessment of the data to identify changes to habitat usage and if this can be attributed to the project; e details of contingency measures that would be implemented in the event of changes to habitat usage patterns directly attributable to the construction or operation of the project; and f provision for annual reporting of monitoring results to the Director General and EPA, or as otherwise agreed by those agencies. The Program shall be submitted for the Director General's approval prior to the commencement of any construction work that would result in the disturbance of any native vegetation. Unless otherwise agreed, the				Ecological Monitoring Program. Annual reporting to be undertaken – first report submitted to DP&E in December 2014. Next report due to be submitted to DP&E by 31-12-2015.

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	Program shall be submitted to the Director General for approval no later than 6 weeks prior to the commencement of any construction that would result in the disturbance of any native vegetation.				
Hydrology and flooding					
B11	The Proponent shall undertake further flood modelling during detailed design to ensure that the Nambucca River crossing is designed and constructed with the aim of not exceeding the afflux and other flood characteristics predicted in the Environmental Assessment and Response to Submissions.	NA	NA	NA	Requirement applicable to Stage 2.
B12	Prior to the commencement of construction within areas affected by an increased afflux from the project, the Proponent shall in consultation with the EPA, DPI (Fisheries) and Nambucca Shire Council undertake flood modelling of the Nambucca River and floodplain based on the detailed design of the project, and submit the flood modelling report for the approval of the Director General. The flood modelling shall: a assess the impacts of the project on flood behaviour (in relation to Nambucca River and floodplain; b confirm the location and size of structures for the crossing the Nambucca River and floodplain which meet the performance criteria outlined in Condition B11; c examine flood behaviours through the full range of flood events including but not limited to the 10%, 5%, 2%, 1% 0.5% and 0.2% Annual Exceedence Probability; d examine any changes in the flood behaviour under climate change conditions; and e examine any changes to existing conditions for flood timing, afflux, inundation, flood velocity, scour and siltation flood warning and flood evacuation strategies including stock.	NA	NA	NA	Requirement applicable to Stage 2.
B13	Prior to commencement of construction within areas affected by an increased afflux from the Nambucca River and Kalang River crossings, the Proponent shall submit a hydrological mitigation report for the approval of the Director General detailing all feasible and reasonable flood mitigation measures for all properties where flood impacts are predicted to increase as a result of the project. The Report shall be	Preconstruction	Roads and Maritime	Closed	Hydrological Mitigation Report approved by DP&E on 26-6-2013.

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	based on detailed floor level survey and associated assessment of potentially flood affected properties. The report shall: a identify all properties likely to have an increased flooding impact and detail the predicted increased flooding impact; b identify mitigation measures to be implemented where increased flooding is predicted to adversely affect access, property or infrastructure; c identify measures to be implemented to minimise scour and dissipate energy at locations where flood velocities are predicted to increase as a result of the project and cause localised soil erosion and/or pasture damage; d be developed in consultation with EPA, the relevant Council, NSW State Emergency Service and directly-affected property owners; and e identify operational and maintenance responsibilities for items (a) to (e) inclusive. The Proponent shall not commence construction of the project on or within areas likely to alter flood conditions until such time as works identified in the hydrological mitigation report have been completed, unless otherwise agreed by the Director General.				
B14	Based on the mitigation measures identified in condition B13, the Proponent shall prepare a final schedule of feasible and reasonable flood mitigation measures proposed at each directly affected property in consultation with the property owner. The schedule shall be provided to the relevant property owner(s) no later than two months prior to the implementation of the mitigation works, unless otherwise agreed by the Director General. A copy of each schedule of flood mitigation measures shall be provided to the relevant Council and the Department prior to the implementation / construction of the mitigation measures on the property.	Preconstruction and construction	Roads and Maritime	Closed	The B13 report recommended mitigation works that were refused by the landowner. No schedule to be submitted for Stage 1.
B15	In the event that the Proponent and the relevant property owner cannot agree on feasible and reasonable flood mitigation measures to be applied to a property within one month of the first consultation on the measures (as required under Condition B14), the Proponent shall employ a suitably qualified and experienced independent hydrological engineer (who has been approved by the Director General for the	Preconstruction and construction	Roads and Maritime	Closed	The B13 report recommended mitigation works that were refused by the landowner. No schedule to be submitted for Stage 1.

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	purposes of this condition prior to the commencement of construction) to advise and assist affected property owners in negotiating feasible and reasonable mitigation measures.				
B16	The Proponent shall provide assistance to the relevant Council's and/ or NSW State Emergency Service to prepare any new or necessary update(s) to the relevant plans and documents in relation to flooding, to reflect changes in flooding levels, flows and characteristics as a result of the project, as identified in the documents listed under condition A1 and the modelling undertaken as part of condition B12.	Preconstruction and construction	Contractor	Open	To be provided if requested.
Water Quality					
B17	The Proponent shall prepare and implement a Water Quality Monitoring Program to monitor the impacts of the project on SEPP 14 wetlands, surface water quality and groundwater resources during construction and operation. The Program shall be developed in consultation with EPA and DPI and shall include but not necessarily be limited to: a identification of surface water and groundwater quality monitoring locations which are representative of the potential extent of impacts from the project; b identification of works and activities during construction and operation of the project, including emergencies and spill events, that have the potential to impact on surface water quality and risks to oyster farming in the Nambucca, Bellinger, and Kalang rivers; c representative background monitoring of surface water and groundwater quality parameters for a minimum of six (6) months (considering seasonality) prior to the commencement of construction to establish baseline water conditions; d development and presentation of indicators or standards against which any changes to surface water quality will be assessed, having regard to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC, 2000); e contingency and ameliorative measures in the event that adverse impacts to surface water quality are identified; f a minimum monitoring period of three years following the completion of construction or until any disturbed waterways/	Preconstruction, construction and operation.	Roads and Maritime to prepare plan and implement the pre and post construction requirements. Contractor to implement requirements during construction.	Open	DP&E approval of surface and ground water monitoring programs obtained 4- 3-2013. Background water quality monitoring commenced September 2012, min 6 months background monitoring achieved following February 2013 monitoring event. The 6month Pre-Construction Monitoring reports have been submitted to the Department, EPA, DPI(Fisheries) and the Office of Water for information. Surface and ground water monitoring has been undertaken monthly during the construction phase in accordance with the approved programs. The monitoring will continue to be implemented through the construction period and continuing

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	groundwater resources are certified by an independent expert as being rehabilitated to an acceptable condition. The monitoring shall also confirm the establishment of operational water control measures (such as sedimentation basis and vegetation swales); and g reporting of the monitoring results to the Department, EPA and DPI. The Program shall be submitted to the Director General for approval six (6) months prior to the commencement of construction of the project, or as otherwise agreed by the Director General. A copy of the Program shall be submitted to EPA and DPI prior to its implementation.				3 years post construction or until effective stabilisation has been demonstrated and verified.
Heritage impacts					
B18	As part of detailed design, the Proponent shall ensure that the final design of the alignment is aligned to minimise project impacts on the Cow Creek Aboriginal Reserve (21-6-0228) as far as practicable and detail these design considerations in the Heritage Management Plan required to be prepared under condition B31(e).	Preconstruction	Contractor	Closed	The project corridor was modified during the EA to avoid the Cow Creek Reserve. By keeping the final design alignment within the approved corridor the intent of B18 will have been satisfied. The B18 design requirements have been included as Appendix A of the HMP submitted to DP&E 1-7-2013.
B19	Prior to the commencement of pre-construction and construction activities affecting the following Aboriginal sites the Proponent shall undertake the relevant salvage mitigation measures outlined in the Environmental Assessment for these sites: a Butchers Creek 1 (previously PAD 1); b Stoney Creek 1 (previously PAD 24); c Bald Hill Road 1 (previously PAD 7); d Old Coast Road Stone Artefact (previously PAD 2); e Boggy Creek Artefact 1 & resource gathering area (previously PAD 16); f Cow Creek Artefact Scatter (previously PAD 8);	Preconstruction	Roads and Maritime	Closed	This has been completed pre construction. Results of the salvage for these sites have been provided to DP&E, OEH and the registered Aboriginal stakeholders as required, in August 2012 as detailed in Warrell Creek to Urunga Pacific Highway Upgrade Archaeological Salvage Works dated 11 July 2012.

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	g Kalang Spur Artefact Scatter (previously PAD 12); h Kalang Flat 1 9(a) (previously PAD 9); i Kalang Flat 2 9(b) (previously PAD 9); j South Arm Road 1; k Tyson's Flat Ridge Artefact Scatter (previously PAD 29); l Tyson's Flat I (previously PAD 28); and m Tyson's Flat 2 (previously PAD 27). The results of the salvage program shall be provided to the Department, OEH and Aboriginal stakeholders within six months of the completion of the salvage program, unless otherwise agreed by the Director General.				
B20	Prior to the commencement of pre-construction and construction activities affecting the possible house site identified as Site 12 in Table 19-3 of the Environmental Assessment, the Proponent shall prepare an archaeological assessment in consultation with the OEH (Heritage Branch), and generally in accordance with the Departments Archaeological Assessments Guideline (1996), and submit the assessment for the Director General's approval. Any further archaeological work recommended on this site by the assessment shall be undertaken by the Proponent in consultation with the OEH (Heritage Branch) and reported to the Director General within six months of the completion of the work, unless otherwise agreed by the Director General.	Preconstruction and construction	Roads and Maritime	Closed	SKM were engaged to prepare reports titled *Warrell Creek to Urunga Pacific Highway Upgrade, Tysons Flat House Site, Urunga, NSW – Archaeological Assessment* and *Warrell Creek to Urunga Pacific Highway Upgrade, Tysons Flat House Site, Urunga, NSW – Archaeological Research Design Report*. These reports are contained in Appendix B and C of the HMP submitted to DP&E 1-7-2013. The archaeological assessment of Site 12 (possible House Site) was submitted to DP&E 23 May, 2012 and approved 7 June, 2012 subject to implementation of the measures to protect the house site from accidental damage during pre-construction and construction of the project. No changes to project boundary proposed.

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Urban design and landscaping					
B21	Prior to the commencement of construction (unless otherwise agreed to by the Director General), the Proponent shall prepare and implement an Urban Design and Landscape Plan for the project. The pan shall be prepared in consultation with the relevant Council and shall present an integrated urban design for the project. The plan shall include, but not necessarily be limited to: a a principle goal of achieving the urban design objectives outlined in Section 13.4 of Volume 1 of the Environmental Assessment; b sections and perspective sketches; c locations along the project corridor directly or indirectly impacted by the construction of the project (e.g. temporary ancillary facilities, access tracks, watercourse crossings, etc.) which are proposed to be actively rehabilitated, regenerated and/ or revegetated to promote biodiversity outcomes and visual integration. Details of species to be replanted/ revegetated shall be provided,, including their appropriateness to the area and considering existing vegetation and habitat for threatened species; d location of existing vegetation and proposed landscaping, including use of indigenous and endemic species where possible. The plan shall assess the visual screening affects of existing vegetation and the proposed landscaping at residences and businesses, which have been identified as likely to experience high visual impact as a result of the project. Where high residual impacts are identified to remain, the plan shall in consultation with affected receptors, identify opportunities for providing at-receptor landscaping to further screen views of the project. Where agreed to with the landowner, these measures shall be implemented during the construction of the project; e strategies for progressive landscaping incorporating other environmental controls such as erosion and sedimentation controls, drainage, noise mitigation; f location and design treatments for built elements including retaining walls, cuttings, bridges, and noise barriers; g location and design treatments for any associated footpaths and	Preconstruction and construction	Contractor	Open	Extension request submitted to DP&E 7-3-2013 and approved 19-3-2013. Draft UDLP submitted to DP&E with CEMP 1-7-2013. Extension requests submitted and granted by DP&E until September 2014. 100% UDLP was submitted to DP&E in September 2014 and approved on 13 February 2015. Ongoing implementation.

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	cyclist elements, and other features such as seating, lighting (in accordance with AS 4282-1997 Control of the Obtrusive Effect of Outdoor Lighting), fencing, and signs; h evidence of consultation with the community on the proposed urban design and landscape measures prior to its finalisation; and i monitoring and maintenance procedures for the built elements and landscaping (including weed control) including responsibilities, timing and duration and contingencies where landscaping measures fail. The Plan shall be submitted for the approval of the Director General prior to commencement of construction of the project. The Plan may be submitted in stages to suit the staged construction program of the project.				
Traffic and access					
B22	The Proponent shall ensure that the project is designed in consultation with DPI (Forests NSW) to ensure that access of a standard that is at least equivalent to that currently existing and which meets relevant road safety standards is maintained within the State forests to enable continued forestry operations, fire management and recreation during construction and operation.	Preconstruction and construction	Contractor	Open	General principals of DPI (Forest NSW) access requirements have been agreed with Roads and Maritime. Detailed design incorporates new state forest roads. Consultation with DPI (Forest NSW) has occurred and agreement has been reached on the required works for the state forest connector roads. Construction of these works has commenced.
B23	The Proponent shall ensure that the project is designed to incorporate appropriate signage for townships along the project alignment, in consultation with the relevant Council and businesses policy, and provide information on the range of services available within the towns including advice that the route through the towns may be taken as an alternative route to the bypass.	Construction	Roads and Maritime	Open	This signage is included in Design Lot LS1 and has been developed in consultation with Council and required businesses.
Property and landuse					
B24	The Proponent shall ensure that the project is designed to minimise land take impacts to surrounding properties (including agricultural properties) as far as feasible and reasonable, in consultation with the affected	Preconstruction	Roads and Maritime	Closed	All property purchase undertaken in accordance with Land Acquisition (Just Terms Compensation) Act 1991

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	landowners. Where the viability of existing agricultural operations are identified to be highly affected by the land requirements of the project, the Proponent shall as part of detailed design employ a suitably qualified and experienced independent agricultural specialist (that is approved by the Director General for the purpose of this condition), to assist in the following (where agreed to by the relevant landowner): a identifying alternative farming opportunities for the relevant properties including purchase of other residual land to enable existing/new agricultural activities to continue; and/or b negotiating appropriate compensation and/or arrangements for the purchase of the property under the Land Acquisition (Just Terms Compensation) Act 1991.				
Compliance tracking					
B25	The Proponent shall develop and implement a Compliance Tracking Program to track compliance with the requirements of this approval. The Program shall be submitted to the Director General for approval prior to the commencement of construction and relate to both the construction and operational phases of the project, and include, but not necessarily be limited to: a provisions for the notification of the Director General of the commencement of works prior to the commencement of construction and prior to the commencement of operation of the project (including prior to each stage, where works are being staged); b provisions for periodic review of project compliance with the requirements of this approval, Statement of Commitments and documents listed under condition A1; c provisions for periodic reporting of compliance status against the requirements of this approval, Statement of Commitments and documents listed under condition A1 to the Director General including at least one month prior to the commencement of construction and operation of the project and at other intervals during the construction and operation, as identified in the Program; d a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/ or Environmental	Preconstruction, construction and operation	Roads and Maritime to prepare and submit the Program for approval and implement the program during the operational phase. Contractor to implement the Program during construction.	Open	Compliance Tracking Program submitted to DP&E 7-3-2013 and approved 20-3-2013. Notification of commencement of works provided 18-9-2013. Preconstruction CTP submitted to DP&E 15-6-2013. Compliance status reviews have been provided to DP&E every 6 months as detailed in the reports for December 2013-April2014; May-November 2014 and this report December 2014- May2015.

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	Management Systems Auditing; e mechanisms for reporting and recording incidents and actions taken in response to those incidents; f provisions for reporting environmental incidents to the Director General during construction and operation; and g procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management.				
Community information and involvement – provision of electronic information					
B26	Prior to the commencement of construction, the Proponent shall establish and maintain a new website, or dedicated pages within an existing website, for the provision of electronic information associated with the project. The Proponent shall, subject to confidentiality, publish and maintain up-to-date information on the website or dedicated pages including, but not necessarily limited to: a information on the current implementation status of the project; b a copy of the documents referred to under condition A1 of this approval, and any documentation supporting modifications to this approval that may be granted from time to time; c a copy of this approval and any future modification to this approval; d a copy of each relevant environmental approval, licence or permit required and obtained in relation to the project; e a copy of each current strategy, plan, program or other document required under this approval; and f the outcomes of compliance tracking in accordance with the requirements of Condition B25.	Preconstruction and construction	Roads and Maritime	Open	Website functioning - http://www.rta.nsw.gov.au/roadprojects/projects/pac_hwy/port_macquarie_coffs_harbour/nambucca_hds_to_urunga/index.html There has been considerable effort to keep the website up to date. The CEMP and other required project documents have been uploaded on the website.
Complaints and enquiries procedure					
B27	Prior to the commencement of construction, the Proponent shall ensure that the following are available for community complaints and enquiries during the construction period: a a telephone number on which complaints and enquiries about b construction and operation activities may be registered;	Preconstruction and construction	Contractor	Open	Toll free number active – 1800 800 612. Written or e-mail complaints directed to: Nambucca Heads to Urunga upgrade

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	c a postal address to which written complaints and enquiries may be sent; and d an email address to which electronic complaints and enquiries may be transmitted. The telephone number, the postal address and the email address shall be published in a newspaper circulating in the local area prior to the commencement of construction and prior to the commencement of project operation. The above details shall also be provided on the website (or dedicated pages) required by this approval. The Proponent must prepare and implement a Construction Complaints Management System consistent with *AS 4269 Complaints Handling* prior to the commencement of construction activities and must maintain the System for the duration of construction activities. Information on all complaints received, including the means by which they were addressed and whether resolution was reached and whether mediation was required or used, must be maintained by the Proponent and included in a complaints register. The information contained within the System must be made available to the Director General on request.				Pacific Highway office • PO Box 546 • Grafton NSW 2460 • Email: pacific.highway@rms.nsw.gov.au Complaint handling by Lend Lease for construction is addressed in the Community Involvement Plan – submitted to DP&E with CEMP 1-7-2013
Community involvement					
B28	The Proponent shall prepare and implement a Community Communication Strategy for the project. This Strategy shall be designed to provide mechanisms to facilitate communication between the Proponent, the Contractor, the Environmental Representative, the relevant Council and the local community (broader and local stakeholders) on the construction and environmental management of the project. The Strategy shall include, but not necessarily be limited to: a identification of stakeholders to be consulted as part of the Strategy, including affected and adjoining landowners; b procedures and mechanisms for the regular distribution of information to stakeholders on the progress of the project and matters associated with environmental management; c procedures and mechanisms through which stakeholders can discuss or provide feedback to the Proponent and/or Environmental Representative in relation to the environmental management and	Preconstruction and construction	Contractor	Open	Community Involvement Plan submitted to DP&E with CEMP documentation on 1-7-2013 Approved 25-9-2013.

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	delivery of the project; d procedures and mechanisms through which the Proponent can respond to any enquires or feedback from stakeholders in relation to the environmental management and delivery of the project; and e procedures and mechanisms that would be implemented to resolve any issues/disputes that may arise between parties on the matters relating to environmental management and the delivery of the project. This may include the use of an appropriately qualified and experienced independent mediator. The Proponent shall maintain and implement the Strategy throughout construction of the project. The Strategy shall be approved by the Director General prior to the commencement of construction, or as otherwise agreed by the Director General.				
Environmental management – Environmental Representative					
B29	Prior to the commencement of construction of the project, or as otherwise agreed by the Director General, the Proponent shall nominate for the approval of the Director General a suitably qualified and experienced Environment Representative(s) that is independent of the design (including preparation of documentation referred to condition A1), and construction personnel. The Proponent shall employ the Environmental Representative(s) for the duration of construction, or as otherwise agreed by the Director General. The Environment Representative(s) shall: a be the principal point of advice in relation to the environmental performance of the project; b be consulted in responding to the community concerning the environmental performance of the project; c monitor the implementation of all environmental management plans and monitoring programs required under this approval; d monitor the outcome of all environmental management plans and advise the Proponent upon the achievement of all project environmental outcomes; e have responsibility for considering and advising the Proponent on matters specified in the conditions of this approval, and all other licences and approvals related to the environmental performance	Preconstruction and construction	Contractor	Open	David Bone – Onsite Environmental Management – approved as ER. by DP&E on 08/02/2013 Contact details - 02 4696 1066 or 0407 461 092 or david.bone@osem.com.au An Environmental Representative will be employed for the duration of construction.

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	and impacts of the project; f ensure that environmental auditing is undertaken in accordance with the requirements of condition B25 and the project Environmental Management System(s); g be given the authority to approve/ reject minor amendments to the Construction Environment Management Plan. What constitutes a "minor" amendment shall be clearly explained in the Construction Environment Management Plan required under condition B30; and h be given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur.				
Construction Environmental Management Plan					
B30	Prior to the commencement of construction, the Proponent shall prepare and (following approval) implement a Construction Environmental Management Plan for the project. The Plan shall outline the environmental management practices and procedures that are to be followed during construction, and shall be prepared in consultation with the EPA, DPI and relevant Council and include, but not necessarily be limited to: a a description of all relevant activities to be undertaken during construction of the project or stages of construction, as relevant; b statutory and other obligations that the Proponent is required to fulfil during construction including all approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies. Evidence of consultation with relevant public authorities, shall be included identifying how issues raised by these public authorities have been addressed in the plan; c a description of the roles and responsibilities for all relevant employees involved in the construction of the project including relevant training and induction provisions for ensuring that all employees, including contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval;	Preconstruction and construction	Contractor	Open	CEMP submitted to DP&E 1-7-2013, approved 25-9-2013. The CEMP was updated in July 2014. Ongoing implementation.

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	d identification of ancillary facility site locations, including an assessment against the location criteria outlined in condition C27; e an environmental risk analysis to identify the key environmental performance issues associated with the construction phase and details of how environmental performance would be monitored and managed to meet acceptable outcomes including what actions will be taken to address identified potential adverse environmental impacts (including any impacts arising from concurrent construction works with adjacent Pacific Highway Upgrade projects, as relevant). In particular, the following environmental performance issues shall be addressed in the Plan: i. measures to monitor and manage **dust emissions** including dust generated by haulage trucks, traffic on unsealed public roads and stockpile management; ii. measures to monitor and manage **waste** generated during construction including but not necessarily limited to: general procedures for waste classification, handling, reuse, and disposal; how contaminated materials would be handled and disposed; use of secondary waste material in construction wherever feasible and reasonable; procedures for dealing with green waste including timber and much from clearing activities; and measures for reducing demand on water resources (including the potential for reuse of treated water from sediment control basins); iii. measures to monitor and manage **spoil and fill** including details of how excavated material would be handled, stockpiled, reused and disposed and a stockpile management protocol detailing location criteria that would guide the placement of stockpiles and minimum management measures (including rehabilitation) that would be implemented to avoid/ minimise amenity impacts to surrounding residents and environmental risks (including to surrounding watercourses); iv. measures to monitor and manage **hazard and risks** including emergency management; and v. the issues identified in condition B31;				

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	f details of community involvement and complaints handling procedures during construction, consistent with the requirements of conditions B26 to B28; g details of compliance and incident management consistent with the requirements of condition B25; and h procedures for the periodic review and update of the Construction Environmental Management Plan as necessary (including where minor changes can be approved by the Environmental Representative). The Plan shall be submitted for the approval of the Director General no later than one month prior to the commencement of construction, or within such period otherwise agreed by the Director General. Construction works shall not commence until written approval has been received from the Director General.				
B31	As part of the Construction Environment Management Plan for the project required under condition B30 of this approval, the Proponent shall prepare and implement the following sub plan(s): a a **Construction Traffic Management Plan**, prepared in accordance with the RTA's *QA Specification G10 - Control of Traffic and Traffic Control at Work Sites Manual* (2003) to manage disruptions to highway and local traffic movements as a result of construction traffic associated with the project. The Plan shall be developed in consultation with Council and shall include, but not necessarily be limited to: i. identification of construction traffic routes and quantification of construction traffic volumes (including heavy vehicle/spoil haulage) on these routes; ii. details of vehicle movements for construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points; iii. potential impacts to traffic on the existing highway and associated local roads including intersection level of service and potential disruptions to arrangements for pedestrians, property access, public transport, parking and/ or cyclist;	Preconstruction	Contractor	Open	Required B31 plans submitted to DP&E with CEMP 1-7-2013 approved 25-9-2013. Ongoing implementation.

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	iv. details of temporary and interim traffic arrangements including intersections, property access and alternative traffic routes; v. traffic and other arrangements to minimise impacts including safe pedestrian access at all times, and the provision of alternative facilities and locations for pedestrians and/or cyclist access; vi. a response procedure for dealing with traffic incidents; and vii. mechanism for the monitoring, review and amendment of this plan; b a **Construction Flora and Fauna Management Plan** to detail how construction impacts on ecology will be minimised and managed. The Plan shall be developed in consultation with the EPA and shall include, but not necessarily be limited to: i. details of pre-construction surveys undertaken to verify the construction boundaries/ footprint of the project based on detailed design and to confirm the vegetation to be cleared as part of the project (including tree hollows, threatened flora and fauna species, mangroves and riparian vegetation). The surveys shall be undertaken by a qualified ecologist and include surveys of existing bridges and culverts for the presence of micro-bat roosting at least 6 months prior to the planned disturbance of such structures and targeted surveys for the Giant Barred Frog within and in the vicinity of the project corridor undertaken during suitable conditions; ii. updated sensitive area vegetation maps based on B31(b)(i) above and previous survey work; iii. a Giant Barred Frog management plan, in the case that this species or its habitat is identified to occur in the project corridor or its vicinity, based on surveys undertaken as part of B31(b)(i); iv. a micro-bat management strategy, in the case that micro bats or evidence of roosting are identified during pre-construction surveys. The strategy shall detail measures to avoid, minimise and mitigate impacts to these species and identified roost sites, including short and long term management measures;				

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	v. details of general work practices to minimise the potential for damage to native vegetation (particularly EECs) not proposed to be cleared as part of the project and native fauna during construction, including (but not necessary limited to): fencing of sensitive areas, a protocol for the removal and relocation of fauna during clearing, presence of an experienced ecologist to oversee clearing activities and facilitate fauna rescues and re- location, clearing timing with consideration to breeding periods, measures for maintaining existing habitat features (such as bush rock and tree branches etc), seed harvesting and appropriate topsoil management, construction worker education, weed management, erosion and sediment control and progressive re-vegetation; vi. specific procedures to deal with EEC/ threatened species anticipated to be encountered within the project corridor including re-location, translocation and/or management and protection measures; vii. a procedure for dealing with unexpected EEC/ threatened species identified during construction including stopping works and notification of EPA, determination of appropriate mitigation measures in consultation with EPA (including relevant relocation measures) and update of ecological monitoring and/ or biodiversity offset requirements consistent with conditions B8 and B10; and viii. mechanism for the monitoring, review and amendment of this plan; c a **Construction Noise and Vibration Management Plan** to detail how construction noise and vibration impacts will be minimised and managed. The Plan shall be developed in consultation with the EPA and include, but not necessarily be limited to: i. identification of nearest sensitive receptors and relevant construction noise and vibration goals applicable; ii. identification of key noise and/or vibration generating construction activities (based on representative construction scenarios) that have the potential to impact on surrounding sensitive receivers including expected noise/ vibration levels;				

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	iii. identification of all feasible and reasonable measures proposed to be implemented to minimise construction noise and vibration impacts (including construction traffic noise impacts); iv. procedure for dealing with out-of-hour works in accordance with condition C4, including procedures for notifying the Director General concerning complaints received in relation to the extended hours approved under condition C4(d); v. procedures and mitigation measures to ensure relevant vibration and blasting criteria are achieved, including a suitable blast program supported by test blast results, applicable buffer distances for vibration intensive works, use of low vibration generating equipment vibration dampeners or alternative construction methodology, and pre- and post- construction dilapidation surveys of sensitive structures where blasting and/ or vibration is likely to result in building damage; vi. procedures for notifying sensitive receivers of construction activities that are likely to affect their noise and vibration amenity, as well as procedures for dealing with and responding to noise complaints; and vii. a program for construction noise and vibration monitoring clearly indicating monitoring frequency, location, how the results of this monitoring would be recorded and, procedures to be followed where significant exceedences of relevant noise and vibration goals are detected; d a **Construction Water Quality Management Plan** to manage surface water quality and groundwater impacts during construction of the project. The Plan shall be developed in consultation with EPA, DPI (Fisheries and NOW) and include, but not necessarily be limited to: i. a contingency plan, consistent with the *Acid Sulfate Soils Manual*, to deal with the unexpected discovery of actual or potential acid sulfate soils; ii. a tannin leachate management protocol to manage the stockpiling of mulch and use of cleared vegetation and mulch filters for erosion and sediment control;				

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	iii. details of how construction activities would be managed and mitigated to minimise erosion and sedimentation consistent with condition C17; iv. where construction activities have the potential to impact on waterways or wetlands (through direct disturbance such as construction of waterway crossings or works in close proximity to waterways or wetlands), site specific mitigation measures to be implemented to minimise water quality, riparian and steam hydrology impacts as far as practicable, including measures to stabilise bank structure and rehabilitate affected riparian vegetation to existing or better condition (including relevant performance indicators and monitoring requirements). The timing of rehabilitation of the waterways shall be as agreed to with DPI (Fisheries and NOW) shall be identified in the plan; v. construction water quality monitoring requirements consistent with condition B17; and vi. a groundwater management strategy, including (but not necessarily limited to): i. description and identification of groundwater resources (including depths of the water table and groundwater quality) potentially affected by the proposal based on baseline groundwater monitoring undertaken in accordance with condition B17(c); ii. identification of surrounding licensed bores, dams or other water supplies and groundwater dependant ecosystems and potential groundwater risks associated with the construction of the project on these groundwater users and ecosystems; iii. measures to manage identified impacts on water table, flow regimes and quality and to groundwater users and ecosystems; iv. groundwater inflow control, handling, treatment and disposal methods; and v. a detailed monitoring plan to identify monitoring				

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	methods, locations, frequency, duration and analysis requirements; and e a **Construction Heritage Management Plan** to detail how construction impacts on Aboriginal and non-Aboriginal heritage will be minimised and managed. The Plan shall be developed in consultation with the OEH (Heritage Branch) (for non-Aboriginal heritage) and OEH and Registered Aboriginal Stakeholders (for Aboriginal heritage), and include, but not necessarily be limited to: ii. In relation to Aboriginal Heritage: i. details of management measures to be carried out in relation to already recorded sites and potential Aboriginal deposits (including further archaeological investigations, salvage measures and/ or measures to protect unaffected sites during construction works in the vicinity); ii. procedures for dealing with previously unidentified Aboriginal objects excluding human remains (including halting of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can re-commence by a qualified archaeologist in consultation with registered Aboriginal stakeholders, assessment of the consistency of any new Aboriginal heritage impacts against the approved impacts of the project, and registering of the new site in the OEH AHIMS register); iii. procedures for dealing with human remains (including halting of works in the vicinity and notification of the NSW Police, OEH and registered Aboriginal stakeholders and not-recommending any works in the area unless authorised by OEH and/ or the NSW Police); and iv. Aboriginal cultural heritage induction processes for construction personnel (including procedures for keeping records of inductions undertaken for the duration of the project) and procedures for ongoing Aboriginal consultation and involvement; and (iii) In relation to non-Aboriginal Heritage:				

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	i. details of management measures to be carried out in relation to already recorded sites (including further heritage investigations, archival recordings and/ or measures to protect unaffected sites during construction works in the vicinity), consistent with the measures listed in Environmental Assessment Table 19-4; ii. procedures for dealing with previously unidentified non-Aboriginal objects, (including halting of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can re-commence by a qualified archaeologist and assessment of the consistency of any new non-Aboriginal heritage impacts against the approved impacts of the project; and iii. non-Aboriginal cultural heritage induction processes for construction personnel.				
Part C – During construction					
Biodiversity					
C1	The Proponent shall employ all feasible and reasonable measures to minimise the clearing of native vegetation to the greatest extent practicable during the construction of the project.	Construction	Contractor	Open	Detailed design and construction being undertaken with consideration to minimising clearing. Clearing limits are delineated on site prior to clearing and has been minimised as much as possible.
Air quality impacts					
C2	The Proponent shall employ all feasible and reasonable measures (including temporary cessation of relevant works, as appropriate) to ensure that the project is constructed in a manner that minimises dust emissions from the site, including wind-blown, traffic-generated dust, stockpiles and material tracking from construction sites onto public roads.	Construction	Contractor	Open	Addressed in AQMP submitted to DP&E on 1-7-2013, approved 25-9-2013. Current measures implemented include water carts, sealing areas, minimising disturbed areas, ceasing works where required, use of dust suppressants, progressive stabilisation with cover crop and permanent landscaping

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
					works. Annual average dust results compliant to date.
Noise and vibration impacts – construction hours					
C3	The Proponent shall only undertake construction activities associated with the project during the following standard construction hours: a 7:00am to 6:00pm Mondays to Fridays, inclusive; and b 8:00am to 1:00pm Saturdays; and c at no time on Sundays or public holidays.	Construction	Contractor	Open	Addressed in NVMP submitted to DP&E on 1-7-2013, approved 25-9-2013. Works have been in accordance with C3 unless otherwise approved in C4 or C5.
C4	Works outside of the construction hours identified in conditions C3 may be undertaken in the following circumstances: a works that generate noise that is not audible at any sensitive receptor; b for delivery of materials required outside these hours by the Police or other authorities for safety reasons; or c where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or d construction works undertaken through sparsely populated areas in which sensitive receptors are located greater than 300 metres away from the project boundary. In this case construction is permissible during the following hours: 6.00am to 6.00pm Monday to Friday and 7.00am to 4.00pm Saturdays and at no time on Sundays or public holidays. These works hours may be reviewed and/ or revoked by the Director General in consultation with the EPA in the case of excessive or unresolved noise complaints; or e where an EPL applies to the construction of the project, construction hours which are approved in accordance with the conditions of an EPL for the project; or f where an EPL does not apply to the construction of the project, Out of Hours Works as agreed to by the Director general in accordance with condition C5.	Construction	Contractor	Open	Addressed in NVMP submitted to DP&E on 1-7-2013, approved 25-9-2013. Works have been in accordance with C3 unless otherwise approved in C4 or C5.
C5	For the purposes of condition C4 (f), certain construction activities (Out of Hours Works) may be allowed to occur outside the construction hours specified in conditions C3 with the prior written approval of the Director	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013.

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	General. Requests for out of hours approval will be considered for construction activities which cannot be undertaken during the construction hours specified in conditions C3 for technical or other justifiable reasons and will be considered on a case by case or activity-specific basis. Any request for Out of Hours Works must be accompanied by: a details of the nature and need for activities to be conducted during the varied construction hours; b written evidence to the EPA and the Director General that activities undertaken during the varied construction hours are justified, appropriate consultation with potentially affected receivers and notification of Council has been undertaken, issues raised have been addressed, and all feasible and reasonable mitigation measures have been put in place; and c evidence of consultation with the EPA on the proposed variation in standard construction hours. Despite the above, Out of Hours Works may also occur in accordance with an approved Construction Environment Management Plan or Construction Noise and Vibration Management Plan for this project, where that plan provides a process for considering the above on a case by case or activity specific basis by the Proponent, including factors a) to c) above.				EPL applicable to construction works C4 measures apply.
C6	Blasting associated with the project shall only be undertaken during the following hours a 9:00 am to 5:00 pm, Mondays to Fridays, inclusive; b 9:00 am to 1:00 pm on Saturdays; and c at no time on Sundays or public holidays. This condition does not apply in the event of a direction from police or other relevant authority for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. Blasting works have been in accordance with these times.
Noise and vibration impacts – construction noise and vibration goals					
C7	The Proponent shall implement all feasible and reasonable noise mitigation measures with the aim of achieving the construction noise management levels detailed in the *Interim Construction Noise Guideline* (DECC, 2009) during construction activities, Any activities that could	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. 94 houses requiring operational

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	exceed the construction noise management levels shall be identified and managed in accordance with the Construction Noise and Vibration Management Plan required under condition B31(c) of this approval.				noise treatment have been treated to provide a benefit with construction noise management. Refer to SoC N1. Feasible and reasonable noise mitigation measures are being implemented. Minimal noise complaints have been received to date.
C8	The Proponent shall implement all feasible and reasonable mitigation measures with the aim of achieving the following construction vibration goals and ground-borne noise levels: a for structural damage vibration, the vibration limits set out in the German Standard D/N 4150 Part 3-1999 Structural Vibration in Buildings - Effects on Structures; b for works in the vicinity of the heritage structures, the vibration limits set out in the German Standard DIN 4150-3: 1999 Structural Vibration - part 3: Effects of vibration on structures; and c for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: A Technical Guideline (DEC 2006); and d the ground-borne noise levels set out in the Interim Construction Noise Guidelines (DECC, 2009).	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. Monitored vibration levels have been in accordance with these limits.
C9	The Proponent shall ensure that airblast overpressure generated by blasting associated with the project does not exceed the criteria specified in Table 1 when measured at the most affected residence or other sensitive receiver. To ensure that criteria are satisfied at the most affected residence or other sensitive receiver, blasting trials shall be undertaken prior to the commencement of the project blasting program, with results from the trials used to determine site specific blast design to satisfy the criteria specified in Table 1. Table 1 Airblast overpressure criteria Airblast overpressure	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, 25-9-2013. Blasting has been in accordance with these limits to date at the most affected sensitive receiver.

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	(dB(Lin Peak)) 115 5% of total 120				
C10	The Proponent shall ensure that ground vibration generated by blasting associated with the project does not exceed the criteria specified in Table 2 when measured at the most affected residence or other sensitive receiver. To ensure that criteria are satisfied at the most affected residence or other sensitive receiver, blasting trials shall be undertaken prior to the commencement of the project blasting program, with results from the trials used to determine site specific blast design to satisfy the criteria specified in Table 2. Table 2 Peak particle velocity criteria Peak particle velocity (mms-1) 5 5% of total 10	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, 25-9-2013. Blasting has been in accordance with these limits to date at the most affected sensitive receiver.
C11	The blasting criteria identified in condition C9 and/ or C10 do not apply where the Proponent has a written agreement with the relevant landowner to exceed the criteria identified in condition C9 and/ or C10 and the Director General has approved the terms of the written agreement. In obtaining the Director General approval for any such agreement, the Proponent shall submit to the Director General: a details of the proposed blasting program and justification for the proposed increase to blasting criteria including alternatives considered (where relevant); b an assessment of the environmental impacts of the increased blast limits on the surrounding environment and most affected residences or other sensitive receivers including, but not limited to noise, vibration and air quality and any risk to surrounding utilities, services or other structures; c details of the blast management, mitigation and monitoring	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. Blasting has been in accordance with C9 and C10 limits to date. Resident agreements currently not required.

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	procedures to be implemented; and d details of consultation undertaken and agreement reached with the relevant landowners (including a copy of the agreement in relation to increased blasting limits). The following exclusions apply to the application of this condition: a any agreements reached may be terminated by the landowner at any time should concerns about the increased blasting limits be unresolved; b the blasting limit agreed to under any agreement can at no time exceed a maximum Peak Particle Velocity vibration level of 25 mm/s or maximum Airblast Overpressure level of 125 dBL; and c the provisions under condition C'11 (to increase applicable blast criteria in agreement with the relevant landowners) do not apply where the property is a heritage property.				
Operational noise mitigation review					
C12	Unless otherwise agreed to by the Director General, within six months of commencing construction, the Proponent shall in consultation with EPA prepare and submit for the approval of the Director General, a review of the operational noise mitigation measures proposed to be implemented for the project. The review shall: a confirm the operational noise predictions of the project based on detailed design. This operational noise assessment shall be based on an appropriately calibrated noise model (which has incorporated additional noise monitoring, where necessary for calibration purposes). The assessment shall specifically include verification of noise levels at Nambucca Heads Rest Area, based on additional noise monitoring undertaken at this location; b review the suitability of the operational noise mitigation measures identified in the documents listed under condition A1 to achieve the criteria outlined in the Environmental Criteria for Road Traffic Noise (EPA, 1999) and the Industrial Noise Policy (EPA, 2000) in relation to the Nambucca Heads Rest Area, based on the operational noise performance of the project predicted under (a) above; and c where necessary, investigate additional feasible and reasonable	Construction	Contractor	Closed	EPA comments received 27-3-2014. Extension requests submitted and granted by DP&E until September 2014. Operational Noise Management Report (ONMR) is at 100% design and was submitted to DP&E for approval in September 2014. ONMR approved by DP&E on 20 February 2015.

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	noise mitigation measures to achieve the criteria outlined in the Environmental Criteria for Road Traffic Noise (EPA, 1999) and the Industrial Noise Policy (EPA, 2000) in relation to the Nambucca Heads Rest Area including the applicability of noise walls in the vicinity of River Road in Macksville.				
Heritage impacts					
C13	This approval does not allow the Proponent to destroy, modify or otherwise physically affect human remains.	Construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. No human remains have been found on site.
C14	The Proponent shall not destroy, modify or otherwise physically affect the Aboriginal cultural sites identified in Table 15-3 of the Environmental Assessment (including AHIMS site numbers 21-6-36, 21-6-0287, 21-6-0016, 21-6-0163, 21-6-0039, 21-6-0090, 21-6-0102, 21-6-0164, 21-6-0064, and 21-6-0044), Buchanan Conflict Site at Cow Creek (21-6-00286), burial site, Aboriginal mirrah (21-3-0034) and Rosewood Scarred Tree.	Construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. No impact has occurred to these sites.
C15	The Proponent shall not destroy, modify or otherwise physically affect the following historic sites: the ferry/ punt crossing at Boulton Hill; old municipal tip; Valla Gold Mine; former stock route; tramway and quarry, Martells Road and the native swamp conservation area.	Construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. No impact has occurred to these sites.
C16	The measures to protect any Aboriginal or historic heritage sites near or adjacent to the project during construction shall be detailed in the Heritage Management Plan required under condition B31(e).	Construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013.
C16A	(a) i) Where permanent works (including utilities, services and permanent access and service roads, or similar works required for the project) located outside the approved project footprint and described in the documents listed in condition A1 are required, and those works have the potential to impact upon previously unidentified non- Aboriginal and Aboriginal archaeology, the proponent shall undertake archaeological investigations to determine the impacts of those works. ii) The proponent shall undertake the investigations required in accordance with condition C16A(a)(i) consistent with the Construction	Construction	Contractor	Open	Requirements incorporated into Appendix H of the HMP. HMP update approved 10-3-2014. Additional heritage investigations outside the project boundary have occurred in accordance with this condition and the approved HMP

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	Heritage Management Plan required under Condition B31(e), or using a methodology prepared in consultation with OEH and approved by the Director General. iii) The proponent shall report on the results of the archaeological investigations prior to commencement of permanent works, and: • where the potential heritage impacts identified in the report are less than those described in the documents listed in condition A1, the report shall be provided to the Director General; • where the potential heritage impacts identified in the report are the same as those described in the documents listed in condition A1, the report shall be prepared in consultation with OEH and submitted to the Director General; • where the potential heritage impacts identified in the report are greater than those described in the documents listed in condition A1, the report shall be prepared in consultation with OEH and submitted to the satisfaction of the Director General. v) The report on the results of the archaeological investigation is to include recommendations (such as for further archaeological work) and shall include, but not necessarily be limited to, consideration of measures to avoid or minimise disturbance to Aboriginal objects where objects of moderate to high significance are found to be present. (b) i) The proponent shall undertake salvage work with the approval of the Director General, when recommended by the results of the archaeological investigation required under condition C16A. ii) In determining whether to approve salvage work, the Director General is to have reference to the results of all relevant archaeological investigations undertaken under condition C16A(a) and the views of OEH.				Appendix H methodology. Reports detailing the archaeological investigations have been provided to DP&E as required by this condition.
Sedimentation, erosion and water					
C17	Soil and water management measures consistent with *Managing Urban Stormwater – Soils and Construction Vols 1 and 2, 4th Edition* (Landcom, 2004) and *Managing Urban Stormwater Soils And Construction Vols 2A and 2D Main Road Construction* (DECC 2008) shall be employed during the construction of the project for erosion and	Construction	Contractor	Open	Requirements incorporated into the SWMP submitted to DP&E 1-7-2013, approved 25-9-2013. The sediment basins and other ERSED controls onsite have been

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	sediment control.				designed, installed and maintained in accordance with the BlueBook. A soil conservationist is engaged to the project to provide advice and experience regarding required controls.
C18	Where available, and of appropriate chemical and biological quality, the Proponent shall use stormwater, recycled water or other water sources in preference to potable water for construction activities, including concrete mixing and dust control.	Construction	Contractor	Open	Requirements incorporated into the SWMP submitted to DP&E 1-7-2013, approved 25-9-2013. Water from the sediment basins has been used for dust suppression and irrigation as much as possible whilst complying with the EPL requirements. Reclaimed water from the Coffs Harbour Sewage Treatment Plant has also been used for dust suppression and construction works.
Property and landuse – property impacts					
C19	The Proponent shall construct the project in a manner that minimises impacts to private properties and other public or private structures (such as dams, fences, utilities, services etc) along the project corridor. In the event that construction of the project results in direct or indirect damage to any such property or structure, the Proponent shall arrange and fund repair of the damage to a standard comparable to the in existence prior to the damage.	Construction	Contractor	Open	This is being considered and implemented through the finalisation of design.
C20	The Proponent shall ensure that access to all properties is maintained during construction unless agreed with the property owner in advance and that any access physically affected by the Project is reinstated to at least an equivalent standard, in consultation with the landowner.	Construction	Contractor	Open	Requirement included in TMP submitted to DP&E 1-7-2013, approved 25-9-2013.
C21	The Proponent shall in consultation with relevant landowners construct, the project in a manner that minimises intrusion and disruption to	Construction	Contractor	Open	Requirement included in TMP submitted to DP&E 1-

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	agricultural operations/activities in surrounding properties (e.g. stock access, access to farm dams etc).				7-2013, approved 25-9-2013.
Property and landuse – forestry impacts					
C22	Where the project traverses Nambucca, Newry and Little Newry State Forests, the Proponent shall in consultation with DPI (Forestry) ensure that construction activities do not unduly disrupt existing forestry activities, access for fire fighting and recreation activities during construction.	Construction	Contractor	Open	Requirement included in TMP submitted to DP&E 1-7-2013, approved 25-9-2013.
Traffic impacts					
C23	Road dilapidation reports shall be prepared for all local roads likely to be used by construction traffic prior to use by construction heavy vehicles. A copy of the relevant report shall be provided to the relevant Council. Any damage resulting from the construction of the project, aside from that resulting from normal wear and tear, shall be repaired at the cost of the Proponent. The roads likely to be used by heavy construction vehicles should be identified in the Traffic Management Plan required under condition B31(a).	Preconstruction and construction	Contractor	Open	Requirements incorporated into the TMP submitted to DP&E 1-7-2013, approved 25-9-2013. The road dilapidation surveys have been completed and the reports provided to Roads and Maritime Services, Nambucca Shire Council and Bellingen Shire Council.
Waste management					
C24	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.	Construction	Contractor	Open	Requirements incorporated into the WEMP submitted to DP&E 1-7-2013, approved 25-9-2013. No waste generated offsite is being brought on to the project unless it is in accordance with EPA's resource recovery waste exemptions.
C25	The Proponent shall maximise the reuse and/or recycling of waste materials generated on site as far as practicable, to minimise the need for treatment or disposal of those materials off site.	Construction	Contractor	Open	Requirements incorporated into the WEMP submitted to DP&E 1-7-2013, approved 25-9-2013. Recycling bins are provided onsite and in the office to reduce waste requiring disposal. Reuse onsite is maximised. Site surplus materials (fill, mulch) are being reused offsite

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					in accordance with EPA's resource recovery waste exemptions.
C26	The Proponent shall ensure that all liquid and/or non-liquid waste generated on the site is assessed and classified in accordance with *Waste Classification Guidelines* (DECC, 2008), or any future guideline that may supersede that document and where removed from the site is only directed to a waste management facility lawfully permitted to accept the materials.	Construction	Contractor	Open	Requirements incorporated into the WEMP submitted to DP&E 1-7-2013, approved 25-9-2013. All wastes are being classified and recorded in accordance with EPA's guidelines.
Ancillary facilities					
C27	Unless otherwise approved by the Director General in accordance with this condition, the sites for ancillary facilities associated with the construction of the project shall: a be located more than 50 metres from a waterway; b have ready access to the road network or direct access to the construction corridor; c be located in areas of low ecological significance and require minimal clearing of native vegetation (not beyond that already required by the project); d be located on relatively level land; e be separated from the nearest residences by at least 200 metres (or at least 300 metres for a temporary batching plant); f be above the 20 ARI flood level unless a contingency plan to manage flooding is prepared and implemented; g not unreasonably affect the land use of adjacent properties; h provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours; and i be located in areas of low heritage conservation significance (including identified Aboriginal cultural value) and not impact on heritage sites beyond those already impacted by the project. Ancillary sites identified that do not meet the above criteria shall be assessed against this criteria to demonstrate how any impacts can be	Preconstruction and construction	Contractor. Roads and Maritime to submit documentation for approval.	Open	Addressed in CEMP and associated Appendices. Ongoing Environmental Assessment / consistency review will be required to assess areas as they are nominated. Approvals have been obtained from DP&E where required by this condition (eg. Sites 12A, 12B, 4, 9, 16, 14C).

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	mitigated and managed to acceptable standards (including demonstrating consistency with project impacts identified in the documents listed under condition 41, to the satisfaction of the Director General. Such assessment(s) can be submitted separately or as part of the Construction Environmental Management Plan required under condition B30.				
C27A	(a) The Proponent may undertake archaeological investigations at ancillary sites that do not meet the criterion set out in condition C27(i) of this approval, where this is required to assess the potential non-Aboriginal and Aboriginal archaeological impacts of the ancillary facility on previously unidentified heritage sites. (b) Any archaeological investigations undertaken under this condition must be undertaken consistent with the Construction Heritage Management Plan required under Condition B31(e) or a methodology prepared in consultation with OEH and approved by the Director General. (c) The results of any relevant archaeological investigations undertaken under this condition must be described in the assessment of the ancillary facility required under Condition C27.	Construction	Contractor	Open	Requirements incorporated into Appendix H of the HMP. HMP update approved 10-3-2014. Additional heritage investigations outside the project boundary have occurred in accordance with this condition and the approved HMP Appendix H methodology. Reports detailing the archaeological investigations have been provided to DP&E as required by this condition.
C28	The Director General's approval is not required for minor ancillary facilities (e.g. lunch sheds, office sheds, and portable toilet facilities) that do not comply with the criteria set out in condition C27 of this approval and which: (a) are located within an active construction zone within the approved project footprint; and (b) have been assessed by the Environmental Representative to have: (i) minimal amenity impacts to surrounding residences, with consideration to matters such as noise and vibration impacts, traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and (ii) minimal environmental impact in respect to waste management, and no impacts on flora and fauna, soil and water, and heritage beyond those approved for the project; and (c) have environmental and amenity impacts that can be managed through the implementation of environmental measures detailed in a Construction Environment Management Plan for the project.	Preconstruction and construction	Contractor. Roads and Maritime to submit documentation for approval.	Open	Addressed in CEMP and associated Appendices. The Environmental Representative assesses and approves all minor ancillary facility works in accordance with the condition.

CoA No.	Requirement	Timing	Responsibility	Status	Reference / Comment
Part D – Prior to Operations					
Operational Environment Management System					
D1	Prior to the commencement of operation, the Proponent shall incorporate the project into its existing environmental management system.	Construction	Roads and Maritime	Open	NA at this stage.
Part E – During Operations					
Operational noise					
E1	Within 12 months of the commencement of operation of the project, or as otherwise agreed by the Director General, the Proponent shall undertake operational noise monitoring to compare actual noise performance of the project against noise performance predicted in the review of noise mitigation measures required by condition C12 and prepare an Operational Noise Report to document this monitoring. The Report shall include, but not necessarily be limited to: a noise monitoring to assess compliance with the operational noise levels predicted in the review of operational noise mitigation measures required under condition C12 and documents specified under condition A1 of this approval; b a review of the operational noise levels in terms of criteria and noise goals established in the Environmental Criteria for Road Traffic Noise (EPA, 1999); c methodology, location and frequency of noise monitoring undertaken, including monitoring sites at which project noise levels are ascertained, with specific reference to locations indicative of impacts on sensitive receivers; d details of any complaints and enquiries received in relation to operational noise generated by the project between the date of commencement of operation and the date the report was prepared; e any required recalibrations of the noise model taking into consideration factors such as actual traffic numbers and proportions; f an assessment of the performance and effectiveness of applied noise mitigation measures together with a review and if necessary,	Operation	Roads and Maritime	Open	NA at this stage.

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	reassessment of all feasible and reasonable mitigation measures; and g identification of any additional feasible and reasonable measures to those identified in the review of noise mitigation measures required by condition C12, that would be implemented with the objective of meeting the criteria outlined in the *Environmental Criteria for Road Traffic Noise* (EPA, 1999), when these measures would be implemented and how their effectiveness would be measured and reported to the Director General and the EPA. The Proponent shall provide the Director General and the EPA with a copy of the Operational Noise Report within 60 days of completing the operational noise monitoring referred to a) above and no later than 12 months after the date of the commencement of operation, or as otherwise agreed by the Director General.				

Table 2 Revised statement of commitments (November 2010)

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	Environmental management				
M1	The head contractor for the project will have an environmental management system.	Preconstruction	Contractor	Open	Refer to CoA B30 and B31 for status update.
M2	Suitably qualified and experienced personnel will develop and implement project specific environmental management plans and procedures, incorporating as a minimum the mitigation and management measures in the environmental assessment.	Preconstruction and construction	Contractor	Open	Refer to CoA B30 and B31 for status update.
M3	RTA and the contractor will implement a performance and compliance program.	Preconstruction and construction	Contractor	Open	Refer to CoA B25 for status update
	Community consultation				
CC1	Keeping the community informed will include: • regular project updates. • prior notice of project activities. • changes to traffic and access and works outside standard working hours. • contact details for enquiries. Targeted consultation with affected individuals or groups will occur as necessary (e.g. waterway users, farmers, noise affected residents, etc.).	Preconstruction and construction	Contractor	Open	Requirements incorporated into the CIP submitted to DP&E 1-7-2013, approved 25-9-2013.
CC2	Complaint management will include: • A published 24 hour toll free complaints number. • Directions on how to register a complaint. • Acknowledgment of complaints within eight working hours. • Complaint recording. • Tracking of complaints until resolution.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the CIP submitted to DP&E 1-7-2013, approved 25-9-2013.
	Traffic and transport				
T1	Construction vehicle movements and work programs will incorporate traffic control measures to minimise traffic and transport impacts on local roads and the existing Pacific Highway.	Preconstruction and Construction	Contractor	Open	Requirements incorporated into the TMP submitted to DP&E 1-7-2013, approved 25-9-2013.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
T2	Any use of non-arterial roads by construction traffic will require the preparation of pre-construction and post construction dilapidation reports, with copies to go to the relevant roads authority. Repair of any damage resulting from construction (normal wear and tear), will occur, unless there are alternative arrangements with the relevant roads authority.	Preconstruction and construction	Contractor	Open	Refer to CoA C23 for status update.
T3	Construction vehicle movement arrangements will limit impacts on other road users (including pedestrians, vehicles, cyclists and disabled persons), having regard to other road works in the area, local traffic movement requirements, and peak traffic volumes, including those during long weekends and holiday periods.	Construction	Contractor	Open	Requirements incorporated into the TMP submitted to DP&E 1-7-2013, approved 25-9-2013.
T4	Where the Proposal temporarily or permanently affects any legal property access, the provision of feasible and reasonable alternative access to an equivalent standard will be necessary, unless a property owner agrees to alternative arrangements.	Preconstruction and construction	Contractor. Roads and Maritime will consult with property owners to determine the locations and arrangements for Property Works and Local Road Works.	Open	Requirements incorporated into the TMP submitted to DP&E 1-7-2013, approved 25-9-2013. Also refer to CoA C20.
T5	Construction vehicle movements and work programs will incorporate traffic control measures to maintain access to state forests.	Construction	Contractor	Open	Requirements incorporated into the TMP submitted to DP&E 1-7-2013, approved 25-9-2013.
	Noise and vibration				
N1	Further investigation of all feasible and reasonable mitigation and management measures to minimise construction noise at sensitive receivers will occur as part of detailed design (including consideration of early implementation of operational noise mitigation measures). Noise and vibration monitoring will measure against predicted levels and assess effectiveness. Implementation of further feasible and reasonable mitigation measures will occur where necessary.	Preconstruction and construction	Contractor. Roads and Maritime will undertake at residence noise mitigation treatments.	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. Roads and Maritime have completed the at residence noise treatments for those residents that have agreed to have the houses treated. Some Utility upgrades required for air conditioning units to be operational, these upgrades have commenced.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
N2	Consultation with affected education institutions during construction works in their vicinity will attempt to limit audible construction works during important events, such as examination periods.	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. There are no educational institutions in the immediate vicinity of the NH2U construction works.
N3	Best practice mitigation and management measures will be used to minimise construction noise and vibration at sensitive receivers.	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. This is addressed in MCoAs C3 to C11 in regards to construction noise.
N4	Construction would normally be limited to the following hours: • Between 6am and 6pm Monday to Friday. • Between 7am and 4pm Saturday. There would be no works outside these hours or on Sundays or public holidays except: a) Works that do not cause construction noise to be audible at any sensitive receivers. b) For the delivery of materials required outside these hours by the Police or other authorities for safety reasons. c) Where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm. d) Any other work as agreed through negotiations between the RTA and potentially affected sensitive receivers. Any such agreement must be recorded in writing and a copy kept on site for the duration of the works. e) Where the work is identified in the CNVMP and approved as part of the Construction Environmental Management Plan. f) As agreed by Department of Planning and or Department of Environment, Climate Change and Water in an EPL for the construction of the Proposal Local residents and the Department of Environment, Climate Change and Water must be informed of the timing and duration of work approved under items (d) and (e) at least 48 hours before that work commences.	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. Refer to CoA C3 & C4 for status update.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
N5	All reasonable attempts will be made to contact sensitive receivers located within 500 metres of a blast location. The contact will be at least 48 hours before a blast and will include a schedule of blast time(s), and a telephone contact name and number.	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. This has been implemented for all blasts to date.
N6	Where complaints relating to noise or vibration impacts as a result of extended workings cannot be satisfactorily resolved with the affected residents then works hours will revert back to standard working hours at that particular location for that particular activity. Resident(s) will be consulted before recommencing any works outside standard working hours. Any complaints received in relation to working hours will be made available to DoP and DECCW.	Construction	Contractor	Open	Requirements incorporated into the NVMP submitted to DP&E 1-7-2013, approved 25-9-2013. Only one complaint has been received to date for out of hours works. This complaint was resolved immediately.
N7	Confirmation of all feasible and reasonable mitigation and management measures to minimise operational noise at sensitive receivers will occur as part of detailed design. Implementation of the measures would occur as construction proceeds.	Preconstruction and construction	Contractor. Roads and Maritime will undertake at residence noise mitigation treatments.	Open	Roads and Maritime included extensive requirements in regards to operational noise in the Deed, including operational noise requirements under SWTC App 4.24 and an Operational Noise Report under SWTC App 4.25. Refer CoA E1 and CoA C12.
N8	Monitoring of operational noise will be undertaken within one year after completion of construction. If monitoring indicates a clear trend that traffic noise levels exceed those predicted, investigation of all further feasible and reasonable management measures will occur. Consultation with a suitably qualified and experienced acoustic specialist and the affected property owner will be necessary during the development of any additional mitigation measures.	Operation	Roads and Maritime	Open	Refer CoA E1.
	Flora and Fauna				
F1	Clearing of native vegetation (including endangered ecological communities (EECs)) will be restricted to the minimum area necessary for construction.	Preconstruction and construction	Contractor	Open	This forms an important part of the project and is an EA/ SWTC requirement. Proposed design refinements consider this issue. Refer to CoA C1. Any increased clearing will be

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
					addressed in the biodiversity offsets strategy/ package.
F2	A qualified ecologist will identify any vegetation (including *Marsdenia longiloba*) to be retained and to be clearly delineated on work plans within the construction corridor. Erection of flagging/fencing on-site prior to any construction works, which is to remain in place for the full construction period, will clearly delineate this vegetation.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the FFMP submitted to DP&E 1-7-2013, approved 25-9-2013. A qualified ecologist has been engaged and has completed this requirement.
F3	A threatened flora survey will be undertaken prior to clearing to identify individuals to be translocated and to confirm the extent of clearing. Erection of exclusion fencing to prevent any further encroachment into Newry State Forest to the east of the construction footprint. Threatened species directly impacted by the Proposal will be translocated to a suitable location outside the impact zone. A further visual inspection will be conducted post clearance to identify threatened species which may be indirectly impacted outside the cleared zone. Landscape planting to commence along the road boundary as soon as possible during construction.	Preconstruction and construction	Contractor. Roads and Maritime will develop a management plan for threatened flora to be implemented by the Contractor.	Open	Threatened Flora Management Plan approved by DP&E 31-5-2013, approved 25-9-2013. Plan has been implemented through preconstruction and construction phases. Pre-clearing surveys have been undertaken by a qualified ecologist. Exclusion fencing has been erected prior to clearing along the approved clearing limits. Threatened species translocations have been undertaken by the ecologist prior to or during clearing. These plants have been translocated to a suitable location outside the impact zone. Landscape planting will occur was works progress.
F4	Plantings of rusty plum (*Amorphospermum whitei*) in areas of suitable habitat adjacent to the Proposal will follow from seed collection and propagation.	Preconstruction and construction	Contractor	Open	Threatened Flora Management Plan approved by DP&E 31-5-2013, approved 25-9-2013. Plan has been implemented through preconstruction and construction phases. The ecologist has completed this work.
F5	Site induction of construction workers will inform and instruct them of vegetation to be retained and on the identification of threatened species	Preconstruction and construction	Contractor	Open	Induction is being performed by Lend Lease and incorporates this requirement.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
F6	A suitably qualified ecologist will undertake pre-clearance surveys for threatened species including frogs. Searches will include nests and hollow bearing trees. Re-location of fauna species at risk of injury found in pre-clearance surveys or during construction will be in suitable habitat as close as possible to the area in which they were found. Immediately prior to clearing an inspection will confirm that the sites subject to pre-clearance surveys remain free of fauna.	Construction	Contractor	Open	Requirements incorporated into the FFMP submitted to DP&E 1-7-2013, approved 25-9-2013. A qualified ecologist has been engaged and has completed this requirement.
F7	Where feasible and reasonable the identification and distribution of natural and artificial habitat features and resources (such as hollow-bearing trees, hollow logs, nest boxes and bush rocks) will occur along the Proposal. This relocation will limit injury to fauna and damage to existing vegetation. A nest box plan will be developed for the Proposal.	Preconstruction and construction.	Contractor. Roads and Maritime will develop a Nest Box Plan to be implemented by the contractor.	Open	Nest Box Plan of Management approved by DP&E 20-3-2013. Plan has been implemented through preconstruction and construction phases. Additional natural and artificial habitat features and resources have been installed outside the clearing limits as per the ecologist's advice.
F8	Retention of mature trees in the median at locations identified in the environmental assessment will provide a stepping stone for gliders. Protection of these trees will occur (F2), and lopping and pruning is not to occur without expert advice.	Preconstruction and construction	Contractor	Open	Refer to CoA B4.
F9	Provision of fauna crossings will be as identified in the environmental assessment. All fauna crossings will be confirmed with the DECCW and I&I (Fisheries) during the detailed design phase.	Preconstruction and construction	Contractor	Open	Refer to CoA B1, B2 and B3.
F10	Design and construction of waterway crossings will be in accordance with the fish habitat classification of each waterway and in consultation with the Department of Industry and Investment. All fauna crossings will be confirmed with the DECCW and I&I (Fisheries) during the detailed design phase.	Preconstruction and construction	Contractor	Open	Refer to CoA B5.
F11	Erection of fauna exclusion fencing (e.g. floppy-top fencing) along the Proposal at appropriate locations will direct fauna movement towards fauna-crossing structures.	Preconstruction and construction	Contractor.	Open	Refer to CoA B1, B2 and B3. This matter has been progressed in consultation with EPA Biodiversity Specialist to determine most appropriate locations for fauna fence. Fauna fence design is at IFC and includes floppy-top fencing.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
F12	Development of an offset strategy will occur in consultation with the Department of Environment, Climate Change and Water.	Preconstruction and construction	Roads and Maritime	Open	Draft Biodiversity Offset Strategy submitted to DP&E 1-7-2013. Final submitted 1-4-2014.
F13	A targeted, adaptive monitoring program will be undertaken for a minimum of 12 months to assess the effectiveness of fauna and flora impact mitigation measures. After 12 months a report will be completed to assess the need for additional measures and/or further targeted monitoring.	Operation	Roads and Maritime	Open	Not applicable at this time.
F14	The RTA will set bed levels for culverts and ledges for combined fauna passage in consultation with the Department of Environment, Climate Change and Water.	Preconstruction and construction	Contractor	Open	Fauna passage has been progressed in detailed design in consultation with EPA Biodiversity Specialist. These culvert structures have been installed.
	Aboriginal heritage				
AH1	The protection of items and areas of archaeological significance not directly affected by construction will occur.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. These sites are identified on the SAPs and are delineated prior to commencing works in that area. This has been implemented to date.
AH2	There will be protocols will be established and implemented to manage any previously unidentified Aboriginal objects or skeletal remains encountered during construction. All works in the vicinity of the find will cease to obtain Aboriginal heritage specialist advice and inform the Department of Environment, Climate Change and Water.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. The Unexpected Archaeological Finds Procedure has been and will continue to be implemented for the project.
AH3	The management of any Aboriginal heritage items directly affected will be in consultation with Aboriginal stakeholders and the Department of Environment, Climate Change and Water.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. An Aboriginal Focus Group has been established for the project and meets as required. EPA are invited to these meetings.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
AH4	All construction personnel will receive training on their obligations for protection of Aboriginal cultural materials, including information on site locations, conservation management and legal obligations in regard to Aboriginal cultural materials.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. The induction provides training on protection of heritage items. Cultural awareness training was completed in July 2014 for key construction staff, performed by the Registered Aboriginal Parties and the project archaeologist.
AH5	The RTA will comply with the NSW Government's *Aboriginal Participation in Construction Guidelines*.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. Lend Lease have developed an Aboriginal Participation Plan for the project. The Aboriginal Focus Group has been consulted on the plan and are very supportive of the plan. A number of Aboriginal trainees have been employed onsite.
	Non-Aboriginal heritage				
NH1	The detailed design will minimise impacts to identified non-Aboriginal heritage items where feasible and reasonable.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. South-Arm Road and Kalang River Farmhouse are the 2 non-Aboriginal heritage items approved to be impacted.
NH2	If any material of potential archaeological significance is unearthed, work will cease to obtain specialist heritage advice.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. The Unexpected Archaeological Finds Procedure has been and will continue to be implemented for the project.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
NH3	Preparation of archival and photographic records for impacted heritage items would be in accordance with relevant guidelines.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the HMP submitted to DP&E 1-7-2013, approved 25-9-2013. An archival record of the Kalang River Farmhouse was completed on 2-8-2013 by a historical archaeologist. The report was submitted to Roads and Maritime, Urunga Library, Urunga Museum, Heritage Branch (OEH) on 13-9-2013.
	Water quality and hydrology				
W1	Minimisation of the area of soil exposure during construction.	Construction	Contractor	Open	Requirement incorporated into SWMP submitted to DP&E 1-7-2013, approved 25-9-2013. This has been achieved by staging clearing and undertaking progressive revegetation works.
W2	Detailed design will further investigate any additional feasible and reasonable mitigation and management measures to minimise construction erosion and sedimentation.	Preconstruction and construction	Contractor	Open	Sediment basin design and the effective design of drains to minimise scouring risk undertaken through design and SWTC requirements.
W3	Monitoring of groundwater impacts and surface water quality upstream and downstream of the site during construction will determine the effectiveness of mitigation strategies. Implementation of additional feasible and reasonable management measures will occur if necessary.	Preconstruction and construction	Roads and Maritime will prepare the monitoring program and implement the pre and post construction requirements. Contractor to implement construction monitoring requirements.	Open	Groundwater and surface water monitoring programs approved by DP&E 4-3-2013.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
W4	Development and implementation of specific construction measures for in-stream works to limit water quality impacts will occur in consultation with relevant government agencies.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the SWMP submitted to DP&E 1-7-2013, approved 25-9-2013. Agency stakeholders have been consulted during the ERG's on the development of detailed design and construction for the waterway realignments.
W5	Managing operational water quality will occur by applying RTA's *Code of Practice for Water Management – Road Development and Management (1999)*.	Preconstruction, construction and operation	Contractor. Roads and Maritime will manage operational water quality during the operational phase.	Open	Requirements incorporated into the SWMP submitted to DP&E 1-7-2013, approved 25-9-2013.
W6	Investigation of the potential for changes in the groundwater table will take place before starting any major earthworks. Where a potential for change is identified, the significance of the change and any resultant impacts will be determined and measures to manage the changes will be designed and implemented as necessary.	Preconstruction and construction	Roads and Maritime will prepare the monitoring program and implement the pre and post construction requirements. Contractor to implement construction monitoring requirements.	Open	Groundwater monitoring program approved by DP&E 4-3-2013. Background monitoring of water quality and levels commenced September 2012.
W7	Baseline monitoring of groundwater levels and chemical levels at cutting sites near springs, creeks or endangered ecological communities prior to construction commencing.	Preconstruction and construction	Contractor. Roads and Maritime will undertake baseline monitoring up to the date of the Deed.	Open	Groundwater monitoring program approved by DP&E 4-3-2013. Background monitoring of water quality and levels commenced September 2012.
	Soils and fill				

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
S1	Identification and management of Acid Sulphate Soils will be in accordance with the *Guidelines for the Management of Acid Sulphate materials: Acid Sulphate Soils, Acid Sulphate Rock and Monosulphidic*	Preconstruction and construction	Contractor	Open	Requirements incorporated into the SWMP submitted to DP&E 1-7-2013, approved 25-9-2013.
	Black Ooze (RTA 2005).				
S2	There will be identification, investigation and appropriate management of areas of potential soil contamination (including works in the vicinity of the old municipal tip site in Nambucca State Forest).	Preconstruction and construction	Contractor	Open	Requirements incorporated into the SWMP submitted to DP&E 1-7-2013, approved 25-9-2013. Additional investigations into potential soil contamination have occurred. Three contaminated sites have been identified on the NH2U section. These include a natural arsenic site, a cattle dip site and a pesticide contaminated area. These sites have now been remediated in accordance with advice from a contamination consultant and EPA.
	Air quality				
AQ1	To minimise windblown, traffic generated or equipment generated dust emissions, there will be feasible and reasonable mitigation and management measures.	Construction	Contractor	Open	Requirements incorporated into the AQMP submitted to DP&E 1-7-2013, approved 25-9-2013. Refer to CoA C2.
AQ2	Dust generating activities will stop where visible dust is being emitted outside the construction corridor and dust suppression measures are ineffective.	Construction	Contractor	Open	Requirements incorporated into the AQMP submitted to DP&E 1-7-2013, approved 25-9-2013. Refer to CoA C2.
	Greenhouse gases and energy				
G1	Wherever feasible and reasonable detailed design will consider whole of life reductions in greenhouse gas emissions and energy consumption.	Preconstruction	Contractor	Open	Requirements incorporated into the WEMP submitted to DP&E 1-7-2013, approved 25-9-2013 and considered in detailed design.
G2	Energy efficient work practices will be adopted to limit energy use. Where reasonable and feasible, equipment and management measures will be adopted to minimise energy use and greenhouse gas production.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the WEMP submitted to DP&E 1-7-2013, approved 25-9-2013.

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
	Visual amenity and design				
UD1	The preparation of detailed urban and landscape design will be in consultation with Nambucca and Bellingen Shire councils and the community. The detailed design and implementation of built elements and landscapes and the mitigation of residual impacts will be in accordance with the visual and urban design objectives and principles of the Proposal.	Preconstruction	Contractor	Open	Refer to CoA B21
UD2	The species to be used in the landscaping treatments will include native and locally indigenous plants.	Preconstruction and construction	Contractor	Open	Included in SWTC App 15, R176, R178 and R179 in regards to urban design and landscape treatments. Refer to CoA B21.
UD3	Landscape and rehabilitation works will be subject to monitoring and maintenance where necessary for a minimum of two years after construction.	Operation	Contractor.	Open	Included in Section 8 of R178 and section 4 of R179 in regards to urban design and landscape treatments. Deed schedule 1 item 8 requires 36 month landscape maintenance period.
	Hazards and risks				
HR1	Hazardous materials used during construction will be stored in bunded areas within construction sites. Hazardous materials will not be stored on the floodplain below the 20 year ARI flood level. Use of hazardous materials in floodplain areas will be limited to a daily or weekly threshold. Containers, workshops, plant, material stores and storage tanks will not be sited on the floodplain of watercourses where avoidable.	Construction	Contractor	Open	Requirements incorporated into the SWMP submitted to DP&E 1-7-2013, approved 25-9-2013. Storage of hazardous materials are above the 20 yr ARI.
HR2	Potentially hazardous and contaminating activities (such as washing construction plant and handling hazardous chemicals) and activities with the potential for spillage such as refuelling, maintenance of equipment, mixing of cutting oil and bitumen will be in bunded areas or in other areas where suitable containment measures are in place to prevent discharge into watercourses.	Construction	Contractor	Open	Requirements incorporated into the SWMP submitted to DP&E 1-7-2013, approved 25-9-2013. Controls are put in place to prevent discharge of chemicals to watercourses. No major spills have occurred to date.
	Waste and resource management				

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
WR1	The waste minimisation hierarchy principles of avoid / reduce / re-use / recycle / dispose will apply to all aspects of the Proposal, including work programs, purchase strategies and site inductions. Quarterly assessments will identify opportunities for improvement.	Construction	Contractor	Open	Requirements incorporated into the WEMP submitted to DP&E 1-7-2013, approved 25-9-2013.
WR2	Where reuse or recycling of water is not possible, it will be sent to an appropriately licensed facility.	Construction	Contractor	Open	Requirements incorporated into the WEMP submitted to DP&E 1-7-2013, approved 25-9-2013. Licenced Landfills and Sewage Treatment Plants are being used.
	Landuse and property				
P1	Negotiation of all property acquisitions will be in accordance with the RTA *Land Acquisition Policy Statement*. Compensation assessment will be in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*.	Preconstruction	Roads and Maritime	Open	All property purchase undertaken in accordance with. Land Acquisition (Just Terms Compensation) Act 1991. Refer to CoA B24
P2	The Department of Industry and Investment will have access to state forest land identified for acquisition by RTA to remove any harvestable timber within the footprint of the Proposal prior to commencement of construction. Access to state forest land adjacent to the Proposal will provide for forestry operations, fire management activities and recreation purposes.	Preconstruction	Roads and Maritime	Closed	Requirement included within State Forest Deed of Agreement as part of land purchase. Forests NSW have had access to the project corridor in the pre-construction phase. Lend Lease have also negotiated with Forest NSW to identify any harvestable timber they would like immediately prior to clearing the forest. Timber has been provided to Forest NSW and RMS for reuse. Clearing operations are predominately complete.
P3	Where the Proposal adversely affects a licensed bore, dam or other property water supply, RTA will investigate an alternate source or negotiate compensation for the loss with the landowner.	Preconstruction and construction	Contractor	Open	Groundwater monitoring program approved by DP&E 4-3-2013. Program did not identify any licensed bores that would be adversely affected. Consultation with landowners has occurred where dams may be

SoC No.	Requirement	Timing	Responsibility	Status	Reference / Comment
					impacted.
	Socio economic impacts				
S1	There will be ongoing consultation with affected businesses, agricultural and aquaculture landowners.	Preconstruction and construction	Contractor	Open	Requirements incorporated into the CIP submitted to DP&E 1-7-2013, approved 25-9-2013.
S2	The identification of utilities and services potentially affected by construction, including requirements for diversion, protection and / or support will occur prior to the start of construction. Consultation with the service providers will determine alterations to services, the limitation of disruptions and requirements for advice to customers.	Preconstruction and construction	Roads and Maritime for some pre construction activities and Contractor for construction.	Open	Utility relocations ongoing in consultation with the relevant service provider.
S3	Sites chosen for ancillary facilities will satisfy criteria outlined in Chapter 7 of the EA. Occupation and use of compound and work sites will seek to minimise disturbance to adjacent residents.	Preconstruction and construction	Contractor	Open	Included in CEMP and SWMP. Further EA/ Consistency required as sites are proposed by the Contractor/ where required. Refer to CoA 27 and 28.
S4	Fencing will be erected around construction activities to prevent livestock from adjacent properties entering construction areas. Inclusion of water quality protection measures during the installation of in-stream structures to protect aquaculture.	Preconstruction and construction	Contractor	Open	Fencing works ongoing and being completed in accordance with SWTC Appendix 3 and the property owners. Aquatic fauna relocated or protected as per ecologist advice.

Appendix B

Environmental Monitoring Results

NH2U - Noise Monitoring Summary December 2014 to May 2015

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
Dec-14										
CP_1 (1A)	70 Foxes Rd (2)	12-Dec-14	8.00am	Earthworks	45	44	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_2 (2A)	47 Boggy Creek Rd (7)	12-Dec-14	9.41am	Earthworks	48	59	57.2	Y	Construction noise barely audible. Excavator in operation on batter(Peak 53dB). Background noise dominated by wind and non project related traffic on Foxes Road.	Construction noise above noise goal but below predicted noise level.
CP_3 (2)	21 Auld Cl (3)	12-Dec-14	10.01am	Earthworks	57	60	60.2	Y	Construction noise audible. Grader operating south of Valla Rd (Peak 55dB). Background noise dominated by non project related traffic on Valla Road and Pacific Highway.	Measured construction noise below noise goal and below predicted noise level.
CP_4 (3)	19 Valla Rd	12-Dec-14	10.35am	Earthworks	57	65	57.7	Y	Construction inaudible - limited works in progress at time of monitoring.	Construction noise inaudible.
CP_5 (5)	7119B Pacific Hwy (42)	12-Dec-14	11.33am	Earthworks	55	53	-	Y	Construction inaudible. Constant highway traffic noise.	Construction noise inaudible.
CP_6 (6A)	7 Valla Beach Rd (97)	12-Dec-14	12.20pm	Earthworks	55	43	-	Y	Construction inaudible. Constant highway traffic noise.	Construction noise inaudible.
CP_7 (7)	6 East West Rd	12-Dec-14	1.35pm	Earthworks	57	64	62.3	Y	Construction audible, drill rig 59 - 62dB, Excavator loading 51 -59dB. Background noise dominated by wind and local traffic.	Construction noise above noise goal but below predicted noise level.
CP_8 (8A)	7440 Pacific Hwy	12-Dec-14	2.00pm	Earthworks	50	47	59.3	Y	Construction inaudible - limited works in progress. Background noise dominated by highway traffic noise.	Construction noise inaudible.
CP_9 (9A)	7443 Pacific Hwy	12-Dec-14	2.25pm	Earthworks	55	53	-	Y	Construction noise inaudible.	Construction noise inaudible.

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_10 (11)	7643 Pacific Hwy	12-Dec-14	3.45pm	Earthworks	59	49	60.2	Y	Construction audible; reverse alarms 50 - 53dB dominant construction noise. Highway traffic dominated background.	Measured construction noise below noise goal. Highway traffic dominated background.
CP_11 (11A)	1316 Martells Rd	5-Dec-15	9.30am	Earthworks	52	23	-	Y	Construction inaudible	Construction inaudible
CP_12 (13A)	354 South Arm Rd (196)	10-Dec-14	2.09pm	Earthworks	40	51	47.9	Y	Construction audible: reversing alarms, truck and dogs and rock being tipped 50. truck and dog on access rd G 60. birds/cicadas constant background noise at 46.	Construction noise above noise goal but below predicted noise level
CP_13 (12A)	358 South Arm Rd (197)	10-Dec-14	12.42pm	Earthworks	40	59	47.4	Y	Construction audible: truck and dog movements peaking at 47, reverse alarm from dozer in cut 32.	Construction noise above noise goal but below predicted noise level
CP_14 (14A)	17 Ridgewood Dr (214)	10-Dec-14	12.13pm	Earthworks	45	52	55.7	N	Construction audible: moxie 64, roller on vibe 52-57, truck and dogs 57-64, watercarts 58.	Construction noise above noise goal and marginally above predicted noise level (3.7 dB). No additional mitigation measures feasible. No complaints received.
CP_15 (15A)	79 Short Cut Rd (219)	10-Dec-14	11.51am	Earthworks	46	56	62.5	N	Cicadas constant background noise 55-58, residents dog barking 62-65. Construction audible; moxies 64, hiab 62, truck and dogs on Short Cut Rd. 64-67.	Construction noise above noise goal and above predicted noise level (6.5 dB). No additional mitigation measures feasible. No complaints received. High Background noise contributing
CP_16 (16A)	63 Waterfall Way (240)	5-Dec-14	12.20pm	Earthworks	54	51	65.4	Y	Cicadas constant background noise 64-65 along with hwy audible but not registering above cicadas. Construction from waterfall way west audible but not registering on meter.	Construction noise not registering on meter. Background noise dominates.

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_17 (17A)	100 Old Pacific Hwy (250)	5-Dec-14	10.30am	Earthworks	57	55	57.7	N	Construction audible; excavator and pad foot roller working on noise mound 55-60.	Construction noise marginally above noise goal (0.7 dB) and marginally above predicted noise level. No additional mitigation measures feasible. No complaints received.
Receiver 281	McCombies, Gossips Rd	5-Dec-14	9.50am	Earthworks	40	47	-	Y	Construction inaudible	Construction inaudible
Jan-15										
CP_1 (1A)	70 Foxes Rd (2)	22-Jan-15	7.30am	Earthworks	45	44	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_2 (2A)	47 Boggy Creek Rd (7)	22-Jan-15	8.15am	Earthworks	48	59	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_3 (2)	21 Auld Cl (3)	22-Jan-15	9.05am	Earthworks	57	60	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_4 (3)	19 Valla Rd	22-Jan-15	9.30am	Earthworks	57	65	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_5 (5)	7119B Pacific Hwy (42)	22-Jan-15	9.55am	Earthworks	55	53	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_6 (6A)	7 Valla Beach Rd (97)	22-Jan-15	10.15am	Earthworks	55	43	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_7 (7)	6 East West Rd	22-Jan-15	12.30pm	Earthworks	57	64	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_8 (8A)	7440 Pacific Hwy	22-Jan-15	1.15pm	Earthworks	50	47	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_9 (9A)	7443 Pacific Hwy	22-Jan-15	1.55pm	Earthworks	55	53	-	Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_10 (11)	7643 Pacific Hwy	22-Jan-15	2.35pm	Earthworks	59	49		Y	Construction Inaudible - Very limited construction activities on site due to bad weather	Construction inaudible
CP_11 (11A)	1316 Martells Rd	6-Jan-15	9.00am	Earthworks	52	23	-	Y	Construction inaudible	Construction inaudible
CP_12 (13A)	354 South Arm Rd (196)	6-Jan-15	11.30am	Earthworks	40	51	45.2	Y	Cicadas constant background noise (46-48dB). Local traffic on South Arm Road (48-56dB). Construction noise included truck and dogs (48-56dB). watercart (46-48dB).	Construction noise above noise goal but below predicted noise level
CP_13 (12A)	358 South Arm Rd (197)	6-Jan-15	11.59	Earthworks	40	59	50.3	Y	Cicadas in background 50 bird calls up to 52. Truck and dog 49, structures crew picking up materials from top of cut 47-59.	Construction noise above noise goal but below predicted noise level
CP_14 (14A)	17 Ridgewood Dr (214)	6-Jan-15	4.52pm	Earthworks	45	52	54.7	N	Cicadas in background 50, activities from resident's 54, dog barking 55. Reversing alarms audible not registering, truck and dog movements 56-61.	Construction noise above noise goal and marginally above predicted noise level (2.7 dB). No additional mitigation measures feasible. No complaints received.
CP_15 (15A)	79 Short Cut Rd (219)	6-Jan-15	12.37pm	Earthworks	46	56	65.2	N	Cicadas constant background noise 65. truck and dogs along Short Cut Rd. 63-68.	Construction noise above noise goal and above predicted noise level. No additional mitigation measures feasible for trucks using Short Cut Rd. No complaints received.
CP_16 (16A)	63 Waterfall Way (240)	6-Jan-15	9.15am	Earthworks	54	51	56.4	Y	Highway traffic main background noise 55-57, cicadas in background up to 57. Construction from Waterfall Way east audible but not registering on meter	Construction noise not registering on meter. Background noise dominates.

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_17 (17A)	100 Old Pacific Hwy (250)	6-Jan-15	8.87am	Earthworks	57	55	54	Y	Construction inaudible	Construction inaudible
Receiver 281	McCombies, Gossips Rd	6-Jan-15	9.30am	Earthworks	40	47	-	Y	Construction inaudible	Construction inaudible
					Feb-15					
CP_1 (1A)	70 Foxes Rd (2)	5.02.15	7.25am	Earthworks	45	44	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_2 (2A)	47 Boggy Creek Rd (7)	5.02.15	8.00am	Earthworks	48	59	42.9	Y	Highway and local traffic 45-52. Construction audible; truck and dogs in gate 10b 43-47. birds in background up to 50.	Construction noise below noise goal.
CP_3 (2)	21 Auld Cl (3)	5.02.15	11.00am	Earthworks	57	60	59.5	Y	construction audible grader to 55. Reversing alarms 57. Hwy noise constant 60-66. Birds and insects in background up to 60.	Construction noise above noise goal but below predicted noise level
CP_4 (3)	19 Valla Rd	5.02.15	11.35am	Earthworks	57	65	63.4	Y	Earthworks and bridge works occurring; to 65, 72; reversing alarms 62. Hway and local traffic to 65.	Construction noise above noise goal but below predicted noise level
CP_5 (5)	7119B Pacific Hwy (42)	5.02.15	1.35pm	Earthworks	55	53	53.9	Y	Highway noise constant background trucks on hwy up to 56. construction audible at 50 (excavator)	Construction noise below noise goal.
CP_6 (6A)	7 Valla Beach Rd (97)	5.02.15	1.50pm	Earthworks	55	43	-	Y	Highway noise constant background. Construction inaudible.	Construction noise inaudible.
CP_7 (7)	6 East West Rd	5.02.15	2.20pm	Earthworks	57	64	56.2	Y	Highway noise constant background trucks on hwy up to 56. Construction audible - heavy vehicles at 60. reversing alarms audible at 55.	Construction noise below noise goal.
CP_8 (8A)	7440 Pacific Hwy	5.02.15	3.15pm	Earthworks	50	47	49	Y	Construction noise inaudible.	Construction noise inaudible.
CP_9 (9A)	7443 Pacific Hwy	5.02.15	3.45pm	Earthworks	55	53	57.4	Y	Hwy traffic up to 57 with peaks up to 61. LV's on fill audible at 48, reverse alarm to 52.	Measured Construction noise below noise goal.

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_10 (11)	7643 Pacific Hwy	5.02.15	4.20pm	Earthworks	59	49	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_11 (11A)	1316 Martells Rd	16.2.15	2.25pm	Earthworks	52	23	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_12 (13A)	354 South Arm Rd (196)	6.2.15	11.17am	Earthworks	40	51	43.9	Y	Construction audible not registering on meter. Traffic on South Arm road up to 51, franner on access road G 54	Construction noise above noise goal but below predicted noise level
CP_13 (12A)	358 South Arm Rd (197)	6.2.15	10.49am	Earthworks	40	59	46.2	Y	Construction "hum" audible from fill 31; reverse alarms scrapers grader rollers not registering on meter. Bird calls in background up to 50	Construction noise above noise goal but below predicted noise level
CP_14 (14A)	17 Ridgewood Dr (214)	10.2.15	11.57am	Earthworks	45	52	50.8	Y	Radio from residents main background noise 48-50 wind rustling leaves in the trees 53-55. truck and dogs on alignment up to 59	Construction noise above noise goal but below predicted noise level
CP_15 (15A)	79 Short Cut Rd (219)	6.2.15	10.18am	Earthworks	46	56	53.5	Y	Construction audible; excavator 54-57, reverse alarms, truck and dogs in alignment 50 on shortcut rd 59-62	Construction noise above noise goal but below predicted noise level
CP_16 (16A)	63 Waterfall Way (240)	6.2.15	9.15am	Earthworks	54	51	50.6	Y	Highway traffic main influence on record 53-59. construction audible not registering on meter	Construction inaudible
CP_17 (17A)	100 Old Pacific Hwy (250)	6.2.15	8.52am	Earthworks	57	55	54.4	Y	Highway traffic main background noise. Construction audible but not registering above background.	Construction inaudible
Receiver 281	McCombies, Gossips Rd	16.2.15	1.43pm	Earthworks	40	47	52.9	N	Construction audible; scrapers 52-60; dozer and excavator 53; reversing alarms. Construction works main background noise	Construction noise above noise goal and marginally above predicted noise level (5.9 dB). No additional mitigation measures feasible. No complaints received.

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
Mar-15										
CP_1 (1A)	70 Foxes Rd (2)	27.03.15	10.50am	Earthworks	45	44	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_2 (2A)	47 Boggy Creek Rd (7)	27.03.15	11.10am	Earthworks	48	59	44.4	Y	Construction audible: Trucks on fill: 45 - 46, excavator reverse alarm: 43. Background noise dominant: Highway traffic: 40 - 55, Birds: 50, Dogs: 45 -50.	Construction below goal and predicted noise level.
CP_3 (2)	21 Auld Cl (3)	27.03.15	11.30am	Earthworks	57	60	55.9	Y	Construction audible: Positrac revers beeper:55, Truck and dogs unloading: 45 -55. Background noise dominant: Highway traffic: 50 - 62, Birds: 45 -55.	Construction below goal and predicted noise level.
CP_4 (3)	19 Valla Rd	27.03.15	12:15pm	Earthworks	57	65	60.1	Y	Construction audible: Positrac reverse beeper:44, Truck and dogs unloading: 40 - 50. Background noise dominant: Highway and local traffic: 50 - 75, Birds: 40 -50.	Measured Construction noise below goal and predicted noise level.
CP_5 (5)	7119B Pacific Hwy (42)	27.03.15	1:15pm	Earthworks	55	53	54	Y	Construction audible (dominant): Excavator on stockpile: 52, D6 Dozer operating: 54 Background noise: Highway traffic: 50 - 62.	Construction noise below goal.
CP_6 (6A)	7 Valla Beach Rd (97)	27.03.15	12:45pm	Earthworks	55	43	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_7 (7)	6 East West Rd	27.03.15	1:39pm	Earthworks	57	64	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_8 (8A)	7440 Pacific Hwy	27.03.15	12:10pm	Earthworks	50	47	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_9 (9A)	7443 Pacific Hwy	27.03.15	2.45pm	Earthworks	55	53	54.7	Y	Construction audible: Grader: 53, Roller: 52. Background noise dominant: Highway traffic: 50 - 62, Birds: 50 - 55.	Construction below goal and predicted noise level.
CP_10 (11)	7643 Pacific Hwy	27.03.15		Earthworks	59	49	-	Y	Construction noise inaudible.	Construction noise inaudible.

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_11 (11A)	1316 Martells Rd	10.3.15	2.05pm	Earthworks	52	23	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_12 (13A)	354 South Arm Rd (196)	10.3.15	3.07pm	Earthworks	40	51	41.6	Y	Construction noise inaudible.	Construction noise inaudible.
CP_13 (12A)	358 South Arm Rd (197)	5.3.15	8.00am	Earthworks and Paving	40	59 Earthworks 50 paving	48.8	Y	Spray seal and paving activities bridge 19, Pier works audible up to 53. cicadas and birds in background up to 53	Construction noise above noise goal but below predicted noise level
CP_14 (14A)	17 Ridgewood Dr (214)	4.3.15	1.54pm	spay seal	45	52 Earthworks 44 Paving	56.5	N	Bird calls in background 55. Multi-tyre reverse alarms 54, spray seal spreader truck up to 64. Paving works 44	Construction noise above noise goal and marginally above predicted noise level (4.5 dB). No additional mitigation measures feasible. No complaints received.
CP_15 (15A)	79 Short Cut Rd (219)	5.3.15	8.44am	Earthworks	46	56	58.8	N	Construction audible high activity area: Dozer, **2** x excavators, tippers, truck and dogs, graders combined noise level up to 66. Residents dogs barking up to 60	Construction noise above noise goal and marginally above predicted noise level (2.8 dB). No additional mitigation measures feasible. No complaints received.
CP_16 (16A)	63 Waterfall Way (240)	4.3.15	2.45pm	Earthworks	54	51	53.1	Y	Highway traffic main influence on record up to 61. Construction inaudible	Construction noise inaudible.
CP_17 (17A)	100 Old Pacific Hwy (250)	4.3.15	2.23pm	Earthworks	57	55	47.6	Y	Traffic on on/off ramps 56-57. Work site visible construction inaudible	Construction noise inaudible.
Receiver 281	McCombies, Gossips Rd	19.3.15	8.50am	Earthworks	40	47	52.8	Y	Noise from residence main background noise residents talking 52-55, dogs barking 52, birds in background 50-76. construction audible not registering	Construction noise inaudible.
Apr-15										

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_1 (1A)	70 Foxes Rd (2)	23.4.15	8.30am	Earthworks	45	44	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_2 (2A)	47 Boggy Creek Rd (7)	24.4.15	4.40pm	Earthworks	48	59	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_3 (2)	21 Auld Cl (3)	24.4.15	12.55pm	Earthworks	57	60	53.2	Y	Background highway trucks/cars at 51-63dB, birds at 43-57dB, excavator tracking at 55dB, tipper heading south at 54dB.	Construction noise below noise goal and predicted noise level.
CP_4 (3)	19 Valla Rd	23.4.15	12.00pm	Earthworks	57	65	58.9	Y	Background local traffic at 65-77dB, highway 55-65dB, construction: grader at 58-62dB and tipper at 45-52dB	Construction noise slightly above noise goal but below predicted noise level
CP_5 (5)	7119B Pacific Hwy (42)	23.4.15	2.10pm	Earthworks	55	53	55	Y	Background highway trucks/cars at 48-65dB, construction tipper at 54dB and light vehicles at 50dB.	Construction noise equal to noise goal
CP_6 (6A)	7 Valla Beach Rd (97)	24.4.15	4.20pm	Earthworks	55	43	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_7 (7)	6 East West Rd	24.4.15	3.15pm	Earthworks	57	64	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_8 (8A)	7440 Pacific Hwy	23.4.15	11.15am	Earthworks	50	47	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_9 (9A)	7443 Pacific Hwy	23.4.15	10.30am	Earthworks	55	53	53.5	Y	Construction noise inaudible. Highway traffic 50-60dB, birds 49-53dB.	Construction noise inaudible.
CP_10 (11)	7643 Pacific Hwy	-	-	Earthworks	59	49	-	-	Monitoring not undertaken as resident not concerned with noise monitoring	-
CP_11 (11A)	1316 Martells Rd	23.04.15	-	Earthworks	52	23	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_12 (13A)	354 South Arm Rd (196)	23.04.15	3.55pm	Earthworks	40	51	48.6	Y	Traffic on South Arm Rd 50-55, trucks on alignment 48, birds in Background up to 68	Construction noise above noise goal but below predicted noise level

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_13 (12A)	358 South Arm Rd (197)	23.04.15	3.30pm	Earthworks and Paving	40	59 Earthworks 50 paving	45.6	Y	Birds in background 40-41. construction hum audible 43-46, bogie tipping/loading 47, occasional reverse alarm audible.	Construction noise above noise goal but below predicted noise level
CP_14 (14A)	17 Ridgewood Dr (214)	23.04.15	2.45pm	Earthworks and Paving	45	52 Earthworks 44 Paving	47.8	Y	birds in background 41-45. Construction audible, tippers for paver 51, water truck 53, truck and dogs 53-63	Construction noise above noise goal but below predicted noise level
CP_15 (15A)	79 Short Cut Rd (219)	24.04.15	9.10am	Earthworks	46	56	55.4	Y	Residents dogs barking up to 62. Construction audible high activity area: **2** x excavators, tippers, truck and dogs, graders combined noise level up to 53-60.	Construction noise above noise goal but below predicted noise level
CP_16 (16A)	63 Waterfall Way (240)	23.04.15	2.20pm	Earthworks	54	51	52.9	Y	Highway traffic main influence on record up to 58. Construction inaudible	Construction noise inaudible.
CP_17 (17A)	100 Old Pacific Hwy (250)	23.04.15	1.52pm	Earthworks	57	55	50.7	Y	Traffic on on/off ramps 71. Work site visible construction inaudible	Construction noise inaudible.
Receiver 281	McCombies, Gossips Rd	24.04.15	10.2	Earthworks	40	47	49.1	Y	Noise from residence main background noise, residents talking 52-55, Builders working on residence 51-64, dogs barking 52, birds in background 50-76. construction audible not registering	Construction noise inaudible.
May-15										
CP_1 (1A)	70 Foxes Rd (2)	26.05.15	11.30am	Earthworks	45	44	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_2 (2A)	47 Boggy Creek Rd (7)	26.05.15	2.15pm	Earthworks	48	59	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_3 (2)	21 Auld Cl (3)	26.05.15	4.15pm	Earthworks	57	60	52.8	Y	Construction noise audible: Grader operating: 53, Excavator tracking: 50 - 54. Background noise dominant: Highway traffic: 50 - 65, birds: 50 - 60.	Construction noise below goal and predicted noise level

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_4 (3)	19 Valla Rd	28.05.15	9.00am	Earthworks	57	65	58.3	Y	Construction noise audible: crane operating on bridge: 50 - 57, hand tool use: 45 -50. Background noise dominant: birds: 45 -58 (constant), local traffic: 50 -78.	Measured Construction noise equal to noise goal and below predicted noise level. Background noise dominant
CP_5 (5)	7119B Pacific Hwy (42)	28.05.15	10.15am	Earthworks	55	53	57.5	Y	Construction noise audible: truck and dog haul: 45 - 52, LV's: 45. Background noise dominant: Highway traffic: 50 -67.	Measured Construction noise below goal and predicted noise level. Background noise dominant
CP_6 (6A)	7 Valla Beach Rd (97)	26.05.15	12.30pm	Earthworks	55	43	55.4	Y	Construction noise inaudible.	Construction noise inaudible.
CP_7 (7)	6 East West Rd	28.05.15	10.45am	Earthworks	57	64	53.8	Y	Construction noise audible: Franna unloading barriers: 45 - 55, semi trailer: 46. Background noise dominant: aircraft: 50 - 55, local traffic: 50 -70, birds: 45 - 56	Construction noise below goal and predicted noise level
CP_8 (8A)	7440 Pacific Hwy	26.05.15	11.15am	Earthworks	50	47	-	Y	Construction noise audible:	Construction noise inaudible.
CP_9 (9A)	7443 Pacific Hwy	28.05.15	11.05am	Earthworks	55	53	55.4	Y	Construction audible: Backhoe in operation: 53, Excavator: 52, tipper: 51. Background noise dominant: highway traffic: 55 -65, birds: 50 -55.	Measured Construction noise below goal and predicted noise level. Background noise dominant
CP_10 (11)	7643 Pacific Hwy	26.05.15	10.30am	Earthworks	59	49	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_11 (11A)	1316 Martells Rd	11.05.15	8.15am	Earthworks	52	23	-	Y	Construction noise inaudible.	Construction noise inaudible.
CP_12 (13A)	354 South Arm Rd (196)	11.05.15	10.40am	Earthworks	40	51	44.3	Y	Traffic on South Arm rd 51. Agi at wash bay 41-51	Construction noise above noise goal but within predicted noise level

Monitoring Location No. (NVMP)	Location and receiver number	Date	Time	Activity	Noise Goal Laeq	Predicted LAeq Noise Level	Measured Noise Level Laeq	Construction Noise Within Predicted Noise Level?	Monitoring Comments	Compliance Check
CP_13 (12A)	358 South Arm Rd (197)	11.05.15	10.15am	Earthworks and Paving	40	59 Earthworks 50 paving	41.7	Y	Birds in background up to 50. Some construction noise audible at 41	Construction noise above noise goal but below predicted noise level
CP_14 (14A)	17 Ridgewood Dr (214)	11.05.15	12.15pm	Earthworks and Paving	45	52 Earthworks 44 Paving	41.6	Y	Birds/residents in background 51. Reverse alarm audible not registering. Concrete agi and light vehicles on alignment 41-52.	Construction noise below goal and predicted noise level
CP_15 (15A)	79 Short Cut Rd (219)	11.05.15	11.45am	Earthworks	46	56	55.6	Y	Construction audible- Grader, rollers, truck and dogs, excavators 61-62	Construction noise above noise goal but below predicted noise level
CP_16 (16A)	63 Waterfall Way (240)	11.05.15	9.00am	Earthworks	54	51	49.3	Y	Pac Hwy main back ground noise up to 57. Birds up to 53. Occasional reverse alarm audible not registering	Construction noise inaudible.
CP_17 (17A)	100 Old Pacific Hwy (250)	11.05.15	8.35am	Earthworks	57	55	53.5	Y	Pac Hwy main background noise up to 53-57. Traffic on on-ramp 57.	Construction noise inaudible.
Receiver 281	McCombies, Gossips Rd	11.05.15	-	Earthworks	40	47	-	-	Monitoring not undertaken as resident not concerned with noise and is currently building a new home.	-

NH2U – Vibration Monitoring Summary December 2014 to May 2015

Date	Time	Location	Activity	Monitoring Duration	Vibration Classification	Structural Criteria					Notes
						PPV (mm/s)			PVS (mm/s)	DIN 4150-3 Min. Safe Limit	
						x axis	z axis	y axis			
13/02/2015	11.36am	7337 Pacific Highway, Valla	SMZ placement (general earthworks)	5.3hrs	intermittent	0.678	0.497	0.654	0.788	5mm/s	Vibration levels compliant. Concerns raised by owner regarding structural damage.
10/03/2015	1.18pm	7337 Pacific Highway, Valla	DGB Placement (general earthworks)	4hrs	intermittent	0.339	0.292	0.544	0.592	5mm/s	Vibration levels compliant. Concerns raised by owner regarding structural damage previously.

Date	Time	Location	Activity	Monitoring Duration	Vibration Classification	Structural Criteria					Notes
						PPV (mm/s)			PVS (mm/s)	DIN 4150-3 Min. Safe Limit	
						x axis	z axis	y axis			
11/03/2015	7.23am	7337 Pacific Highway, Valla	DGB Placement (general earthworks)	5hrs	intermittent	0.528	0.378	0.654	0.679	5mm/s	Vibration levels compliant. Concerns raised by owner regarding structural damage previously.
15/04/2015	8.34am	7337 Pacific Highway, Valla	SMZ placement on driveway	7.71hrs	intermittent	0.899	0.394	0.694	1.14	5mm/s	Vibration levels compliant. Concerns previously raised by owner regarding structural damage.
16/04/2015	8.22am	15 South Arm Rd, Urunga	South Arm Rd tie in	8.85hrs	intermittent	0.654	0.765	0.678	0.872	5mm/s	Vibration levels compliant. Concerns previously raised by owner regarding structural damage.

NH2U – Blasting Monitoring Summary December 2014 to May 2015

Blast Number:	Date:	Time:	Monitor location (nearest affected residence)	Peak Vector Sum (mm/s)	DIN 4150-1999 Vibration Limit mm/s	Recorded Peak Overpressure:	AS2187.2 Overpressure Limit dBL	Compliant:
12	4/12/2014	1:05pm	1314 Martells Road	0.28	5	101.3	115	yes
13	18/12/2014	1:09pm	1314 Martells Road	0.23	5	105.1	115	yes
14	15/01/2015	1.00pm	1314 Martells Road	1.28	5	96.6	115	yes
15	12/02/2015	1.00pm	1314 Martells Road	0.836	5	93.1	115	yes
16	5/03/2015	2.12pm	1314 Martells Road	0.65	5	101.4	115	yes
17	13/03/2015	11.56am	1314 Martells Road	Did Not Trigger (<0.5mm/s)	5	Did Not Trigger	115	yes
18	9/04/2015	1.00pm	1314 Martells Road	0.639	5	102.7	115	yes
19	22/04/2015	1.03pm	1314 Martells Road	0.626	5	94.8	115	yes
20	26/05/2015	1.03pm	1314 Martells Road	0.746	5	102.8	115	yes

NH2U - Dust Monitoring Summary December 2014 to May 2015

Dust Deposition Gauge (DDG) Number	Location
1	70 Foxs Road, Nambucca
2	47 Boggy Creek Road, Valla
3	2 Auld Close, Valla
4	Western corridor boundary (Ch64350), Valla
5	23 East West Road, Valla
6	7 Valla Beach Road, Valla
7	7443 Pacific Highway, Valla
7B	Oyster Drive, Valla
8	7643 Pacific Highway, Valla
11	1053 Martells Road, Urunga
12	358 South Arm Road, Urunga
13	South of Short Cut Road, Off South Arm Road, Raleigh
14	79 Short Cut Road, Urunga
15	100 Old Pacific Highway, Raleigh
16	63 Waterfall Way, Raleigh
17	2/2 Thompson Valla Beach -Control
18	1129 Martells Road Urunga (Smiths residence)
19	6 Ridgewood Drive, Raleigh
20	7115 Pacific Highway, Valla
23	Additional monitoring location at 111 Short Cut Road, Raleigh

Table 5-1 Air quality monitoring criteria for deposited dust[a]

Pollutant	Annual concentration		Source
Deposited dust[b]	2 g/m2/month[c]	4 g/m2/month[d]	NERDDC (1998)

Note:

a. *Adapted from DECCW guideline; Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DECCW 2005).

b. *Dust is assessed as insoluble solids as defined by AS 3580.10.1-2003 (AM-19).*

c. *Maximum increase in deposited dust level.*

d. *Maximum total deposited dust level.*

	Month	Dec-14	Jan-15	Feb-15	Mar-15	April-15
	Period	**05/12/14 – 06/01/15**	**06/01/15 – 06/02/15**	**06/02/15 – 09/03/15**	**09/03/15-10/04/15**	**10/04/15 – 11/05/15**
DDG01	Total Insoluble Matter (g/m^2/month)	0.8	1.8	0.7	1.4	0.8
	Annual Insoluble Average (g/m^2/month)	0.8	0.9	1.0	1.0	1.1
DDG02	Total Insoluble Matter (g/m^2/month)	1.3	1.2	0.7	1.6	0.8
	Annual Insoluble Average (g/m^2/month)	2.3	2.2	2.3	2.2	2.1
DDG03	Total Insoluble Matter (g/m^2/month)	2.4	0.7	8.5	5.2	1.5
	Annual Insoluble Average (g/m^2/month)	0.9	0.9	1.6	2.0	2.1
	Comments	-	-	Construction works adjacent were limited to predominately bridge works. No complaints. Annual average remainsbelow 4g/m^2/month.	Construction works adjacent were limited to predominately bridge works. No complaints. Annual average remainsbelow 4g/m^2/month.	-
DDG04	Total Insoluble Matter (g/m^2/month)	1.8	0.8	1.0	1.4	1.2
	Annual Insoluble Average (g/m^2/month)	1.5	1.5	1.5	1.6	1.7
DDG05	Total Insoluble Matter (g/m^2/month)	0.8	1.0	0.5	0.6	1.8
	Annual Insoluble Average (g/m^2/month)	0.7	0.7	0.8	0.8	0.9

	Month	Dec-14	Jan-15	Feb-15	Mar-15	April-15
	Period	**05/12/14 – 06/01/15**	**06/01/15 – 06/02/15**	**06/02/15 – 09/03/15**	**09/03/15-10/04/15**	**10/04/15 – 11/05/15**
DDG06	Total Insoluble Matter (g/m^2/month)	0.9	1.3	0.8	0.6	1.9
	Annual Insoluble Average (g/m^2/month)	0.9	0.9	0.9	0.9	1.0
DDG07	Total Insoluble Matter (g/m^2/month)	1.5	0.6	0.8	1.0	2.5
	Annual Insoluble Average (g/m^2/month)	1.4	1.4	1.4	1.5	1.6
DDG07B	Total Insoluble Matter (g/m^2/month)	1.4	4.6	1.0	0.7	5.3
	Annual Insoluble Average (g/m^2/month)	1.8	2.1	2.0	1.9	2.2
	Comments	-	The prevailing winds during this period have been north- easterly and southerly winds. Therefore it is unlikely that these dust results represent construction impacts as the dust gauges is located to the east of the alignment. No complaints. Annual average remainsbelow 4g/m^2/month.	-	-	High level of organic matter present in sample. Organic matter is not from construction works. No complaints. Annual average remains below4g/m^2/month.
DDG08	Total Insoluble Matter (g/m^2/month)	1.6	1.3	0.6	1.2	sample unavailable
	Annual Insoluble Average (g/m^2/month)	1.3	1.3	1.3	1.3	-

	Month	Dec-14	Jan-15	Feb-15	Mar-15	April-15
	Period	**05/12/14 – 06/01/15**	**06/01/15 – 06/02/15**	**06/02/15 – 09/03/15**	**09/03/15-10/04/15**	**10/04/15 – 11/05/15**
DDG11	Total Insoluble Matter (g/m^2/month)	1.1	0.5	1.2	1.1	2.7
	Annual Insoluble Average (g/m^2/month)	1.1	1.1	1.2	1.2	1.3
DDG12	Total Insoluble Matter (g/m^2/month)	0.5	3.0	1.4	2.3	2.0
	Annual Insoluble Average (g/m^2/month)	2.7	2.7	2.6	3.2	3.1
DDG13	Total Insoluble Matter (g/m^2/month)	0.6	0.8	1.1	0.8	0.5
	Annual Insoluble Average (g/m^2/month)	1.5	1.5	1.6	1.5	1.5
DDG14	Total Insoluble Matter (g/m^2/month)	0.6	0.5	0.8	1.1	1.7
	Annual Insoluble Average (g/m^2/month)	1.1	1.2	1.2	1.2	1.3
DDG15	Total Insoluble Matter (g/m^2/month)	1.4	0.8	4.1	0.4	1.0
	Annual Insoluble Average (g/m^2/month)	1.0	1.1	1.4	1.4	1.4
	Comments	-	-	High level of organic matter present in sample. Organic matter is not from construction works. Annual average remains below	-	-

	Month	Dec-14	Jan-15	Feb-15	Mar-15	April-15
	Period	**05/12/14 – 06/01/15**	**06/01/15 – 06/02/15**	**06/02/15 – 09/03/15**	**09/03/15-10/04/15**	**10/04/15 – 11/05/15**
				4g/m2/month.		
DDG16	Total Insoluble Matter (g/m^2/month)	0.4	0.6	0.7	0.7	2.3
	Annual Insoluble Average (g/m^2/month)	1.0	1.1	1.1	1.1	1.2
DDG17	Total Insoluble Matter (g/m^2/month)	1.5	2.4	0.5	0.5	0.7
	Annual Insoluble Average (g/m^2/month)	1.2	1.3	1.3	1.3	1.2
DDG18	Total Insoluble Matter (g/m^2/month)	0.6	0.6	1.1	0.8	0.5
	Annual Insoluble Average (g/m^2/month)	1.3	1.2	1.2	1.2	1.1
DDG19	Total Insoluble Matter (g/m^2/month)	0.6	0.1	1.2	0.6	0.5
	Annual Insoluble Average (g/m^2/month)	1.1	1.1	1.0	1.1	1.0
DDG20	Total Insoluble Matter (g/m^2/month)	3.2	0.6	0.5	0.2	2.3
	Annual Insoluble Average (g/m^2/month)	2.6	2.4	2.2	2.1	2.1

	Month	Dec-14	Jan-15	Feb-15	Mar-15	April-15
	Period	**05/12/14 – 06/01/15**	**06/01/15 – 06/02/15**	**06/02/15 – 09/03/15**	**09/03/15-10/04/15**	**10/04/15 – 11/05/15**
DDG23(additional monitoring location)	Total Insoluble Matter (g/m^2/month)	19.4	0.5	8.1	4.2	25.0
	Annual Insoluble Average (g/m^2/month)	10.5	7.2	7.4	6.8	9.8
	Comments	Elevated levels. The Lab stated "the sample contained quite coarse soil & this does seem very unusual and non typical – like something was added to the bottle. The ratio of Ash/ combustible is very non-typical. Also often with higher dust you get higher salts but not in this case. "Thus sample compromised. Environmental officer reviewed the mitigation measures and confirmed the required measures were in place. The environmental officer also noted that there were only 10 worked construction days over this monitoring period with wet periods over the Christmas holiday break. The results were discussed at ERG 25.	-	Environmental officer reviewed the mitigation measures and confirmed the required measures were in place. Controls implemented onsite near this business include, increased water cart usage, increased street sweeper usage, sealed Short Cut and South Arm Road intersection, finishing and stabilising the work area near the business as soon as possible. Placement of SMZ occurred during this monitoring period. The environmental officer also noted that there were only 9 days of construction works with possible influence on this monitoring location given the prevailing winds and rain in the monitoring period. The results were discussed at ERG 27.	SMZ was completed by 12/3/15, stabilising the area. The results were discussed at ERG 28.	Abnormally high result and not consistent with nearby dust gauges DDG13 & DDG14. Environmental officer reviewed the mitigation measures and confirmed the required measures were in place. DGB placed during monitoring period & area finalised ready for sealing. Some priming works occurred week of 4/5/15. Controls implemented onsite near this business include water cart usage, street sweeper usage, progressive topsoil and reveg. The environmental officer also noted that there were only 9 days of construction works with possible influence on this monitoring location given the prevailing winds and rain in the monitoring period. Dust gauge removed11.5.15 following the ok from the business. The new Short Cut Rd was opened on 18/05/2015.

NH2U – Surface Water Monitoring Summary December 2014 to May 2015

ANZECC Guidelines		
Arsenic	0.007	mg/L
Copper	2	mg/L
Iron	0.3	mg/L
Maganese	0.5	mg/L
Nickel	0.02	mg/L
Nitrate	50	mg/L
Nitrite	3	mg/L
Selenium	0.01	mg/L
Zinc	3	mg/L
TotalPhosphorus	0.05	mg/L
Phosphate	0.02	mg/L
Total Nitrogen	0.5	mg/L
Nitrogen Oxides	0.04	mg/L
Ammonia	0.02	mg/L

Green =	"Triggered" value: water quality better than corresponding upstream value or Pre-construction criteria
White =	Within P80 range +/- std dev
Red =	"Triggered" value

EPL Limits	
Oil and Grease	Nil
pH	6.5-8.5
TSS	50 mg/L
NTU	70

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location Cow Creek																																		
21700 US	12.12.14	wet	2.00pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria. No construction impacts observed.	22.77	7.36	4.11	80.1	6.54	2.63	1.1	37	Nil	0.081	0.012	0.31	0.27	0.046	0.044	0.002	0.145	-	-	<0.001	0.012	0.002	<0.001	0.001	-	0.269	0.340	<0.001	<0.001	<0.002
21700 DS	12.12.14	wet	2.15pm		22.5	7.28	4.12	71.7	6.04	2.64	2.2	35	Nil	0.085	0.021	0.321	0.22	0.097	0.096	0.001	0.102	-	-	<0.001	0.009	0.002	<0.001	0.001	-	0.198	0.328	<0.001	<0.001	<0.002
21700 US	20.1.15	wet	7.15am	Elevated NTU/TSS due to discharge from sediment basin from above design rain event. Other parameters only marginal variations between downstream and upstream values.	23.47	6.7	0.197	10.7	3.19	0.13	0.1	20	Nil	0.13	0.048	0.53	0.40	0.130	0.128	0.002	0.058	<0.001	0.142	0.007	<0.001	0.001	0.001	0.809	0.003	<0.001	<0.001	<0.001	0.001	<0.0005
21700 DS	20.1.15	wet	7.30am		24.1	6.76	0.41	175	4.16	0.266	0.2	130	Nil	0.099	0.03	0.498	0.49	0.012	0.009	0.003	0.072	<0.001	0.119	0.005	<0.001	<0.001	0.002	0.713	0.004	0.001	<0.001	<0.001	0.001	<0.0005
21700 US	28.1.15	wet	9.20am	Compliant.	23.5	6.21	0.157	4.2	6.1	0.102	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 DS	28.1.15	wet	8.20am		23.48	6.23	0.149	3.6	5.73	0.097	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 US	4.2.15	wet	3.45pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. No construction impacts observed.	25.0	6.3	0.142	0.4	5.85	0.092	0.1	4	Nil	0.05	0.020	0.31	0.30	0.014	0.011	0.003	0.029	<0.001	0.405	0.007	<0.001	<0.001	0.001	0.804	0.004	0.001	<0.001	<0.001	0.001	<0.0005
21700 DS	4.2.15	wet	3.40pm		24.8	6.32	0.144	1.3	12.05	0.093	0.1	4	Nil	0.067	0.035	0.309	0.30	0.005	0.002	0.003	0.009	<0.001	0.413	0.007	<0.001	<0.001	0.001	0.831	0.005	0.001	<0.001	<0.001	0.001	<0.0005
21700 US	23.2.15	wet	2.15pm	Elevated NTU due to discharge from sediment basin from above design rain event. Results within EPL criteria.	24.8	6.86	0.113	24.4	9.53	0.075	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 DS	23.2.15	wet	2.38pm		25	6.56	0.105	48.4	7.06	0.069	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 US	20.3.15	dry	9.40am	Compliant.	22.54	7.3	0.229	5.6	12.7	0.149	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 DS	20.3.15	dry	9.40am		21.9	7.32	4.17	5.2	5.66	2.67	2.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 US	01.04.15	wet	12.20pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria. No construction impacts observed.	22.4	7.02	0.169	20.8	5.64	0.127	0.1	16	Nil	0.05	0.013	0.24	0.22	0.019	0.016	0.003	0.046	<0.001	0.037	0.004	<0.001	<0.001	0.001	0.475	0.002	<0.001	<0.001	<0.005	0.002	<0.0005
21700 DS	01.04.15	wet	12.30pm		22.5	6.88	0.189	17.5	4.52	0.123	0.1	16.5	Nil	0.049	0.010	0.24	0.21	0.025	0.021	0.004	0.024	<0.001	0.025	0.003	<0.001	<0.001	0.001	0.404	0.002	<0.001	<0.001	<0.005	0.005	<0.0005
21700 US	17.04.15	Dry	1.45pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	24.31	7.75	1.61	13	9.01	0.932	0.6	7	Nil	0.03	0.008	0.25	0.24	0.014	0.012	0.002	0.028	<0.001	0.016	0.002	<0.001	<0.001	<0.001	0.350	0.045	<0.001	<0.001	<0.001	0.001	<0.0005
21700 DS	17.04.15	Dry	2.00pm		24.21	7.31	1.58	22	8.56	0.903	0.7	9	Nil	0.051	0.021	0.30	0.29	0.010	0.007	0.003	0.026	<0.001	0.009	0.002	<0.001	<0.001	0.001	0.123	0.045	0.001	<0.001	<0.001	0.002	<0.0005
21700 US	30.04.15	wet	8.55am	Some results higher than preconstruction, however within EPL criteria . All required controls are in place.	24	7.77	1.5	19	7.63	0.916	0.4	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 DS	30.04.15	wet	9.15am		23.9	7.58	7.63	23	6.86	0.921	0.5	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 US	18.05.15	wet	3.30pm	Compliant.	20.1	7.8	0.599	1.9	8.05	0.376	0.3	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 DS	18.05.15	wet	3.42pm		20.16	7.71	0.427	2.2	10.23	0.399	0.3	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 US	22.05.15	wet	10.15am	Compliant. Turbidity triggered only marginally above background	20.18	7.62	0.486	3.6	9.23	0.331	0.3	Lab results pending																								
21700 DS	22.05.15	wet	10.15am		20.12	7.51	0.512	5.9	10.62	0.31	0.3	Lab results pending																								
21700 US	29.05.15	Dry	9.30am	Compliant.	20.18	7.4	0.501	6.2	6.88	0.319	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21700 DS	29.05.15	Dry	9.30am		20.22	7.63	0.587	5.4	9.21	0.348	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location Boggy Creek																																		
20800 US	12.12.14	wet	1.35pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	24.73	7.95	2	70.1	4.63	1.25	1	29	Nil	0.200	0.149	0.58	0.52	0.058	0.052	0.006	0.124	-	-	<0.001	0.154	0.003	<0.001	0.013	-	0.759	0.006	0.003	<0.001	<0.002
20800 DS	12.12.14	wet	1.40pm		24.68	7.68	1.99	76.2	4.44	1.26	9.2	30	Nil	0.148	0.1	0.61	0.51	0.104	0.097	0.007	0.12	-	-	<0.001	0.146	0.003	<0.001	0.013	-	0.751	0.006	0.003	<0.001	0.003
20800 US	20.1.15	wet	2.00pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	23.49	6.66	0.319	57.9	4.44	0.207	0.2	24	Nil	0.05	0.007	0.36	0.32	0.034	0.031	0.003	0.056	<0.001	0.117	0.003	<0.001	<0.001	0.003	0.792	0.004	0.001	<0.001	<0.001	0.001	<0.0005
20800 DS	20.1.15	wet	2.20pm		23.62	6.68	0.307	74	4.12	0.2	0.1	30	Nil	0.05	0.006	0.379	0.34	0.039	0.035	0.004	0.071	<0.001	0.141	0.003	<0.001	<0.001	0.004	0.806	0.004	0.002	<0.001	<0.001	0.001	<0.0005
20800 US	28.1.15	wet	9.00am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values . All required controls are in place.	24.17	6.26	0.217	0.7	11.3	0.141	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 DS	28.1.15	wet	9.10am		23.69	6.16	0.246	3.6	7.45	0.16	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 US	4.2.15	wet	2.25pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values . No construction impacts observed.	23.3	6.64	0.189	16.8	9.2	0.123	0.1	11	Nil	0.07	0.021	0.47	0.46	0.017	0.011	0.006	0.069	<0.001	0.471	0.004	<0.001	0.001	0.002	0.934	0.013	0.002	<0.001	0.001	0.003	<0.0005
20800 DS	4.2.15	wet	2.35pm		23.5	6.28	0.171	12.6	6.9	0.111	0.1	13	Nil	0.216	0.122	0.625	0.59	0.032	0.023	0.009	0.154	<0.001	0.597	0.005	<0.001	0.001	0.003	1.017	0.011	0.002	<0.001	<0.001	0.006	<0.0005
20800 US	23.2.15	wet	1.53pm	Compliant	23.19	7.82	0.713	21	10.59	0.139	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 DS	23.2.15	wet	3398		23.24	6.89	0.141	19.8	7.87	0.092	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 US	20.3.15	dry	9.20am	Some results higher than preconstruction criteria however only marginal variations between DS and US values with the exception of TDS possibly influenced by incoming tide. No construction impacts observed.	22.22	7.2	1.11	18.4	8.7	0.708	0.5	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 DS	20.3.15	dry	9.30am		22.35	6.83	11.6	16.1	11.84	7.16	6.6	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 US	01.04.15	wet	12.00pm	DO below preconstruction and marginally below upstream values possibly due to natural fluctuations within the system	22	7.47	0.704	23.8	5.38	0.43	0.3	9	Nil	0.32	0.237	0.26	0.24	0.020	0.013	0.007	0.074	<0.001	0.042	0.003	<0.001	<0.001	0.001	0.639	0.080	0.002	<0.001	<0.005	0.002	<0.0005
20800 DS	01.04.15	wet	12.15pm		22.2	7.1	0.344	25.5	4.41	0.224	0.2	8	Nil	0.065	0.029	0.249	0.24	0.012	0.007	0.005	0.029	<0.001	0.053	0.003	<0.001	<0.001	0.001	0.644	0.020	0.001	<0.001	<0.005	0.002	<0.0005
20800 US	17.04.15	Dry	3.00pm	DO lower than preconstruction criteria however only marginal variations between DS and US values	24	7.57	0.352	18.5	4.78	0.229	0.2	10	Nil	0.03	0.010	0.37	0.36	0.012	0.006	0.006	0.063	<0.001	0.051	0.002	<0.001	<0.001	0.001	0.719	0.023	0.001	<0.001	<0.001	0.002	<0.0005
20800 DS	17.04.15	Dry	2.30pm		23.7	7.48	0.399	16.9	4.03	0.259	0.2	19	Nil	0.044	0.012	0.525	0.52	0.006	0.000	0.006	0.080	<0.001	0.048	0.003	<0.001	<0.001	0.001	0.642	0.008	0.002	<0.001	<0.001	0.003	<0.0005
20800 US	30.04.15	wet	8.10am	DO below preconstruction and marginally below upstream values possibly due to natural fluctuations within the system. pH and turbidity results higher than preconstruction, however within EPL criteria and marginally higher than upstream. All required controls are in place.	23.1	7.48	0.321	14	5.21	0.221	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 DS	30.04.15	wet	8.40am		23.2	7.62	0.401	16.2	4.02	0.26	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 US	18.05.15	wet	2.35pm	Compliant.	18.69	7.01	0.329	1.5	8.27	0.222	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 DS	18.05.15	wet	2.30pm		18.7	6.81	0.331	1	6.05	0.215	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 US	22.05.15	wet	8.30am	Compliant. Marginal increase in EC	19.2	7.12	0.318	8.9	11.21	0.237	0.2	Lab results pending																								
20800 DS	22.05.15	wet	8.30am		19.11	7.22	0.328	12	9.62	0.221	0.2	Lab results pending																								
20800 US	29.05.15	Dry	8.00am	Compliant. Marginal increase in EC	19.5	6.92	0.31	6.2	9.12	0.201	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20800 DS	29.05.15	Dry	8.00am		19.7	6.84	0.363	7.9	8.36	0.242	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location Deep Creek																																		
23100 US	12.12.14	wet	1.15pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	24.25	7.17	39.5	16.4	4.21	24.1	25.1	18	Nil	0.118	0.050	0.38	0.37	0.009	0.007	0.002	0.226	-	-	<0.001	0.016	0.005	<0.001	<0.001	-	0.014	0.004	0.001	<0.001	<0.002
23100 DS	12.12.14	wet	1.30pm		24.26	7.15	39.1	15.1	3.62	24.1	25.3	19	Nil	0.054	0.011	0.376	0.37	0.010	0.01	<0.001	0.122	-	-	<0.001	0.010	0.002	<0.001	<0.001	-	0.009	0.004	0.001	<0.001	0.003
23100 US	20.1.15	wet	10.00am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. All required controls are in place.	22.63	6.32	1.75	28.1	3.93	1.12	0.9	17	Nil	0.05	0.017	0.60	0.36	0.240	0.232	0.008	0.104	<0.001	0.236	<0.001	<0.001	<0.001	0.001	0.639	0.028	<0.001	<0.001	<0.001	0.004	<0.0005
23100 DS	20.1.15	wet	10.30am		21.99	6.4	2.28	34.9	4.63	1.46	1.2	22	Nil	0.05	0.004	0.629	0.48	0.153	0.147	0.006	0.115	<0.001	0.17	0.001	<0.001	<0.001	0.001	0.562	0.024	0.001	<0.001	<0.001	0.005	<0.0005
23100 US	28.1.15	wet	8.10am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. No construction impacts observed.	23.6	6.08	0.927	11.6	5.79	0.593	0.5	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 DS	28.1.15	wet	8.05am		23.62	6.16	1.57	7.9	4.6	0.969	0.8	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 US	4.2.15	wet	4.19pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	25.19	6.07	1.86	26.3	7.11	1.2	0.9	19	Nil	0.05	0.014	0.51	0.44	0.064	0.057	0.007	0.057	<0.001	0.282	0.002	<0.001	<0.001	0.002	0.610	0.059	0.001	<0.001	0.003	0.005	<0.0005
23100 DS	4.2.15	wet	4.25pm		25.2	6.71	1.95	27.9	5.71	1.25	1	20	Nil	0.041	0.006	0.456	0.39	0.070	0.063	0.007	0.037	<0.001	0.308	0.002	<0.001	<0.001	0.002	0.577	0.064	0.002	<0.001	0.002	0.004	<0.0005
23100 US	23.2.15	wet	5.15pm	Compliant. pH better than upstream	24.3	6.4	1.07	9	8.66	0.666	0.5	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 DS	23.2.15	wet	5.25pm		24.1	6.46	1.09	13	7.99	0.646	0.5	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 US	20.3.15	dry	7.35am	Compliant. pH better than upstream	23.15	6.9	20.6	11.1	8.04	13.4	11.6	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 DS	20.3.15	dry	7.30am		23.25	6.93	24.9	10.5	7.77	15.4	15	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 US	01.04.15	wet	11.30am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	22.1	7.59	11.6	30.3	9.16	7.16	6.6	20	Nil	0.48	0.467	0.36	0.31	0.055	0.051	0.004	0.101	0.004	0.022	<0.010	<0.001	<0.001	0.001	0.063	0.086	0.002	<0.001	<0.005	0.008	<0.0005
23100 DS	01.04.15	wet	11.40am		22.6	7.38	9.64	35.3	7.09	6.07	5.4	20	Nil	0.156	0.101	0.38	0.34	0.043	0.04	0.003	0.016	0.001	0.045	<0.010	<0.001	<0.001	0.001	0.125	0.083	<0.001	<0.001	<0.005	0.005	<0.0005
23100 US	17.04.15	Dry	1.15am	Nitrate results higher than preconstruction criteria however only marginal variations between downstream and upstream values. All other parameters compliant.	25.4	7.87	9.63	22.9	9.5	6.08	5.4	7	Nil	0.02	0.006	0.32	0.28	0.036	0.033	0.003	0.078	<0.001	0.004	<0.010	<0.001	<0.001	<0.001	0.022	0.046	0.001	<0.001	<0.010	<0.001	<0.0005
23100 DS	17.04.15	Dry	1.20am		25.3	7.79	9.51	19.6	8.57	6.05	5.4	4	Nil	0.02	0.007	0.30	0.28	0.027	0.023	0.004	0.046	<0.001	0.005	<0.010	<0.001	<0.001	0.001	0.032	0.037	<0.001	<0.001	<0.010	0.001	<0.0005
23100 US	30.04.15	wet	10.20am	Compliant.	24.3	7.62	8.54	24	9.6	6	4.8	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 DS	30.04.15	wet	11.00am		24.3	7.5	8.66	20.2	9.12	6.18	4.9	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 US	18.05.15	wet	4.12pm	Compliant.	21.5	7.58	7.55	4	9.41	4.11	4.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 DS	18.05.15	wet	4.10pm		21.46	7.62	7.65	4.4	10.27	4.81	4.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 US	22.05.15	wet	12.00pm	Compliant.	20.9	7.71	6.96	3.7	8.68	4.24	3.8	Lab results pending																								
23100 DS	22.05.15	wet	12.00pm		20.62	7.68	7.01	4.2	11.23	4.31	3.8	Lab results pending																								
23100 US	29.05.15	Dry	9.50pm	Compliant.	20.92	7.21	6.86	3.8	8.01	4.22	4	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23100 DS	29.05.15	Dry	9.50pm		20.81	7.39	6.42	4.6	8.55	4.55	3.95	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldah Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location	**Dalhousie Creek**																																	
31500 US	12.12.14	wet	-	Waterway dry - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	12.12.14	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	20.1.15	wet	1.30pm	Aluminium results higher than preconstruction criteria however only marginal variations between downstream and upstream values. Slightly lower DO result possibly due to natural fluctuations in the system.	26.17	6.52	0.892	0.5	4.85	0.569	0.4	4	Nil	0.13	0.072	0.50	0.49	0.012	0.003	0.009	0.092	<0.001	0.326	0.001	<0.001	0.001	0.003	0.493	0.002	0.003	<0.001	<0.001	0.004	<0.0005
31500 DS	20.1.15	wet	1.45pm		27.93	6.05	0.412	14.4	4.49	0.269	0.2	6.5	Nil	0.041	0.022	0.445	0.43	0.016	0.009	0.007	0.051	<0.001	0.374	0.001	<0.001	0.001	0.002	0.524	0.002	0.002	<0.001	<0.001	0.002	<0.0005
31500 US	28.1.15	wet	4.50pm	Elevated NTU due to discharge from sediment basin from above design rain event. Results within EPL criteria. All required controls are in place.	23.29	6.82	0.249	16.1	6.94	0.162	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	28.1.15	wet	5.05pm		23.63	6.51	0.142	63.4	6.55	0.092	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	4.2.15	wet	1.45pm	Elevated NTU/TSS due to discharge from sediment basin from above design rain event. Results within EPL. All required controls are in place. Other parameters only marginal variations between downstream and upstream values.	24.04	6.05	0.212	15.3	4.27	0.138	0.1	12	Nil	0.03	0.006	0.21	0.20	0.019	0.013	0.006	0.013	<0.001	0.484	0.001	<0.001	0.001	0.002	0.497	0.003	0.001	<0.001	<0.001	0.002	<0.0005
31500 DS	4.2.15	wet	1.55pm		23.61	6.19	0.22	95	5.26	0.143	0.1	112	Nil	0.042	0.006	0.394	0.36	0.039	0.036	0.003	0.062	<0.001	0.539	0.001	<0.001	0.001	0.004	0.565	0.003	0.004	<0.001	<0.001	0.007	<0.0005
31500 US	23.2.15	wet	1.30pm	Elevated NTU due to discharge from sediment basin from above design rain event. Results within EPL criteria. All required controls are in place. Lower DO result possibly due to natural fluctuations in the system.	25.22	6.86	0.176	8.6	7.62	0.116	0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	23.2.15	wet	1.45pm		25.51	6.69	0.174	42.6	4.41	0.113	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	12.3.15	dry	10.30am	Compliant	24.33	6.08	0.408	3.2	3.89	0.257	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	12.3.15	dry	10.40am		24.23	6.19	0.365	4.7	8.03	0.237	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	01.04.15	wet	-	Waterway dry - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	01.04.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	17.04.15	Dry	-	Waterway dry - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	17.04.15	Dry	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	30.04.15	wet	12.30pm	Only marginal variations between D/S and U/S values with the exception of NTU. Results however within EPL criteria. All required controls are in place.	23.41	7.15	0.185	17.3	7.29	0.12	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	30.04.15	wet	12.45pm		23.52	6.8	0.09	36.2	6.49	0.058	0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	18.05.15	wet	10.30am	Compliant	18.42	6.72	0.429	1.2	7.66	0.28	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	18.05.15	wet	10.45am		18.77	6.63	0.416	12.4	6.06	0.271	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	22.05.15	wet	-	Waterway dry - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	22.05.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 US	29.05.15	Dry	-	Waterway dry - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31500 DS	29.05.15	Dry	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location McGraths Creek																																		
30100 US	12.12.14	wet	-	Waterway dry - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 DS	12.12.14	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 US	20.1.15	wet	4.30pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	23.89	6.33	0.652	30.5	3.12	0.417	0.3	5	Nil	0.03	0.010	0.30	0.28	0.016	0.013	0.003	0.008	<0.001	0.062	0.001	<0.001	<0.001	0.001	0.501	0.001	0.001	<0.001	<0.001	0.003	<0.0005
30100 DS	20.1.15	wet	4.20pm		24.22	6.34	0.567	33.2	3.5	0.365	0.3	7.3	Nil	0.027	0.007	0.226	0.22	0.005	<0.005	<0.001	0.005	<0.001	0.077	0.001	<0.001	<0.001	0.002	0.318	0.001	0.002	<0.001	<0.001	0.004	<0.0005
30100 US	28.1.15	wet	10.30am	pH slightly lower than preconstruction and upstream values. DO discrepancy may be the result of natural fluctuations within the system. No construction impacts observed.	22.23	6.2	0.249	3.6	4.84	0.162	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 DS	28.1.15	wet	10.15am		22.58	6.15	0.244	1.1	3.85	0.158	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 US	4.2.15	wet	4.34pm	Elevated NTU/TSS due to discharge from sediment basin from above design rain event. Results within EPL criteria. All required controls are in place. Other parameters only marginal variations between downstream and upstream values.	23.73	6.21	0.204	3.9	6.68	0.133	0.1	10	Nil	0.04	0.008	0.37	0.35	0.022	0.015	0.007	0.044	<0.001	0.407	0.002	<0.001	0.001	0.003	0.793	0.018	0.002	<0.001	<0.001	0.006	<0.0005
30100 DS	4.2.15	wet	4.24pm		23.85	6.31	0.166	22.3	11.24	0.108	0.1	15	Nil	0.034	0.019	0.223	0.21	0.016	0.013	0.003	0.027	<0.001	0.345	0.001	<0.001	0.001	0.003	0.632	0.046	0.005	<0.001	<0.001	0.008	<0.0005
30100 US	23.2.15	wet	5.40pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	22.99	6.38	0.175	6.7	3.02	0.114	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 DS	23.2.15	wet	5.55pm		23.46	6.86	0.168	10.9	5.62	0.121	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 US	20.3.15	dry	10.50am	DO discrepancy may be the result of natural fluctuations within the system. No construction impacts observed.	22.42	6.82	0.456	26.1	18.89	0.297	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 DS	20.3.15	dry	10.40am		23.16	6.96	0.383	14.4	4.25	0.249	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 US	01.04.15	wet	11.00am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values and within EPL criteria . All required controls are in place.	23.57	6.55	0.448	26.4	3.88	0.291	0.2	11	Nil	0.04	0.014	0.30	0.26	0.045	0.032	0.013	0.116	<0.001	0.152	0.002	<0.001	<0.001	0.001	1.208	0.015	0.001	<0.001	<0.005	0.003	<0.0005
30100 DS	01.04.15	wet	11.15am		23.68	6.59	0.464	24.3	7.82	0.302	0.2	15	Nil	0.04	0.013	0.271	0.23	0.038	0.03	0.008	0.068	<0.001	0.037	0.001	<0.001	<0.001	0.002	0.688	0.01	0.002	<0.001	<0.005	0.006	<0.0005
30100 US	17.04.15	Dry	3.30pm	DO and nitrite discrepancy may be the result of natural fluctuations within the system. No construction impacts observed.	24.57	7.06	0.45	27.5	9.27	0.293	0.2	10	Nil	0.04	0.013	0.44	0.40	0.039	0.033	0.006	0.085	<0.001	0.048	0.001	<0.001	<0.001	0.001	0.957	0.047	0.001	<0.001	<0.001	0.005	<0.0005
30100 DS	17.04.15	Dry	3.45pm		24.6	6.6	0.426	18.3	4.93	0.426	0.2	6	Nil	0.032	0.011	0.397	0.35	0.045	0.036	0.009	0.068	<0.001	0.044	0.001	<0.001	<0.001	0.001	0.920	0.018	0.001	<0.001	<0.001	0.003	<0.0005
30100 US	30.04.15	wet	2.30pm	EC only slightly lower than upstream value. No construction impacts observed.	22.14	7.12	0.32	19.4	6.9	0.208	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 DS	30.04.15	wet	3.00pm		22.19	7.29	0.333	20.8	7.87	0.217	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 US	18.05.15	wet	4.50pm	Compliant	18.78	7.42	0.356	3.5	8	0.221	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 DS	18.05.15	wet	5.00pm		18.29	7.07	0.352	14.1	6.23	0.229	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 US	22.05.15	wet	1.30pm	Compliant	19.1	7.16	0.333	8.2	8.26	0.218	0.1	Lab results pending																								
30100 DS	22.05.15	wet	1.30pm		19.12	7.28	0.349	9.5	7.21	0.229	0.1	Lab results pending																								
30100 US	29.05.15	Dry	11.35am	Compliant	19.9	7.02	0.322	6.6	8	0.222	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30100 DS	29.05.15	Dry	11.35am		19.7	7.13	0.386	5.9	6.96	0.262	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp. (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location Oyster Creek																																		
26000 US	12.12.14	wet	-	Waterway dry - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 DS	12.12.14	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 US	20.1.15	wet	4.30pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. All required controls are in place.	23.89	6.95	0.185	48.5	10.59	0.12	0.1	21	Nil	0.06	0.003	0.45	0.45	0.008	<0.005	0.010	0.062	<0.001	0.387	0.002	<0.001	0.001	0.002	1.818	0.003	0.002	<0.001	<0.001	0.006	<0.0005
26000 DS	20.1.15	wet	4.15pm		23.98	7.23	0.19	58.2	10.72	0.124	0.1	52	Nil	0.072	0.025	0.566	0.55	0.016	0.007	0.009	0.089	<0.001	0.454	0.002	<0.001	0.001	0.002	1.731	0.004	0.002	<0.001	<0.001	0.006	<0.0005
26000 US	28.1.15	wet	8.40am	pH slightly lower than preconstruction and upstream values.	23.64	6.47	0.318	0.5	5.27	0.206	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 DS	28.1.15	wet	7.20am		23.65	6.36	0.186	4.8	4.89	0.121	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 US	4.2.15	wet	7.30am	Elevated NTU/TSS due to discharge from sediment basin from above design rain event. Results within EPL criteria. All required controls are in place. Other parameters only marginal variations between downstream and upstream values.	20.8	6.54	0.173	10.5	4.05	0.11	0.1	10	Nil	0.07	0.020	0.44	0.41	0.032	0.021	0.011	0.051	<0.001	0.357	0.002	<0.001	0.001	0.002	1.223	0.011	0.003	<0.001	<0.001	0.003	<0.0005
26000 DS	4.2.15	wet	7.43am		21.06	6.3	0.144	30.5	4.26	0.093	0.1	19	Nil	0.054	0.007	0.361	0.33	0.036	0.028	0.008	0.064	<0.001	0.329	0.002	<0.001	0.001	0.002	1.223	0.005	0.002	<0.001	<0.001	0.004	<0.0005
26000 US	23.2.15	wet	3.10pm	Elevated NTU due to discharge from sediment basin from above design rain event. Results within EPL criteria. All required controls are in place.	25	6.68	0.149	12.7	7.55	0.092	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 DS	23.2.15	wet	3.31pm		24.9	6.8	0.141	21	5.98	0.093	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 US	20.3.15	dry	10.15am	EC marginal difference between upstream and downstream. DO reading anomalous	22.32	7.06	0.209	23.9	4.86	0.136	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 DS	20.3.15	dry	7.20am		21.22	7.38	0.33	10.6	-	0.215	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 US	01.04.15	wet	10.15am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. All required controls are in place.	23.37	6.68	0.203	10.6	8	0.132	0.1	20	Nil	0.04	0.009	0.31	0.25	0.055	0.046	0.009	0.107	<0.001	0.206	0.002	<0.001	0.001	0.001	1.338	0.004	0.001	<0.001	<0.005	0.003	<0.0005
26000 DS	01.04.15	wet	10.00am		23.27	6.67	0.205	29.6	8	0.133	0.1	28.3	Nil	0.04	0.006	0.316	0.28	0.039	0.032	0.007	0.092	0.002	0.265	0.002	<0.001	0.001	0.001	1.160	0.004	0.001	<0.001	<0.005	0.005	<0.0005
26000 US	17.04.15	Dry	4.15pm	Elevated Turbidity/TSS, however results within EPL criteria. Low flow in downstream pool maybe contributing factor to turbidity difference. No particular construction impacts noted. Only marginal variations between downstream and upstream values for other parameters.	24.51	6.74	0.223	14	3.29	0.145	0.1	7	Nil	0.03	0.004	0.39	0.35	0.038	0.029	0.009	0.040	<0.001	0.059	0.001	<0.001	0.001	0.001	0.877	0.006	0.001	<0.001	<0.001	0.003	<0.0005
26000 DS	17.04.15	Dry	4.00pm		24.9	6.91	0.258	58.2	6.72	0.183	0.1	28.3	Nil	0.03	0.006	0.384	0.35	0.032	0.027	0.005	0.054	<0.001	0.073	0.001	<0.001	<0.001	0.001	0.92	0.022	0.001	<0.001	<0.001	0.003	<0.0005
26000 US	30.04.15	wet	3.15pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. Results within EPL criteria. All required controls are in place.	21.74	7.54	0.2	10	10.19	0.137	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 DS	30.04.15	wet	3.20pm		22.00	7.74	0.241	20.7	15.1	0.152	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 US	18.05.15	wet	3.00pm	Compliant.	19.8	7.59	0.233	2.5	6.83	0.152	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 DS	18.05.15	wet	3.10pm		20.1	7.36	0.221	3.6	8.19	0.155	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 US	22.05.15	wet	3.25pm	Compliant.	19.82	7.62	0.226	8.7	10.6	0.148	0.1	Lab results pending																							
26000 DS	22.05.15	wet	3.25pm		19.79	7.58	0.219	10.3	9.47	0.156	0.1	Lab results pending																							
26000 US	29.05.15	Dry	2.50pm	Compliant. Marginal increase in EC above background	19.66	7.44	0.212	4	8.46	0.144	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26000 DS	29.05.15	Dry	2.50pm		19.82	7.62	0.234	6.61	6.29	0.161	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp. (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location Kalang River																																		
35900 US	12.12.14	wet	2.15pm	DO discrepancy may be the result of natural fluctuations within the system. No construction impacts observed.	24.88	6.94	42.3	35.4	5.37	25.8	27.2	15	Nil	0.046	0.016	0.42	0.37	0.056	0.053	0.003	0.117	<0.001	0.002	0.001	<0.001	0.001	<0.001	0.009	0.006	0.001	<0.001	<0.002	0.010	<0.001
35900 DS	12.12.14	wet	2.43pm		24.72	7.31	43.8	10.5	4.42	26.7	28.2	26	Nil	0.047	0.006	0.427	0.39	0.042	0.04	0.002	0.167	<0.001	0.011	0.002	<0.001	0.002	0.001	0.004	0.001	0.002	<0.001	0.005	0.001	<0.001
35900 US	20.1.15	wet	5.00pm	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. Major rain event in catchment 130-250mm. All required controls are in place.	25.84	6.14	1.59	169	4.49	1.02	0.5	104	Nil	0.07	0.018	0.64	0.37	0.268	0.264	0.004	0.148	<0.001	0.280	<0.001	<0.001	<0.001	0.002	0.374	0.023	0.001	<0.001	<0.001	0.003	<0.0005
35900 DS	20.1.15	wet	4.45pm		25.95	6.08	1.53	193	3.91	0.984	0.8	93	Nil	0.07	0.005	0.609	0.39	0.217	0.215	0.002	0.118	<0.001	0.249	0.001	<0.001	<0.001	0.001	0.379	0.028	<0.001	<0.001	<0.001	0.003	<0.0005
35900 US	28.1.15	wet	10.30am	Minor DO discrepancy compared to upstream value.	21.11	5.91	0.289	51.4	3.04	0.188	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 DS	28.1.15	wet	10.45am		21.24	6.02	0.279	52.1	3.02	0.181	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 US	4.2.15	wet	9.30am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. All required controls are in place.	20.97	6.46	4.73	20.8	7.01	3.02	2.5	22	Nil	0.03	<0.005	0.39	0.31	0.079	0.072	0.007	0.053	<0.001	0.153	<0.001	<0.001	<0.001	0.001	0.581	0.114	0.001	<0.001	0.001	0.003	<0.0005
35900 DS	4.2.15	wet	10.03am		22.59	5.89	7.59	15.4	4.31	4.78	4.2	11	Nil	0.023	0.006	0.373	0.35	0.028	0.027	0.001	0.015	<0.001	0.123	0.002	<0.001	<0.001	0.001	0.467	0.118	0.001	<0.001	0.001	0.001	<0.0005
35900 US	23.2.15	wet	8.50am	Compliant. River in flood ebb.	21.87	6.93	0.404	23.9	4.55	0.263	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 DS	23.2.15	wet	9.02am		21.91	6.98	0.402	30.9	5.12	0.261	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 US	12.3.15	dry	8.45am	Compliant	23.35	6.64	4.1	10.4	6.71	8.77	8.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 DS	12.3.15	dry	8.50am		24.03	6.97	15.7	9.5	6.85	9.61	9.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 US	01.04.15	wet	08.30am	Compliant	23.18	7.46	23.1	0.5	7.63	14.3	13.9	13	Nil	0.02	<0.005	0.41	0.39	0.022	0.020	0.002	0.112	<0.001	0.011	<0.010	<0.001	<0.001	0.002	0.023	0.049	<0.001	<0.001	<0.005	0.006	<0.0005
35900 DS	01.04.15	wet	8.45am		23.38	7.46	27	0	7.96	16.8	16.6	9.5	Nil	0.015	<0.005	0.3	0.30	0.004	<0.005	0.001	0.017	<0.001	0.011	<0.010	<0.001	<0.001	0.001	0.022	0.018	<0.001	<0.001	<0.005	0.004	<0.0005
35900 US	17.04.15	Dry	9.30am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. Results within EPL criteria. All required controls are in place.	21.49	6.75	20.4	10	5.37	12.6	12.1	3	Nil	0.02	0.004	0.31	0.27	0.034	0.029	0.005	0.087	<0.001	0.010	<0.010	<0.001	<0.001	0.001	0.028	0.034	0.001	<0.001	<0.010	0.001	<0.0005
35900 DS	17.04.15	Dry	9.42am		22.92	6.89	20.7	6	4.7	12.9	12.4	5.5	Nil	0.022	0.004	0.34	0.31	0.026	0.021	0.005	0.055	<0.001	0.009	<0.010	<0.001	<0.001	<0.001	0.019	0.025	0.003	<0.001	<0.010	0.001	<0.0005
35900 US	30.04.15	wet	10.43am	Compliant	19.49	8.37	27.2	6.2	8.09	16.9	16.6	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 DS	30.04.15	wet	11.00am		19.69	7.72	28	10.7	7.78	17.3	17.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 US	18.05.15	wet	4.48pm	Compliant. Marginal increase in EC above upstream value	20.47	7.4	14.2	22.6	8.63	8.78	8.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 DS	18.05.15	wet	5.05pm		19.67	7.39	14.9	18.9	8.23	9.26	8.7	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 US	22.05.15	wet	11.15am	DO results lower than preconstruction criteria however only marginal variations between downstream and upstream values. Results within EPL criteria.	17.92	7.11	15.8	15.2	5.51	9.81	9.2	Lab results pending																								
35900 DS	22.05.15	wet	11.30am		17.86	7.13	15.6	16.3	5.03	9.76	9.2	Lab results pending																								
35900 US	29.05.15	Dry	9.45am	Compliant	16.85	7.01	20.8	5.9	7.03	12.9	12.4	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35900 DS	29.05.15	Dry	10.00am		16.87	7	20.8	6	7.31	12.8	12.4	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp. (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location SEPP 14-353																																	
SEPP 353	12.12.14	wet	3.00pm	Some results slightly higher than preconstruction criteria. Results within EPL criteria. All required controls are in place.	24.71	7.49	40.7	10.4	3.7	24.8	26	19	Nil	0.099	0.006	0.534	0.47	0.063	0.059	0.004	0.174	<0.001	0.009	0.004	<0.001	<0.001	<0.001	0.015	0.015	0.001	<0.001	0.003	0.003	<0.001
SEPP 353	20.1.15	wet	4.00pm	Some results slightly higher than preconstruction criteria. Results within EPL criteria. All required controls are in place.	26.31	6.98	5.06	57.1	4.66	3.18	2.7	26	Nil	0.068	0.012	1.122	0.91	0.213	0.204	0.009	0.37	<0.001	0.061	0.001	<0.001	<0.001	0.002	0.215	<0.001	0.001	<0.001	<0.001	0.008	<0.0005
SEPP 353	28.1.15	wet	-	Inaccessible due to flooding	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 353	4.2.15	wet	-	Inaccessible due to flooding	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 353	23.2.15	wet	-	Inaccessible due to flooding	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 353	12.3.15	dry	12.25pm	DO marginally below P80 std dev and upstream value	28.12	6.31	0.355	14.3	6.94	0.231	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 353	01.04.15	wet	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 353	17.04.15	Dry	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 353	30.04.15	wet	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 353	18.05.15	wet	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 353	22.05.15	wet	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 354	29.05.15	Dry	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp. (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location 36000																																		
36000 US	12.12.14	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	12.12.14	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	20.1.15	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	20.1.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	28.1.15	wet	10.50am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. All required controls are in place.	21.68	5.77	0.077	23.5	1.63	0.5	0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	28.1.15	wet	11.03am		21.87	5.69	0.082	26.9	1.53	0.53	0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	4.2.15	wet	9.52am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values with the exception of DO which may be attributed to natural fluctuation. All required controls are in place.	21.81	6.02	0.26	16.9	6.81	0.164	0.1	22	Nil	0.05	0.008	0.39	0.36	0.025	<0.005	0.024	0.027	<0.001	0.160	0.001	<0.001	<0.001	0.001	3.093	0.075	0.001	<0.001	<0.001	0.003	<0.0005
36000 DS	4.2.15	wet	10.11am		22.24	6.08	0.362	18.1	3.58	0.198	0.3	26	Nil	0.05	0.009	0.362	0.34	0.019	<0.005	0.029	0.034	<0.001	0.164	0.001	<0.001	<0.001	0.001	3.09	0.053	0.001	<0.001	<0.001	0.003	<0.0005
36000 US	23.2.15	wet	11.35am	Compliant	24.72	6.02	0.091	9	3.36	0.059	0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	23.2.15	wet	9.05am		23.06	6.56	0.107	11.8	7.91	0.069	0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	12.3.15	dry	11.22am	Low DO result possibly due to natural fluctuation. No specific construction impacts observed. All required controls are in place.	26.84	6.16	0.204	14.9	7.02	0.133	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	12.3.15	dry	12.25pm		26.96	6.11	0.21	22.9	1.45	0.137	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	01.04.15	wet	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	01.04.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	17.04.15	Dry	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	17.04.15	Dry	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	30.04.15	wet	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	30.04.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	18.05.15	wet	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	18.05.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	22.05.15	wet	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	22.05.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 US	29.05.15	Dry	-	No sample taken pump diversion operation upstream	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36000 DS	29.05.15	Dry	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp. (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location 38000																																		
38000 US	12.12.14	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	12.12.14	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	20.1.15	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	20.1.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	28.1.15	wet	10.00am	Compliant	20.61	5.8	0.202	9.8	4.72	0.151	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	28.1.15	wet	10.15am		20.7	5.53	0.17	14.7	4.68	0.11	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	4.2.15	wet	10.43am	Some results higher than preconstruction criteria however only marginal variations between downstream and upstream values. No construction impacts observed.	21.84	5.38	0.162	5.3	4.03	0.106	0.1	6	Nil	0.03	0.031	0.45	0.44	0.010	<0.005	0.013	0.020	<0.001	0.918	0.001	<0.001	0.001	0.002	1.351	0.049	0.002	<0.001	<0.001	0.005	<0.0005
38000 DS	4.2.15	wet	10.32am		23.13	5.61	0.182	11.2	3.08	0.118	0.1	8.5	Nil	0.03	0.008	0.479	0.46	0.021	0.008	0.013	0.022	<0.001	0.932	0.001	<0.001	0.001	0.002	1.183	0.053	0.002	<0.001	<0.001	0.005	<0.0005
38000 US	23.2.15	wet	10.08am	Compliant	23.58	5.9	0.105	43.8	7.98	0.069	0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	23.2.15	wet	10.29am		24.21	5.66	0.105	35.2	7.72	0.068	0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	12.3.15	dry	7.17am	Compliant	21.33	6.44	0.386	24.6	7.88	0.251	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	12.3.15	dry	7.05am		22.01	7.21	0.41	7.4	5.56	0.267	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	01.04.15	wet	11.00am	Turbidity/TSS elevated. Rainfall within design capacity of controls. All required controls are in place. All other parameters downstream are better than upstream values.	22.72	6.76	0.252	69.1	8.27	0.163	0.1	41	Nil	0.03	0.005	0.52	0.51	0.012	<0.005	0.011	0.058	<0.001	0.427	0.001	<0.001	0.001	0.002	1.362	0.056	0.002	<0.001	<0.005	0.007	<0.0005
38000 DS	01.04.15	wet	11.30am		22.34	6.26	0.292	140	8.15	0.19	0.1	71	Nil	0.03	<0.005	0.409	0.39	0.017	0.01	0.007	0.101	<0.001	0.262	0.001	<0.001	0.001	0.001	1.33	0.060	0.002	<0.001	<0.005	0.006	<0.0005
38000 US	17.04.15	Dry	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	17.04.15	Dry	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	30.04.15	wet	12.00pm	Turbidity elevated but only marginally different to upstream. Heavy rainfall event in progress. All required controls are in place. pH slightly higher than preconstruction criteria and upstream however within EPL criteria.	17.25	6.95	0.383	109	4.82	0.279	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	30.04.15	wet	11.50am		19.42	7.96	0.309	128	10.7	0.302	0.2	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	18.05.15	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	18.05.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	22.05.15	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	22.05.15	wet	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 US	29.05.15	Dry	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38000 DS	29.05.15	Dry	-		-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

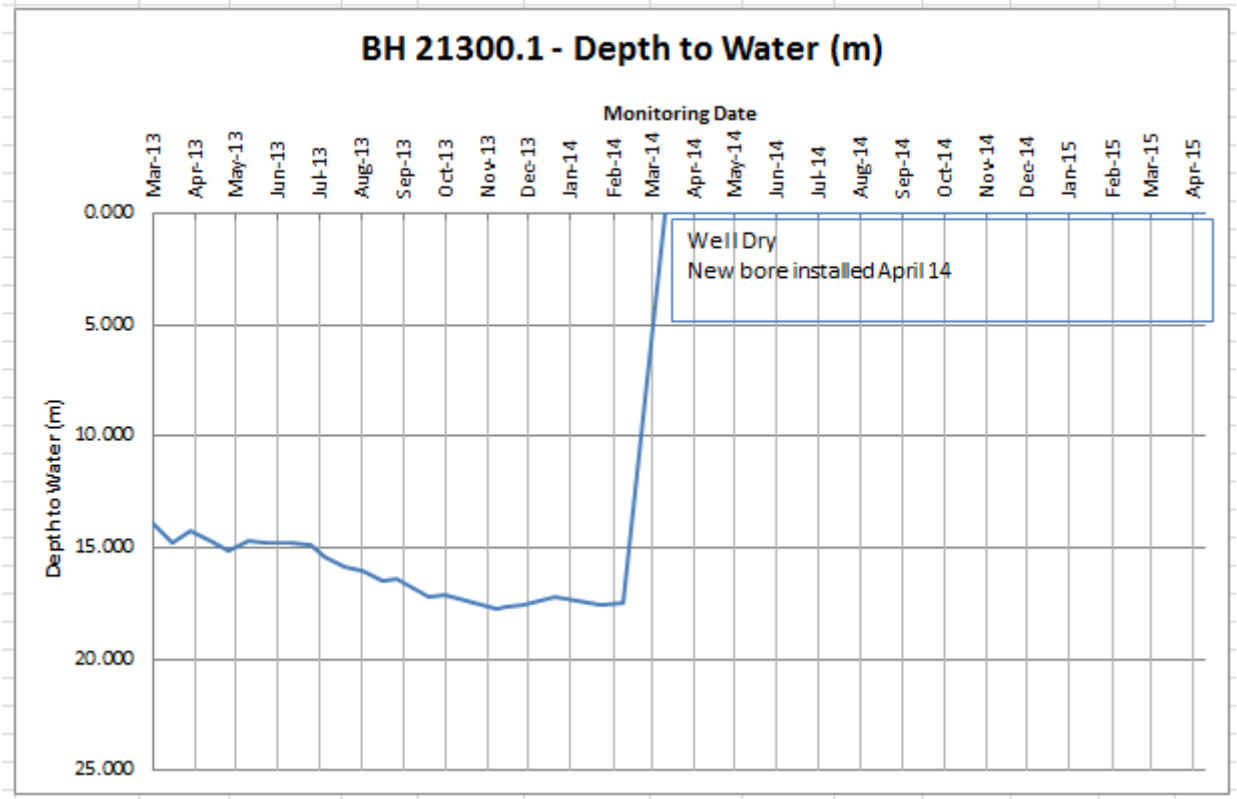
Site ID	Sampling Date	Sampling Event	Sampling Time	Compliance Comments	Temp (°C)	pH	EC (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (mg/L)	Salinity (ppt)	TSS (mg/L)	Oil and Grease	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Total Kjeldahl Nitrogen (mg/L N)	NOx	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
Location SEPP 14-351																																		
SEPP 351	12.12.14	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 351	20.1.15	wet	4.30pm	Some results slightly higher than preconstruction criteria. Results within EPL criteria. All required controls are in place.	26.45	6.13	0.43	1.3	5.33	0.28	0.2	7	Nil	0.063	0.007	1.092	1.07	0.025	0.009	0.016	0.13	<0.001	0.16	0.002	<0.001	0.001	0.001	0.54	<0.001	<0.001	<0.001	<0.001	0.005	<0.0005
SEPP 351	28.1.15	wet	10.22am	Some results slightly higher than preconstruction criteria. All required controls are in place.	21.55	5.59	0.106	48.2	1.41	0.069	0.0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 351	4.2.15	wet	11.05am	Some results slightly higher than preconstruction criteria. All required controls are in place.	22.68	5.61	0.127	6.2	1.57	0.082	0.1	13	Nil	0.029	<0.005	0.587	0.57	0.015	<0.005	0.016	0.055	<0.001	0.537	0.001	<0.001	0.001	0.001	1.33	0.052	0.001	<0.001	0.001	0.003	<0.0005
SEPP 351	23.2.15	wet	10.45am	Some results slightly higher than preconstruction criteria. All required controls are in place.	23.16	5.82	0.109	17.5	3.22	0.071	0.0	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 351	12.3.15	dry	9.30am	DO marginally lower than preconstruction values. No construction impacts observed	22.83	6.95	0.925	7.1	2.76	0.574	0.4	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 351	01.04.15	wet	9.45am	EC and DO results marginally higher than preconstruction criteria. All required controls are in place.	23.18	7.15	1.04	20	3.53	0.657	0.5	23	Nil	0.04	<0.005	0.74	0.73	0.007	<0.005	0.007	0.160	<0.001	0.2	0.001	<0.001	0.001	0.001	0.903	0.045	0.001	<0.001	<0.005	0.004	<0.0005
SEPP 351	17.04.15	Dry	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 351	30.04.15	wet	1.00pm	Compliant	17.15	6.77	0.175	10.7	5.48	0.114	0.1	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 351	18.05.15	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 351	22.05.15	wet	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEPP 351	29.05.15	Dry	-	Pooled water / no flow - no sample taken	-	-	-	-	-	-	-	-	Nil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NH2U – Ground Water Monitoring Summary December 2014 to May 2015

Trigger Values	
White =	Within P80 range +/- std dev or better
Red =	"Triggered" value

Bore 21300.1 – control site

Monitoring Bore 21300.1		Earthworks Activity during Monitoring	Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results: Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	8.00am	-	DRY	DRY	DRY	DRY																											
	January	Construction	15/01/2015	10.10am	-	DRY	DRY	DRY	DRY																											
	February	Construction	24/02/2015	7.15am	-	DRY	DRY	DRY	DRY																											
2015	March	Construction	23/03/2015	8.20am	-	DRY	DRY	DRY	DRY	Insufficient sample available to undertake lab testing																										
	April	Construction	28/04/2015	7.15am	-	DRY	DRY	DRY	DRY																											
	May	Construction	26/05/2015	8.00am	-	DRY	DRY	DRY	DRY																											
					Data Analysis	Median	20.885	0.275	5.57	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#####	#####	#NUM!	#NUM!	#####	#####	#####	#####	#####	#NUM!	#####	#####	#####	#NUM!	#NUM!	#NUM!	#NUM!	#####	#NUM!
					Compliance to background P80	P80 value	17.16	0.27	5.79	400	14	0.031	0.005	0.351	-0.001	0.002	0.061	39.1	0.65	0.71	1.34	54.1	3.63	<0.001	0.301	0.003	<0.001	<0.001	0.003	0.221	0.301	0.004	0.002	<0.002	0.046	<0.0005
						Standard Deviation	0.91	0.03	0.26	341.76	3.19	0.02	0.01	0.10	0.00	0.01	0.05	3.93	0.76	0.26	0.38	6.06	1.04	-	0.46	0.00	-	0.00	0.00	0.22	0.23	0.00	0.00	-	0.02	-
					Comments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-


BH 21300.1 - Depth to Water (m)
Monitoring Date
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000
Well Dry
New bore installed April 14

Bore 21300.2 – downstream site

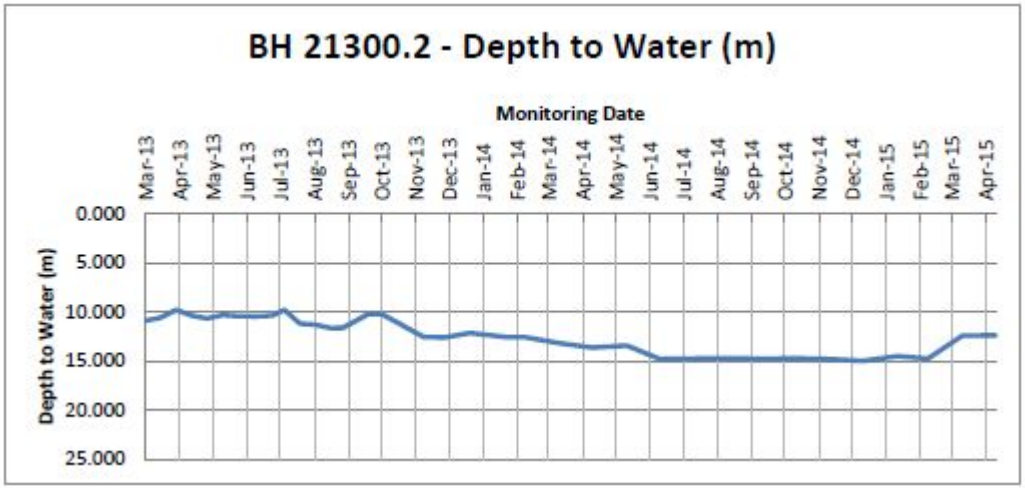
Well Depth:17.32m

Monitoring Bore 21300.2 - impact site		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	**Lab Results** Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ **equivalent)**	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)
2014	December	Construction	16/12/2014	9.00am	complies	14.81	21.36	0.1	5.24								
2015	January	Construction	15/01/2015	8.45am	Minor parameter fluctuation	14.990	21.5	0.21	5.35								
	February	Construction	24/02/2015	11.00am	Minor parameter fluctuation	14.520	21.9	0.22	5.42								
	March	Construction	23/03/2015	7.50am	complies	14.75	22	0.136	5.66	Lab resuts taken but unable to be tested due to delivery time lapse. Resampled in April.							
	April	Construction	28/04/2015	8.00am	Minor parameter fluctuation	12.41	20.31	0.155	6.95	40	10	0.061	0.007	0.537	0.133	0.002	0.028
	May	Construction	26/05/2015	8.52am	complies	12.39	20.19	0.162	6.82								
					Data Analysis	**Median**	21.25	0.130	5.59	55	5.0	0.075	0.112	0.534	0.038	0.002	0.032
					Compliance to background P80	**P80 value**	20.26	0.178	5.21	100	9.6	0.011	0.01	0.097	0.041	0.002	0.025
						Standard Deviation	0.85	0.04	0.49	26.44	5.42	0.00	0.00	0.05	0.01	0.00	0.03
						P20 value	-	-	4.45	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	complies	complies	complies	complies	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation

Monitoring Bore 21300.2 - impact site		Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December																			
2015	January																			
	February																			
	March																			
	April	5.9	11	5.2	1.2	34	4	0.001	0.134	0.001	<0.001	<0.001	0.002	0.075	0.014	0.001	<0.001	<0.001	0.012	<0.0005
	May																			
Data Analysis	**Median**	12.3	0.89	2.3	1.45	33.5	5	0.001	0.129	0.001	<0.001	<0.001	0.004	0.111	0.02	0.001	0.002	<0.001	0.01	<0.0005
Compliance to background P80	**P80 value**	17.6	0.41	2.17	2.49	36.1	3.96	<0.001	0.200	0.001	<0.001	<0.001	0.003	0.050	0.02	0.002	0.001	<0.002	0.018	<0.0005
	Standard Deviation	2.77	0.24	1.58	0.45	6.29	1.33	-	0.78	0.00	-	0.00	0.00	0.05	0.01	0.00	0.00	-	0.00	-
	P20 value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6 month median compliance Comments		complies	Minor parameter fluctuation	complies	complies	complies	complies	complies	complies	complies	complies	complies	Minor parameter fluctuation	Minor parameter fluctuation	complies	complies	complies	complies	complies	complies

Well Depth:17.32m

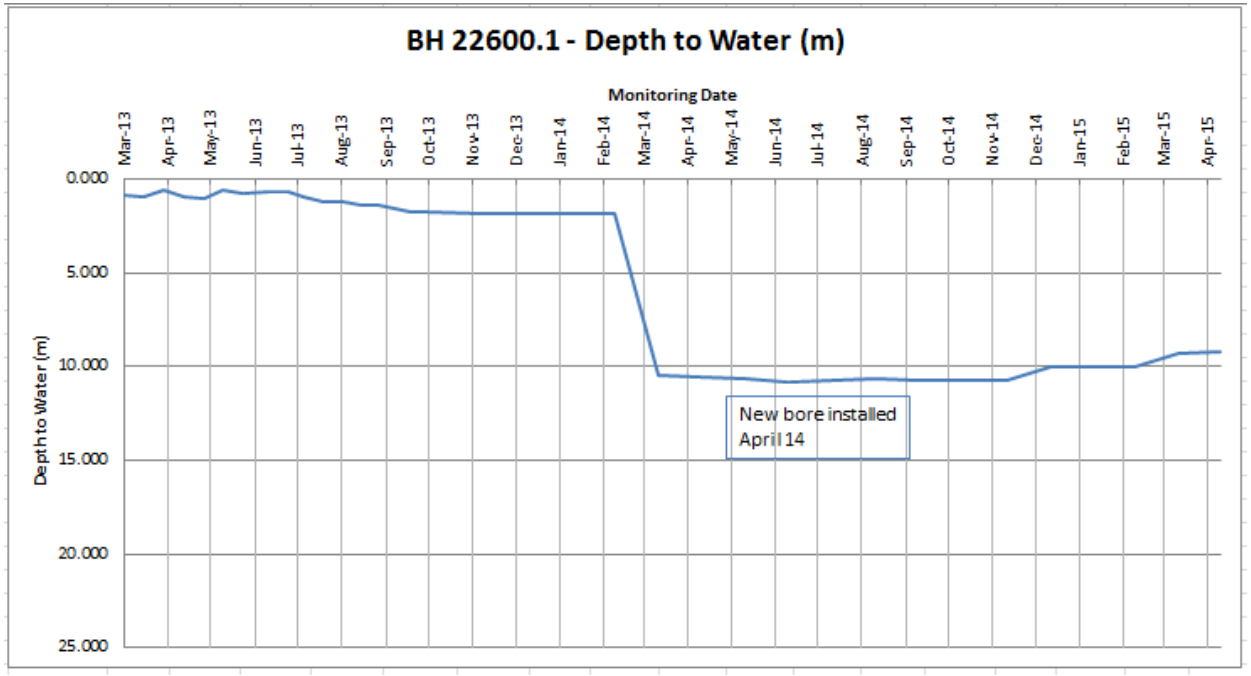
Monitoring Bore 21300.2 - impact site		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	**BTEX**	Benzene (µg/L or ppb)	Toluene (µg/L or ppb)	Ethylbenzene (µg/L or ppb)	m+p-Xylene (µg/L or ppb)	o-Xylene (µg/L or ppb)	Naphthalene (µg/L or ppb)	Total Recoverable Hydrocarbons:	C6-C9 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb) LESS BTEX (F1)	C10-C14 Fraction (µg/L or ppb)	C15-C28 Fraction (µg/L or ppb)	C29-C36 Fraction (µg/L or ppb)	C10-C16 Fraction (µg/L or ppb)	C10-C16 less Naphthalene Fraction (µg/L or ppb)	C16-C34 Fraction (µg/L or ppb)	C34-C40 Fraction (µg/L or ppb)
2014	December	Construction	16/12/2014	9.00am	complies																		
2015	January	Construction	15/01/2015	8.45am	Minor parameter fluctuation																		
	February	Construction	24/02/2015	11.00am	Minor parameter fluctuation																		
	March	Construction	23/03/2015	7.50am	complies																		
	April	Construction	28/04/2015	8.00am	Minor parameter fluctuation		<1	<1	<1	<2	<1	<1		<10	<10	<10	<50	<100	<100	<50		<100	<100
	May	Construction	26/05/2015	8.52am	complies																		
					Data Analysis	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	<100	<100	<50	-	<100	<100
					Compliance to background P80	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	<100	<100	<50	N/A	<100	<100
						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	complies	complies	complies	complies	complies	complies	-	complies	complies	complies	complies	complies	complies	complies	-	complies	complies


BH 21300.2 - Depth to Water (m)
Monitoring Date
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15

Bore 22600.1 – control site

Monitoring Bore 22600.1 - control site		Well Depth: 10.91m																																				
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	8.35am	Minor parameter fluctuation	10.72	19.9	1.8	8.65																													
2015	January	Construction	15/01/2015	12.00pm	Minor parameter fluctuation	10.020	20.09	1.91	8.36																													
	February	Construction	24/02/2015	10.15am	Minor parameter fluctuation	9.980	21.3	1.76	8.01																													
	March	Construction	23/03/2015	11.50am	Minor parameter fluctuation	10.010	21.8	1.59	7.95	Lab resuts taken but unable to be tested due to delivery time lapse. Resampled in April.																													
	April	Construction	28/04/2015	10.00am	Elevated BTEX and TRH results currently being investigated. Minor parameter fluctuation on several other parameters	9.300	20.27	1.09	6.40	673	45	0.05	0.01	0.27	0.05	0.003	0.04	175	2.60	43.00	6.40	304.00	8.00	<0.001	0.04	0.001	<0.001	<0.001	0.001	0.01	0.02	0.001	<0.001	<0.001	0.004	<0.0005
	May	Construction	26/05/2015	9.38am	EC minor fluctuation. Previous elevated BTEX and TRH results still being	9.20	20.1	0.99	6.36																													
					Data Analysis	**Median**	20.32	1.605	7.82	2351	45	0.065	0.005	0.46	0.07	0.002	0.296	239.5	6.3	55.25	9.35	350	28	0.001	1.204	0.007	<0.001	0.005	0.002	0.044	0.043	0.002	0.005	0.002	0.004	<0.0005
					Compliance to background P80	**P80 value**	20.35	0.24	5.69	138	13	0.015	0.010	0.097	0.04	0.002	0.058	35.76	0.7	1.63	4.53	58.5	2.778	<0.001	0.020	<0.001	<0.001	<0.001	0.001	0.021	0.015	0.003	<0.001	<0.002	0.022	<0.0005
						Standard Deviation	1.80	0.02	0.19	39.98	2.67	0.00	0.00	0.05	0.01	0.00	0.03	1.72	0.33	0.46	0.20	4.59	1.09	-	0.01	-	-	-	0.00	0.01	0.01	0.00	-	-	0.01	-
						P20 value	-	-	5.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	Minor parameter fluctuation. EC within acceptable range	Minor parameter fluctuation. pH within acceptable range	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	compliies	Minor parameter fluctuation	Minor parameter fluctuation	complies	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	compliies	Minor parameter fluctuation	Minor parameter fluctuation	complies	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	complies	Minor parameter fluctuation	complies	complies	complies	complies

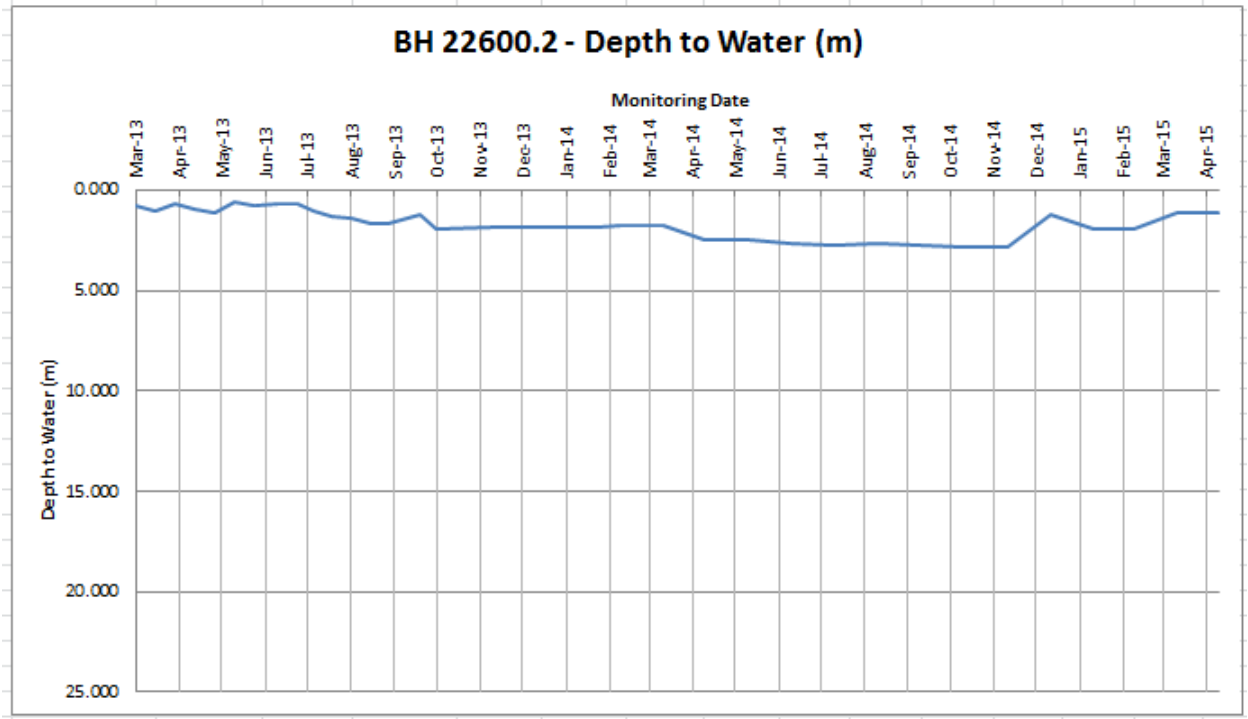
Monitoring Bore 22600.1 - control site		Well Depth: 10.91m																				
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	BTEX	Benzene (µg/L or ppb)	Toluene (µg/L or ppb)	Ethylbenzene (µg/L or ppb)	m+p-Xylene (µg/L or ppb)	o-Xylene (µg/L or ppb)	Naphthalene (µg/L or ppb)	Total Recoverable Hydrocarbons:	C6-C9 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb) LESS BTEX (F1)	C10-C14 Fraction (µg/L or ppb)	C15-C28 Fraction (µg/L or ppb)	C29-C36 Fraction (µg/L or ppb)	C10-C16 Fraction (µg/L or ppb)	C10-C16 less Naphthalene Fraction (µg/L or ppb)	C16-C34 Fraction (µg/L or ppb)	C34-C40 Fraction (µg/L or ppb)
2014	December	Construction	16/12/2014	8.35am	Minor parameter fluctuation																		
2015	January	Construction	15/01/2015	12.00pm	Minor parameter fluctuation																		
	February	Construction	24/02/2015	10.15am	Minor parameter fluctuation																		
	March	Construction	23/03/2015	11.50am	Minor parameter fluctuation																		
	April	Construction	28/04/2015	10.00am	Elevated BTEX and TRH results currently being investigated. Minor parameter fluctuation on several other parameters		<1	1400	1	<2	<1	<1		2200	2200	<50	<100	<100	<100	<50	<50	<100	<100
	May	Construction	26/05/2015	9.38am	EC minor fluctuation. Previous elevated BTEX and TRH results still being																		
					Data Analysis	-	<1	775	1	<2	<1	<1	-	1230	1230	<50	<100	<100	<100	<50	<50	120	<100
					Compliance to background P80	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	<100	<100	<50	N/A	<100	<100
							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	complies	Elevated BTEX and TRH results currently being investigated.	complies	complies	complies	complies	-	Elevated BTEX and TRH results currently being investigated.	Elevated BTEX and TRH results currently being investigated.	complies	complies	complies	complies	complies	complies	complies	complies


BH 22600.1 - Depth to Water (m)
Monitoring Date
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000
New bore installed
April 14

Bore 22600.2 – downstream site

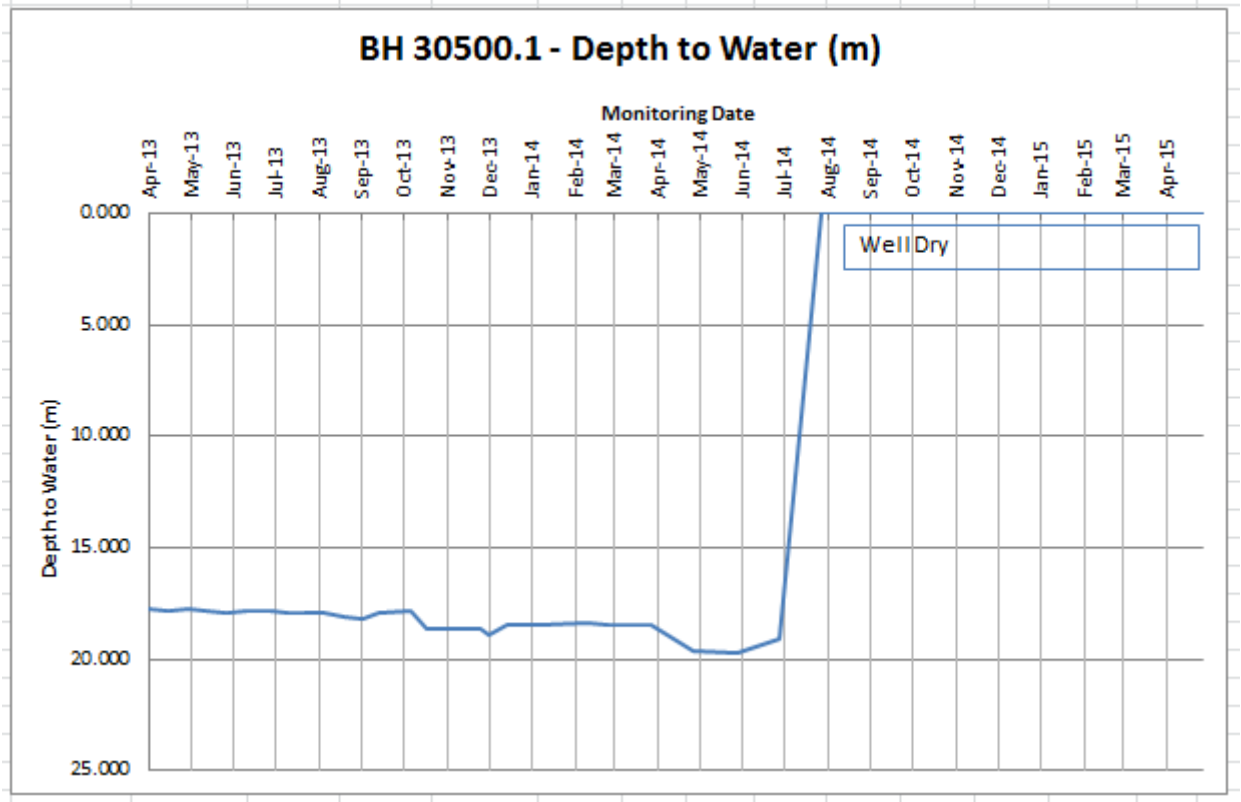
Monitoring Bore 22600.2 - impact site						Well Depth: 10.27m																																		
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results: Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	1.00pm	Minor parameter fluctuation	2.7	21.8	0.29	5.82																															
2015	January	Construction	28/02/2015	12.05pm	complies	Retest BTEX and TRH following contamination of sampling equipment																																		
	January	Construction	15/01/2015	12.15pm	Minor parameter fluctuation	1.200	20.09	1.91	8.36																															
	February	Construction	24/02/2015	9.30am	Minor parameter fluctuation	1.960	22.2	0.39	6.03																															
	March	Construction	23/03/2015	11.00am	Minor parameter fluctuation	1.950	21.5	0.45	5.78	Lab resuts taken but unable to be tested due to delivery time lapse. Resampled in April.																															
	April	Construction	24/04/2015	11.15am	Minor parameter fluctuation	1.150	21.7	0.285	6.73	147	40	0.046	0.008	0.301	0.147	0.001	0.004	37.2	0.9	6.1	7.3	60	5	<0.001	0.012	0.001	<0.001	<0.001	0.001	0.001	0.02	0.002	<0.001	<0.001	0.036	<0.0005
	May	Construction	26/05/2015	10.05am	complies	1.120	20.9	0.271	6.81																															
					Data Analysis	**Median**	21.00	0.35	6.51	85.5	38	0.038	0.0085	0.105	0.037	0.001	0.0195	37.15	0.8	4.2	6.75	62	5.5	<0.001	0.008	0.0035	<0.001	<0.001	0.001	0.009	0.019	0.002	0.001	<0.001	0.0155	<0.0005
					Compliance to background P80	**P80 value**	21.67	0.29	6.13	200	45	0.011	0.007	0.051	0.007	0.003	0.011	37.9	0.91	5.51	7.48	57.50	2.82	<0.001	0.013	0.001	<0.001	0.002	0.002	0.0454	0.024	0.001	0.001	<0.002	0.017	<0.0005
						Standard Deviation	1.90	0.02	0.33	70.16	3.84	0.01	0.00	0.02	0.01	0.00	0.02	1.63	0.18	0.46	0.50	5.23	1.12	-	0.01	0.00	-	-	0.00	0.09	0.00	0.00	0.00	-	0.01	-
						P20 value	-	-	5.84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	Minor parameter fluctuation. EC within acceptable range	complies	complies	complies	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	complies	Minor parameter fluctuation	complies	complies	complies	complies	complies	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	complies	complies	complies	complies	complies	Minor parameter fluctuation	complies	complies	complies	complies

Monitoring Bore 22600.2 - impact site		Well Depth: 10.27m																				
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	BTEX	Benzene (µg/L or ppb)	Toluene (µg/L or ppb)	Ethylbenzene (µg/L or ppb)	m+p-Xylene (µg/L or ppb)	o-Xylene (µg/L or ppb)	Naphthalene (µg/L or ppb)	Total Recoverable Hydrocarbons:	C6-C9 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb) LESS BTEX (F1)	C10-C14 Fraction (µg/L or ppb)	C15-C28 Fraction (µg/L or ppb)	C29-C36 Fraction (µg/L or ppb)	C10-C16 Fraction (µg/L or ppb)	C10-C16 less Naphthalene Fraction (µg/L or ppb)	C16-C34 Fraction (µg/L or ppb)	C34-C40 Fraction (µg/L or ppb)
2014	December	Construction	16/12/2014	1.00pm	Minor parameter fluctuation																		
2015	January	Construction	28/02/2015	12.05pm	complies - Retest BTEX and TRH following contamination of sampling equipment		<1	<1	<1	<2	<1	<1		<10	<10	<10	<50	<100	<100	<50		<100	<100
	January	Construction	15/01/2015	12.15pm	Minor parameter fluctuation																		
	February	Construction	24/02/2015	9.30am	Minor parameter fluctuation																		
	March	Construction	23/03/2015	11.00am	Minor parameter fluctuation																		
	April	Construction	24/04/2015	11.15am	Minor parameter fluctuation		<1	<1	<1	<2	<1	<1		<10	<10	<10	<50	<100	<100	<50		<100	<100
	May	Construction	26/05/2015	10.05am	complies																		
					Data Analysis	-	<1	<1	<1	<2	<1	<1		<10	<10	<10	<50	<100	<100	<50	-	<100	<100
					Compliance to background P80	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	<100	<100	<50	-	<100	<100
						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	complies	complies	complies	complies	complies	complies	-	complies	complies	complies	complies	complies	complies	complies	-	complies	complies


BH 22600.2 - Depth to Water (m)
Monitoring Date
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000

Bore 30500.1 – control site

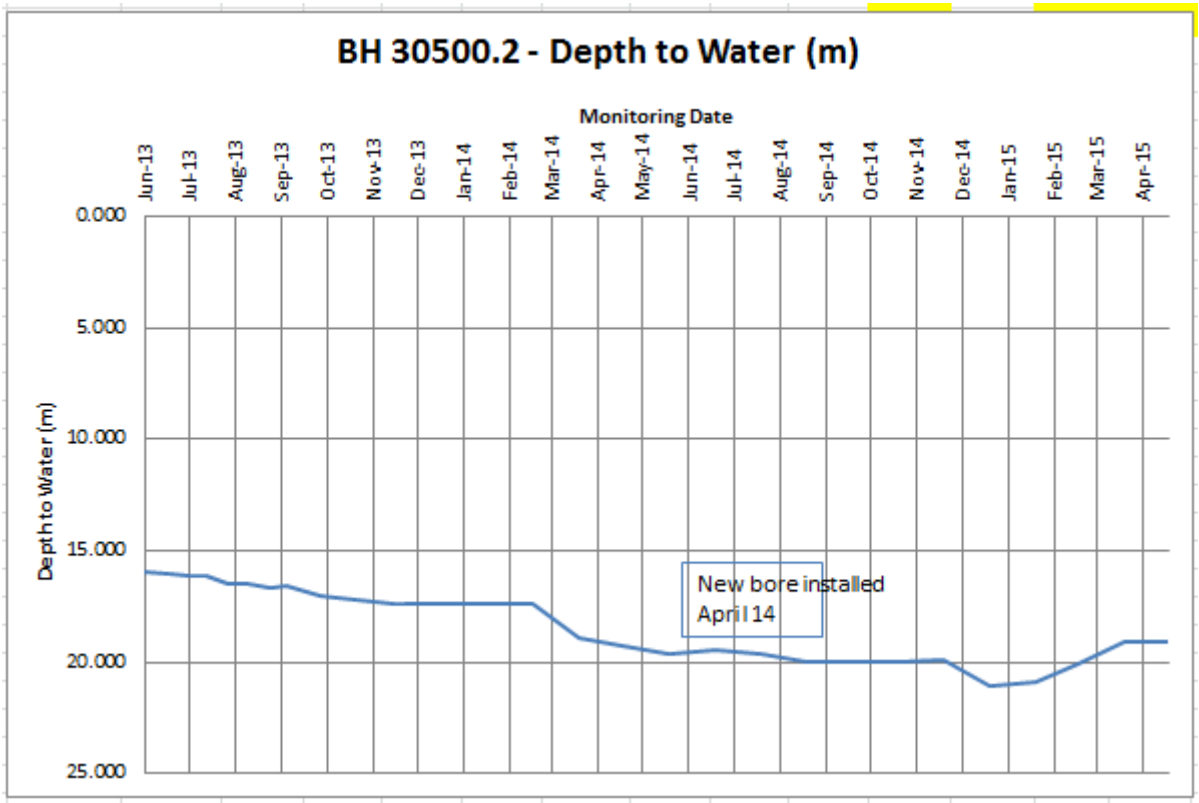
Monitoring Bore 30500.1 - control site		Well Depth: 20.75m																																						
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results: Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	1.30pm	-	DRY	DRY	DRY	DRY																															
	January	Construction	15/01/2015	8.55am	-	DRY	DRY	DRY	DRY																															
	February	Construction	24/02/2015	9.50am	-	DRY	DRY	DRY	DRY																															
	March	Construction	23/03/2015	10.35am	-	DRY	DRY	DRY	DRY	Insufficent sample available for lab tests																															
	April	Construction	27/04/2015	2.30pm	-	DRY	DRY	DRY	DRY																															
	May	Construction	26/05/2015	10.50am	-	DRY	DRY	DRY	DRY																															
2015	June	Construction																																						
	July	Construction																																						
	August	Construction																																						
	September	Construction																																						
	October	Construction																																						
	November	Construction																																						
	December	Construction																																						
					Data	Median	20.36	1.08	5.44	2320	57	1.34	0.007	0.36	0.098	#NUM!	0.044	191	2	8	8.9	286	140	#NUM!	0.032	#NUM!	#NUM!	#NUM!	0.001	0.018	0.388	0.017	####	0.001	0.039	#NUM!
					Compliance to background	P80 value	21.7	1.04	5.50	600	40	0.138	0.031	0.275	0.2092	N/A	0.0454	187	1.07	10.6	8.96	234	101.1	N/A	0.2244	0.001	N/A	0.001351	0.004	0.573	0.261	0.016	0.002	0.004	0.0588	N/A
						Standard Deviation	1.46	0.21	0.32	143.52																												
						P20 value	-	-	5.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-


BH 30500.1 - Depth to Water (m)
Monitoring Date
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
0.000
5.000
10.000
15.000
20.000
25.000
Depth to Water (m)
Well Dry

Bore 30500.2 – downstream site

Monitoring Bore 30500.2 - impact site		Well Depth: 20.82m																																					
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results Total Dissolved	Bicarbonate (Alkalinity) (mg/L $CaCO_3$)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	11.35am	Minor parameter fluctuation. EC within acceptable range	19.93	21.6	1.03	6.47																														
2015	January	Construction	15/01/2015	10.15am	Minor parameter fluctuation. EC within acceptable range	21.030	22.3	1.56	6.35																														
	February	Construction	24/02/2015	10.55am	Minor parameter fluctuation. EC within acceptable range	20.890	22.1	1.56	6.21																														
	March	Construction	23/03/2015	2.30pm	Minor parameter fluctuation. EC within acceptable range	20.050	21.8	1.46	6.45	Lab resuts taken but unable to be tested due to delivery time lapse. Resampled in April.																														
	April	Construction	28/04/2015	10.30am	Minor parameter fluctuation.	19.05	20.24	0.968	6.53	587	150	0.22	0.064	0.397	0.116	0.005	0.075	147	5	33.8	17	184	46	<0.001	0.012	0.004	<0.001	0.001	0.001	0.429	0.488	0.032	<0.001	<0.001	0.047	<0.0005
	May	Construction	26/05/2015	11.2	Minor parameter fluctuation. EC within acceptable range	19.1	20.22	0.971	6.61																														
					Data Analysis	**Median**	21.6	0.815	7.135	341	157	0.14	0.0565	0.559	0.117	0.006	0.0745	110.7	5.75	41.8	13.25	145	52.5	<0.001	0.103	0.002	<0.001	0.004	0.003	0.406	0.178	0.01	0.004	0.001	0.029	<0.0005
					Compliance to background P80	**P80 value**	20.458	0.3824	5.396	250	20	0.069	0.011	0.03	0.028	0.006	0.024	65.8	0.65	0.76	2.97	76.5	35.1	<0.001	1.07	0.003	<0.001	0.003	0.011	1.615	0.188	0.007	0.003	<0.002	0.052	<0.0005
						Standard Deviation	1.36	0.08	0.62	355.15	8.55	0.00	0.00	0.05	0.05	0.00	0.01	9.07	0.06	0.07	0.92	17.66	11.59	-	1.15	0.001	-	0.001	0.01	1.20	0.02	0.001	0.001	-	0.02	-
						P20 value	-	-	4.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	complies	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	complies	complies	complies	complies	complies	complies	complies	complies	Minor parameter fluctuation	complies	complies	complies	complies	complies

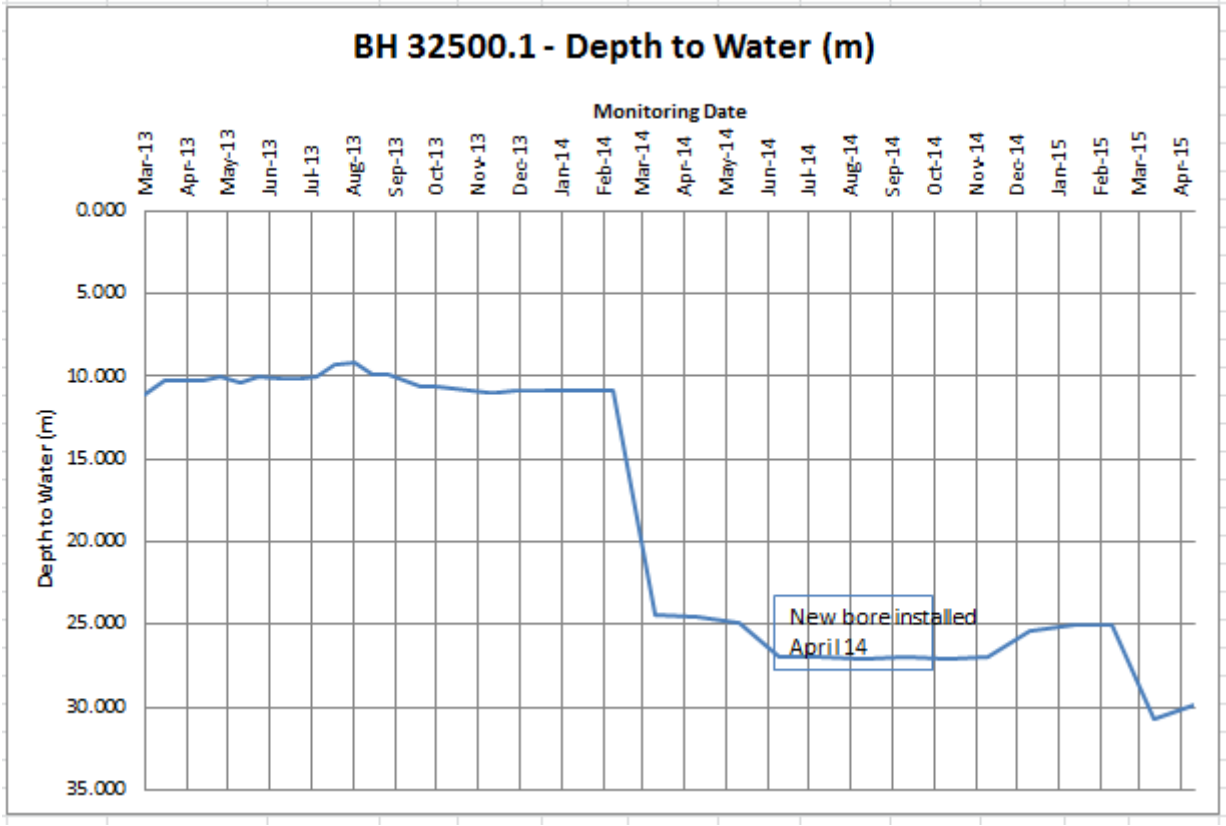
Monitoring Bore 30500.2 - impact site		Vell Depth: 20.82m																					
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	BTEX	Benzene (µg/L or ppb)	Toluene (µg/L or ppb)	Ethylbenzene (µg/L or ppb)	m+p-Xylene (µg/L or ppb)	o-Xylene (µg/L or ppb)	Naphthalene (µg/L or ppb)	Total Recoverable Hydrocarbons:	C6-C9 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb) LESS BTEX (F1)	C10-C14 Fraction (µg/L or ppb)	C15-C28 Fraction (µg/L or ppb)	C29-C36 Fraction (µg/L or ppb)	C10-C16 Fraction (µg/L or ppb)	C10-C16 less Naphthalene Fraction (µg/L or ppb)	C16-C34 Fraction (µg/L or ppb)	C34-C40 Fraction (µg/L or ppb)
2014	December	Construction	16/12/2014	11.35am	Minor parameter fluctuation. EC within acceptable range																		
2015	January	Construction	15/01/2015	10.15am	Minor parameter fluctuation. EC within acceptable range																		
	February	Construction	24/02/2015	10.55am	Minor parameter fluctuation. EC within acceptable range																		
	March	Construction	23/03/2015	2.30pm	Minor parameter fluctuation. EC within acceptable range																		
	April	Construction	28/04/2015	10.30am	Minor parameter fluctuation.		<1	<1	<1	<2	<1	1		<10	<10	<10	<50	<100	<100	<100		<100	<100
	May	Construction	26/05/2015	11.2	Minor parameter fluctuation. EC within acceptable range																		
					Data Analysis	-	<1	<1	<1	<2	<1	1	-	<10	<10	<10	<50	<100	<100	<100	-	<100	<100
					Compliance to background P80	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100
						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	complies	complies	complies	complies	complies	complies	-	complies	complies	complies	complies	complies	complies	complies	-	complies	complies


BH 30500.2 - Depth to Water (m)
Monitoring Date
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000
New bore installed
April 14

Bore 32500.1 – downstream site

Monitoring Bore 32500.1 - impact site		**Well Depth: 41.0m**																																		
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	**Lab Results** Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L **$CaCO_3$ equivalent)**	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	3.10pm	Minor parameter fluctuation	26.99	21	3.25	8.96	Retest of BTEX and TRH following contamination of sampling equipment, refer to 15/0674 - LEND LEASE. Lab results all clear.																										
2015	January	Construction	15/01/2015	12.35pm	Minor parameter fluctuation. EC within acceptable range	25.360	21.5	2.96	8.32																											
	February	Construction	24/02/2015	1.30pm	Minor parameter fluctuation. EC within acceptable range	25.010	21	2.96	8.16																											
	March	Construction	23/03/2015	10.00am	Minor parameter fluctuation. EC within acceptable range	25.03	21.6	2.78	8.03	Lab resuts taken but unable to be tested due to delivery time lapse. Resampled in April.																										
	April	Construction	28/04/2015	12.00pm	Minor parameter fluctuation. Slightly Elevated BTEX and TRH results currently being	30.700	19.03	4.71	8.25	1200	1100	0.031	0.002	3.75	0.013	0.002	2.847	282	70.5	201	0.00	90	76	<0.001	0.628	0.002	<0.001	<0.001	0.002	0.03	<0.001	0.012	0.001	<0.005	0.002	<0.0005
	May	Construction	26/05/2015	12.22pm	Minor parameter fluctuation.	29.90	19.9	4.21	8.8																											
					Data Analysis	**Median**	21	3.175	8.245	587	808.5	0.041	0.006	3.245	0.011	0.003	2.6255	242	92.1	204	0.05	62	107.5	<0.001	0.537	0.002	<0.001	0.001	0.005	0.05	0.004	0.009	0.001	0.002	0.012	<0.0005
					Compliance to background P80	**P80 value**	21.06	1.214	6.872	740	314.6	0.079	0.008	0.332	0.084	0.024	0.172	103	1.81	129	16.4	187	15.71	<0.001	0.033	0.009	<0.001	0.001	0.002	5.12	1.90	0.002	0.001	0.002	0.071	<0.0005
						Standard Deviation	1.70	0.06	0.13	192.21	15.58	0.02	0.00	0.13	0.08	0.01	0.06	4.67	0.26	3.14	1.13	9.94	0.86	-	0.02	0.00	-	0.00	0.00	2.95	0.09	0.001	0.00	-	0.03	-
						P20 value	-	-	6.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	Minor parameter fluctuation. EC within acceptable range	Minor parameter fluctuation. pH within acceptable range	complies	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	complies	Minor parameter fluctuation	complies	complies	complies	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	complies	complies	complies	complies

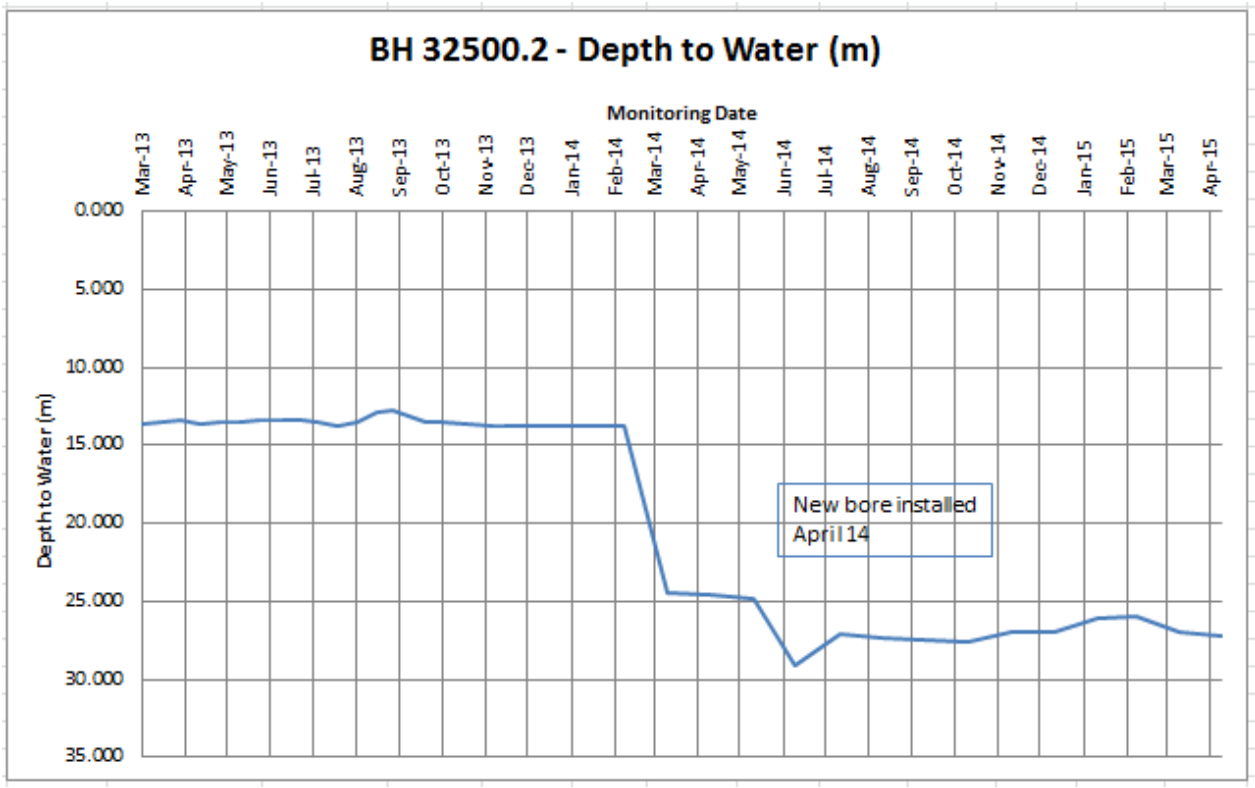
Monitoring Bore 32500.1 - impact site		Well Depth: 41.0m																				
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	BTEX	Benzene (µg/L or ppb)	Toluene (µg/L or ppb)	Ethylbenzene (µg/L or ppb)	m+p-Xylene (µg/L or ppb)	o-Xylene (µg/L or ppb)	Naphthalene (µg/L or ppb)	Total Recoverable Hydrocarbons:	C6-C9 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb) LESS BTEX (F1)	C10-C14 Fraction (µg/L or ppb)	C15-C28 Fraction (µg/L or ppb)	C29-C36 Fraction (µg/L or ppb)	C10-C16 Fraction (µg/L or ppb)	C10-C16 less Naphthalene Fraction (µg/L or ppb)	C16-C34 Fraction (µg/L or ppb)	C34-C40 Fraction (µg/L or ppb)
2014	December	Construction	16/12/2014	3.10pm	Minor parameter fluctuation		<1	<1	<1	<2	<1	1		<25	<25	<25	<25	<100	<100	<25		<100	<100
2015	January	Construction	15/01/2015	12.35pm	Minor parameter fluctuation. EC within acceptable range																		
	February	Construction	24/02/2015	1.30pm	Minor parameter fluctuation. EC within acceptable range																		
	March	Construction	23/03/2015	10.00am	Minor parameter fluctuation. EC within acceptable range																		
	April	Construction	28/04/2015	12.00pm	Minor parameter fluctuation. Slightly Elevated BTEX and TRH results currently being		<1	<1	<1	<2	<1	1		<10	11	11	56	<100	<100	58		<100	<100
	May	Construction	26/05/2015	12.22pm	Minor parameter fluctuation.																		
					Data Analysis	-	<1	<1	<1	<2	1	1	-	11	17	16	76	<100	<100	85	-	<100	<100
					Compliance to background P80	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	140	<100	120	120	<100	<100
						-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	0.00	0.00	-	-
						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	complies	complies	complies	complies	complies	complies	-	complies	low level of hydrocarbon detection. Cause unknown	low level of hydrocarbon detection. Cause unknown	low level of hydrocarbon detection. Cause unknown	complies	complies	low level of hydrocarbon detection. Cause unknown		complies	complies


BH 32500.1 - Depth to Water (m)
Monitoring Date
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
New bore installed April 14

Bore 32500.2 – control site

Monitoring Bore 32500.2 - control site		Well Depth: 16.63m																																						
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	7.25am	complies	27.01	21.9	1.44	7.63	Retest of BTEX and TRH following contamination of sampling equipment. Lab results all clear, refer to 15/0674 - LEND LEASE																															
2015	January	Construction	15/01/2015	8.35am	complies	27.000	21.4	1.35	7.36																															
	February	Construction	24/02/2015	11.15am	complies	26.050	21.6	1.35	7																															
	March	Construction	23/03/2015	4.50pm	complies	26.000	21	1.51	7.22	Lab resuts taken but unable to be tested due to delivery time lapse. Resampled in April.																															
	April	Construction	27/04/2015	9.15am	Minor parameter fluctuation	27.00	20.63	0.217	6.7	133	50	0.086	0.005	0.546	0.08	0.005	0.046	17	3.2	18.5	2.3	27	10	<0.001	0.845	0.002	<0.001	0.002	0.01	0.572	0.043	0.003	0.004	0.001	0.109	<0.0005
	May	Construction	26/05/2015	1.10pm	complies	27.2	19.5	0.215	6.8																															
					Data Analysis	**Median**	21.17	1.42	7.75	133.50	150.00	0.08	0.02	1.19	0.02	0.01	0.98	150.40	39.25	80.20	2.65	186.00	142.00	<0.001	0.31	0.001	<0.001	0.001	0.003	0.25	0.03	0.002	0.003	0.002	0.02	<0.0005
					Compliance to background P80	**P80 value**	22.02	1.42	6.25	854.00	120.00	0.279	0.192	0.243	0.035	0.008	0.041	244	2.430	20.700	28.30	261.00	199.50	<0.001	0.526	0.015	<0.001	0.002	0.013	1.799	0.347	0.010	0.003	0.001	0.034	<0.0005
						Standard Deviation	1.62	0.42	0.13	260.57	27.21	0.095	0.149	0.106	0.015	0.003	0.019	72.790	0.520	5.606	9.166	84.782	68.297	-	0.896	0.006	-	0.002	0.007	1.193	0.106	0.002	0.003	0.001	0.011	-
						P20 value	-	-	6.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	complies	complies	complies	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	complies	Minor parameter fluctuation	Minor parameter fluctuation	complies	Minor parameter fluctuation	Minor parameter fluctuation	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies

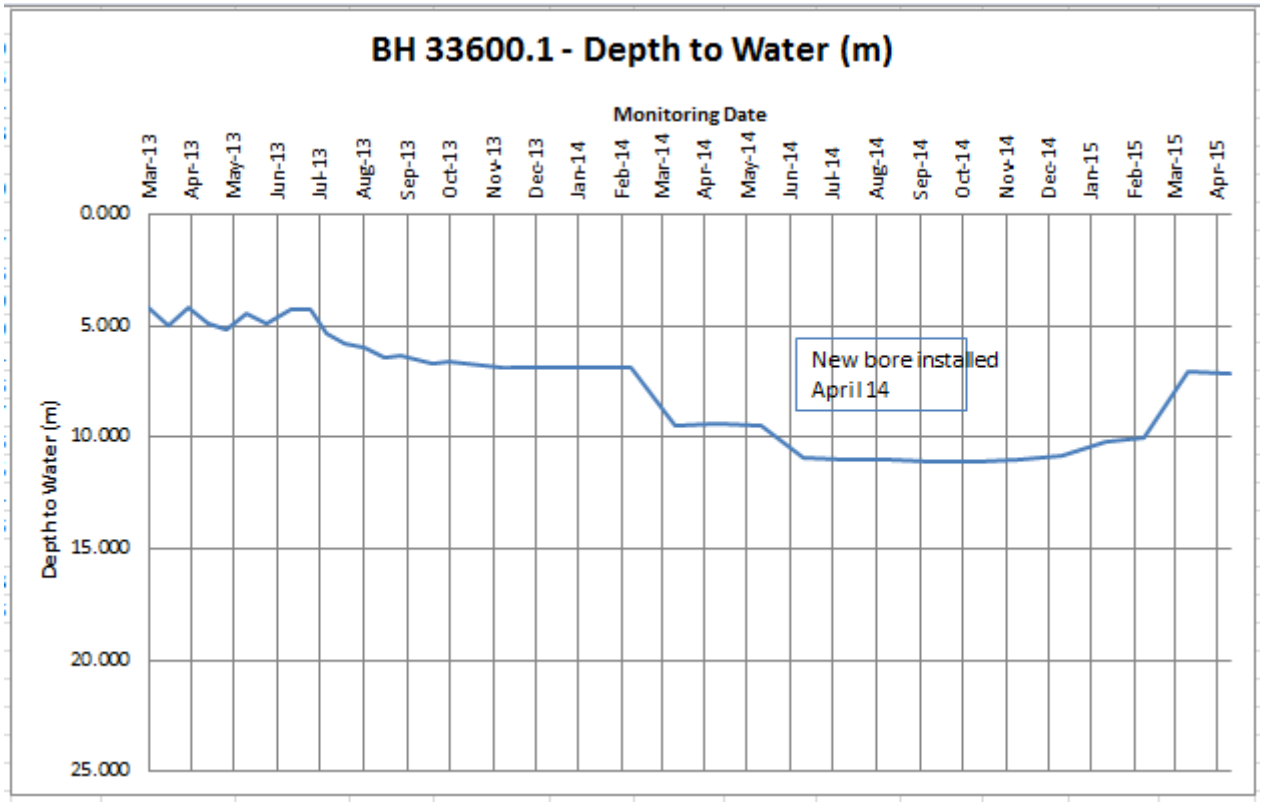
Monitoring Bore 32500.2 - control site		Well Depth: 16.63m																						
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	BTEX	Benzene (µg/L or ppb)	Toluene (µg/L or ppb)	Ethylbenzene (µg/L or ppb)	m+p-Xylene (µg/L or ppb)	o-Xylene (µg/L or ppb)	Naphthalene (µg/L or ppb)	Total Recoverable Hydrocarbons:	C6-C9 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb) LESS BTEX (F1)	C10-C14 Fraction (µg/L or ppb)	C15-C28 Fraction (µg/L or ppb)	C29-C36 Fraction (µg/L or ppb)	C10-C16 Fraction (µg/L or ppb)	C10-C16 less Naphthalene Fraction (µg/L or ppb)	C16-C34 Fraction (µg/L or ppb)	C34-C40 Fraction (µg/L or ppb)
2014	December	Construction	16/12/2014	7.25am	complies	27.01		<1	<1	<1	<2	<1	1		<25	<25	<25	<25	<100	<100	<25		<100	<100
2015	January	Construction	15/01/2015	8.35am	complies	27.000																		
	February	Construction	24/02/2015	11.15am	complies	26.050																		
	March	Construction	23/03/2015	4.50pm	complies	26.000																		
	April	Construction	27/04/2015	9.15am	Minor parameter fluctuation	27.00		<1	<1	<1	<2	<1	1		<25	<25	<25	<25	<100	<100	<25		<100	<100
	May	Construction	26/05/2015	1.10pm	complies	27.2																		
					Data Analysis	**Median**	-	<1	<1	<1	<2	<1	1	-	<25	<25	<25	<25	230.00	<100	60.00	-	210.00	<100
					Compliance to background P80	**P80 value**	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	140	<100	120	120	120	<100	<100
						Standard Deviation	-	-	-	-	-	-	-	-	-	-	-	0.00	-	0.00	0.00	0.00	-	-
						P20 value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	complies	complies	complies	complies	complies	complies	-	complies	complies	complies	complies	hydrocarbon in Nov 2014. Retest confirmed no hydrocarbon	complies	hydrocarbon in Nov 2014. Retest confirmed no hydrocarbon	-	hydrocarbon in Nov 2014. Retest confirmed no hydrocarbon	complies


BH 32500.2 - Depth to Water (m)
Monitoring Date
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
New bore installed
April 14

Bore 33600.1 – control site

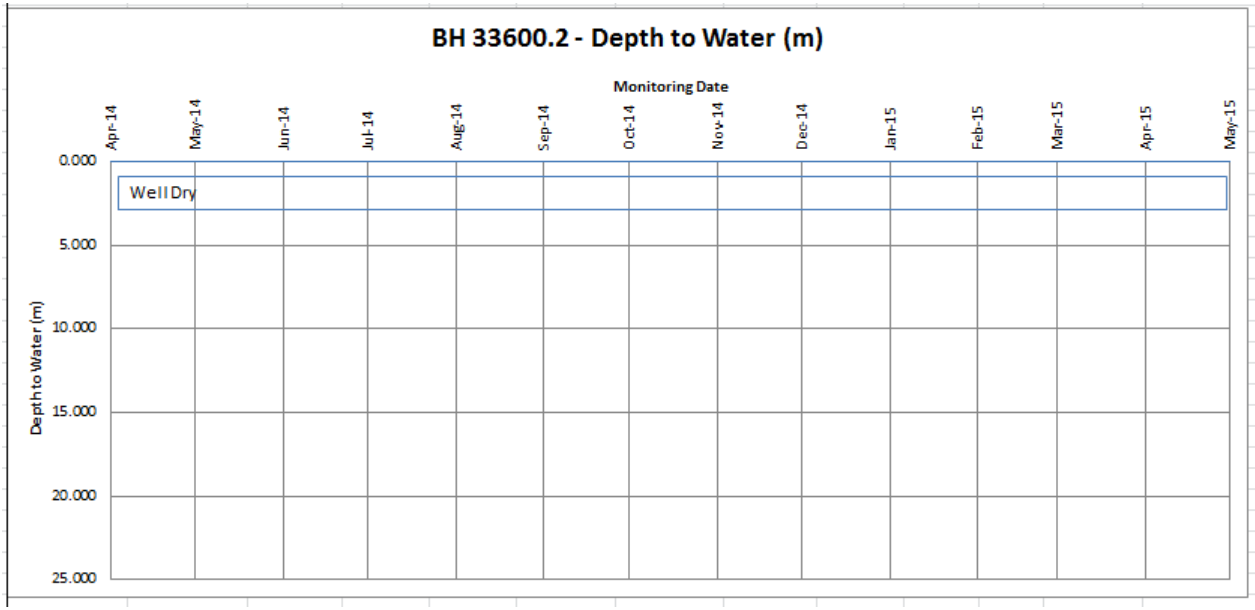
Monitoring Bore 33600.1 - control site		Well Depth: 14.0m																																				
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	2.00pm	Minor parameter fluctuation.	11	21.03	0.9	8.85																														
2015	January	Construction	15/01/2015	3.30pm	complies	10.850	22.36	0.98	8.32																														
	February	Construction	24/02/2015	11.20am	complies	10.150	21.99	0.98	8.24																														
	March	Construction	23/03/2015	10.10am	complies	10.020	21.5	0.95	8.01	Lab resuts taken but unable to be tested due to delivery time lapse. Resampled in April.																														
	April	Construction	27/04/2015	1.30pm	Minor parameter fluctuation.	7.030	19.81	0.733	7.99	407	120	0.116	0.042	0.485	<0.005	0.006	0.097	105	17.5	30.5	5.7	129	23	<0.001	0.218	0.003	<0.001	0.004	0.003	0.985	0.069	5	0.001	<0.001	0.014	<0.0005
	May	Construction	26/05/2015	2.10pm	complies	7.100	19.9	0.719	8.05																														
					Data Analysis	**Median**	20.61	1.04	8.05	268.00	110.50	0.08	0.03	0.79	0.01	0.002	0.49	105.00	50.95	34.60	1.10	122.50	56.50	<0.001	0.23	0.001	0.001	0.001	0.004	0.01	0.07	0.01	0.002	0.002	0.01	<0.0005
					Compliance to background P80	**P80 value**	21.71	1.10	5.28	650.00	20.00	0.040	0.014	0.339	0.037	0.003	0.199	180.200	1.782	1.540	14.880	287.200	19.470	<0.001	0.569	0.002	<0.001	0.001	0.028	1.188	0.125	0.013	0.005	<0.002	0.231	<0.0005
						Standard Deviation	1.51	0.22	0.46	232.39	8.21	0.02	0.00	0.20	0.04	0.001	0.08	50.34	0.47	0.58	5.06	82.49	4.37	-	1.17	0.001	-	0.001	0.01	0.77	0.04	0.004	0.00	-	0.08	-
						P20 value	-	-	4.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	-	complies	Minor parameter fluctuation. pH within acceptable range	complies	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	complies	Minor parameter fluctuation	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies

Monitoring Bore 33600.1 - control site		Well Depth: 14.0m																					
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	BTEX	Benzene (µg/L or ppb)	Toluene (µg/L or ppb)	Ethylbenzene (µg/L or ppb)	m+p-Xylene (µg/L or ppb)	o-Xylene (µg/L or ppb)	Naphthalene (µg/L or ppb)	Total Recoverable Hydrocarbons:	C6-C9 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb) LESS BTEX (F1)	C10-C14 Fraction (µg/L or ppb)	C15-C28 Fraction (µg/L or ppb)	C29-C36 Fraction (µg/L or ppb)	C10-C16 Fraction (µg/L or ppb)	C10-C16 less Naphthalene Fraction (µg/L or ppb)	C16-C34 Fraction (µg/L or ppb)	C34-C40 Fraction (µg/L or ppb)
2014	December	Construction	16/12/2014	2.00pm	Minor parameter fluctuation.	11																		
2015	January	Construction	15/01/2015	3.30pm	complies	10.850																		
	February	Construction	24/02/2015	11.20am	complies	10.150																		
	March	Construction	23/03/2015	10.10am	complies	10.020																		
	April	Construction	27/04/2015	1.30pm	Minor parameter fluctuation.	7.030		<1	<1	<1	<2	<1	<1		<10	<10	<10	<50	<100	<100	<50		<100	<100
	May	Construction	26/05/2015	2.10pm	complies	7.100																		
					Data Analysis	**Median**	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	<100	<100	<50	-	<100	<100
					Compliance to background P80	**P80 value**	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	57	160	<100	151	-	<100	<100
						Standard Deviation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						P20 value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	complies	complies	complies	complies	complies	complies		complies	complies	complies	complies	complies	complies	complies	-	complies	complies


BH 33600.1 - Depth to Water (m)
Monitoring Date
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000
New bore installed April 14

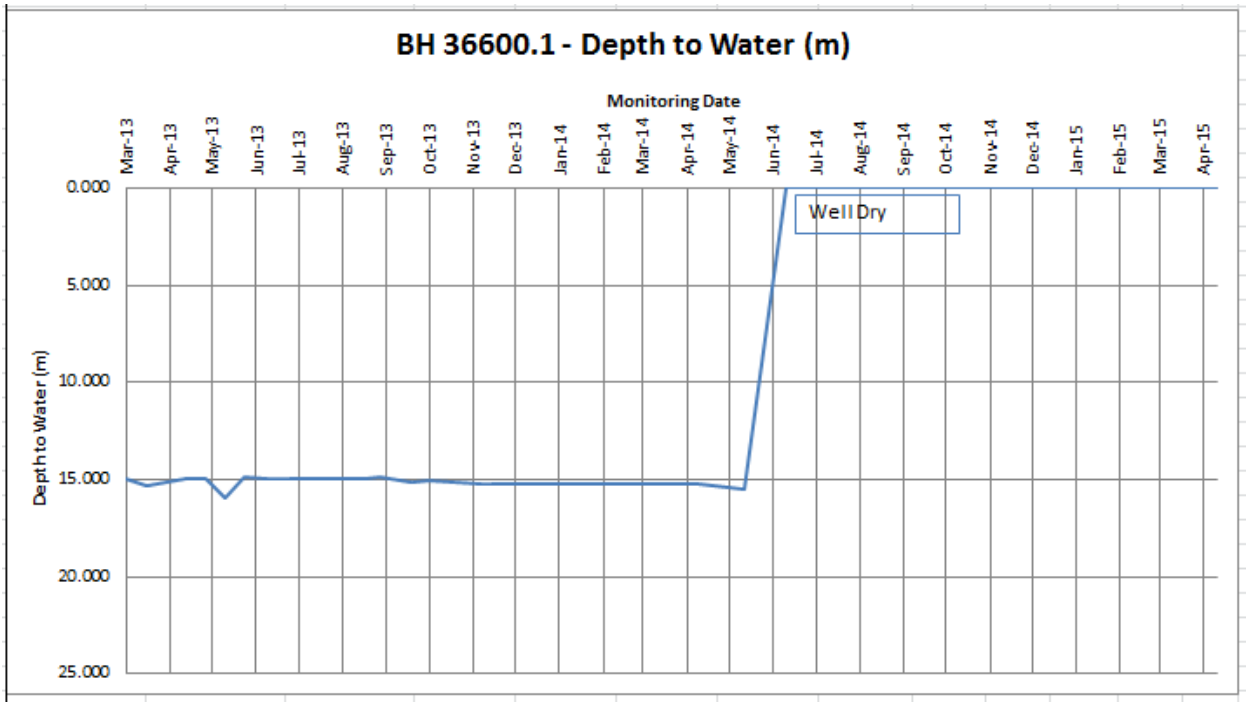
Bore 33600.2 – downstream site

Monitoring Bore 33600.2 - impact site		Earthworks Activity during Monitoring	Monitoring Event Date	Well Depth: 12.5m Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorous (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)
2014	December	Construction	16/12/2014	10.25am	-	DRY																			
2015	January	Construction	15/01/2015	1.30pm	-	DRY																			
	February	Construction	24/02/2015	2.30pm	-	DRY																			
	March	Construction	23/03/2015	3.25pm	-	DRY	Insufficient sample available to undertake lab testing																		
	April	Construction	28/04/2015	3.30pm	-	DRY																			
	May	Construction	26/05/2015	4.20pm	-	DRY																			
					Data Analysis	Median	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	<0.001	#NUM!
					Compliance to background P80	P80 value	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	<0.001	#REF!
						Standard Deviation	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	-	#DIV/0!
						P20 value	-	-	#REF!																	
					6 month median compliance Comments		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Bore 36600.1 – control site

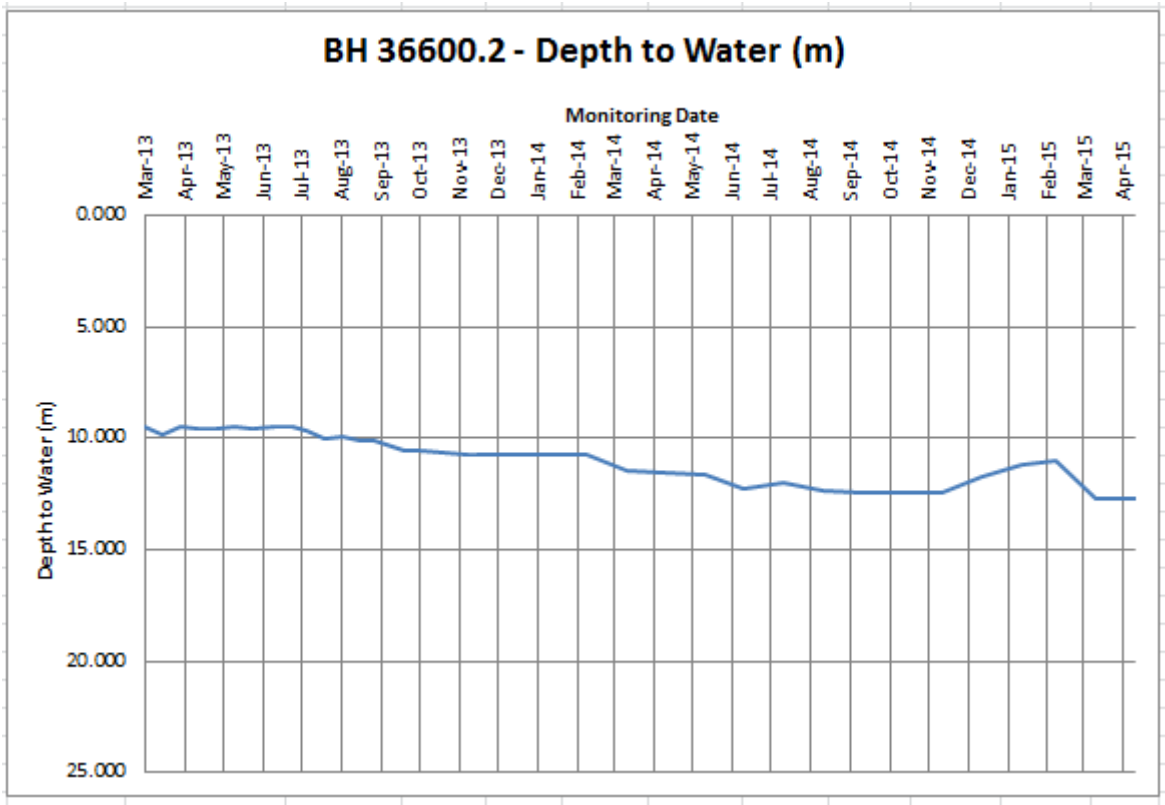
Monitoring Bore 33660.1 - control site		Earthworks Activity during Monitoring	Monitoring Event Date	Well Depth: Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (uscm)	pH	Lab Results: Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4^{2-})	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)
2014	December	Construction	16/12/2014	2.30pm	-	DRY	DRY	DRY	DRY																						
2015	January	Construction	15/01/2015	11.00am	-	DRY	DRY	DRY	DRY																						
	February	Construction	24/02/2015	10.15am	-	DRY	DRY	DRY	DRY																						
	March	Construction	23/03/2015	3.20pm	-	DRY	DRY	DRY	DRY	Insufficent sample for lab test																					
	April	Construction	28/04/2015	4.30pm	-	DRY	DRY	DRY	DRY																						
	May	Construction	26/05/2015	3.15pm	-	DRY	DRY	DRY	DRY																						
					Data Analysis	Median	20.35	0.7	6.32	1700	#NUM!	0.28	0.011	1.9	0.007	0.01	0.177	24.6	1.3	3.5	2	22	27	#NUM!	1.456	0.001	#NUM!	0.002	0.004	1.689	0.066
					Compliance to background P80	P80 value	20.98	3.122	6.0	1775	90	1.695	1.6238	0.283	0.1914	0.003	0.123	618	2.04	3.73	39.4	709	393	#NUM!	0.0946	0.01	0.001	0.001174	0.01	0.701892	2.2098
						Standard Deviation	1.59	0.33	0.15	655.86	27.37	0.50	0.37	0.11	0.06	0.00	0.05	167.87	0.56	0.98	10.76	187.29	131.74	#DIV/0!	0.23	0.00	0.00	0.00	0.01	0.56	0.88
						P20 value	-	-	5.79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Bore 36600.2 – downstream site

Monitoring Bore 33660.2 - impact site		Well Depth: 22.47m																																				
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	Temp (Celcius)	EC (us/cm)	pH	Lab Results: Total Dissolved Solids (mg/L)	Bicarbonate (Alkalinity) (mg/L $CaCO_3$ equivalent)	Total Phosphorus (mg/L P)	Phosphate (mg/L P)	Total Nitrogen (mg/L N)	Nitrate (mg/L N)	Nitrite (mg/L N)	Ammonia (mg/L N)	Sodium (mg/L)	Potassium (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L SO_4)	Silver (mg/L)	Aluminium (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)	Mercury (mg/L)
2014	December	Construction	16/12/2014	11.55am	complies	12.45	20.23	1.19	6.13																													
2015	January	Construction	15/01/2015	9.45am	complies	11.680	21.4	1.21	6.59																													
	February	Construction	24/02/2015	9.55am	Minor parameter fluctuation, within P20	11.220	22.3	1.21	5.96																													
	March	Construction	23/03/2015	10.15am	complies	11.010	21.6	1.22	6.09	Lab resuts taken but unable to be tested due to delivery time lapse. Resampled in April.																												
	April	Construction	28/04/2015	2.00pm	Minor parameter fluctuation	12.700	20.06	1.24	6.79	684	80	1.244	0.691	0.835	0.128	0.005	0.184	218	1.7	6.7	12.6	253	101	<0.001	0.297	0.005	<0.001	0.001	0.005	1.678	0.565	0.017	0.003	<0.001	0.057	<0.0005
	May	Construction	26/05/2015	5.00pm	complies	12.670	20.1	1.21	6.82																													
					Data Analysis	**Median**	20.6	1.22	6.61	364.50	77.00	1.24	0.62	0.08	0.02	0.004	0.02	231.50	0.95	8.05	12.55	279.50	101.00	<0.001	0.07	0.005	<0.001	0.001	0.002	0.85	0.48	0.02	0.003	<0.001	0.02	<0.0005
					Compliance to background P80	**P80 value**	21.9	1.33	6.28	700	69.76	0.943	0.871	0.211	0.081	0.006	0.053	239.0	1.930	4.920	13.80	261.00	111.90	<0.001	0.055	0.005	<0.001	0.003	0.003	0.397	1.573	0.085	0.001	0.003	0.053	<0.0005
						Standard Deviation	1.44	0.09	0.24	499.28	38.82	0.23	0.23	0.09	0.04	0.02	0.23	146.28	0.82	0.78	9.74	175.21	150.93	-	0.03	0.00	-	0.00	0.001	0.28	0.68	0.04	0.001	0.00	0.02	-
						P20 value	-	-	5.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	complies	complies	complies	complies	complies	Minor parameter fluctuation	complies	complies	complies	complies	complies	complies	Minor parameter fluctuation	complies	complies	complies	complies	complies	complies	complies	complies	complies	Minor parameter fluctuation	complies	complies	Minor parameter fluctuation	complies	complies	complies

Monitoring Bore 33660.2 - impact site		Well Depth: 22.47m																					
		Earthworks Activity during Monitoring	Monitoring Event Date	Time	Compliance comments	Field Results: Depth to Water (m)	BTEX	Benzene (µg/L or ppb)	Toluene (µg/L or ppb)	Ethylbenzene (µg/L or ppb)	m+p-Xylene (µg/L or ppb)	o-Xylene (µg/L or ppb)	Naphthalene (µg/L or ppb)	Total Recoverable Hydrocarbons:	C6-C9 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb)	C6-C10 Fraction (µg/L or ppb) LESS BTEX (F1)	C10-C14 Fraction (µg/L or ppb)	C15-C28 Fraction (µg/L or ppb)	C29-C36 Fraction (µg/L or ppb)	C10-C16 Fraction (µg/L or ppb)	C10-C16 less Naphthalene Fraction (µg/L or ppb)	C16-C34 Fraction (µg/L or ppb)	C34-C40 Fraction (µg/L or ppb)
2014	December	Construction	16/12/2014	11.55am	complies	12.45																		
2015	January	Construction	15/01/2015	9.45am	complies	11.680																		
	February	Construction	24/02/2015	9.55am	Minor parameter fluctuation, within P20	11.220																		
	March	Construction	23/03/2015	10.15am	complies	11.010																		
	April	Construction	28/04/2015	2.00pm	Minor parameter fluctuation	12.700		<1	<1	<1	<2	<1	<1		<10	<10	<10	<50	<100	<100	<50	<50	<100	<100
	May	Construction	26/05/2015	5.00pm	complies	12.670																		
					Data Analysis	**Median**	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100
					Compliance to background P80	**P80 value**	-	<1	<1	<1	<2	<1	<1	-	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100
						Standard Deviation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						P20 value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					6 month median compliance Comments	-	-	complies	complies	complies	complies	complies	complies	-	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies	complies


BH 36600.2 - Depth to Water (m)
Monitoring Date
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
Depth to Water (m)
0.000
5.000
10.000
15.000
20.000
25.000