Foxground and Berry Bypass

Construction Compliance Report

Report 1

28 October 2014 – 30 April 2015

Contents

Appendices

Details of Revision and Amendment:

Plan Control

The most current version of this report will be available on the Fulton Hogan database for all project personnel. Distribution of this report will be made through the Foxground and Berry Bypass project document control system 'iTwo'.

The environmental management team will maintain, review and update this report on a six monthly basis.

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1	Project Director	16 July 2015	Andrew Mcrae
2	Environmental Manager	16 July 2015	Shannon Chisholm
3	NSW Environmental Manager	16 July 2015	Irina Kliger
4	RMS Environmental Representative	16 July 2015	Graham Roche
5	DP&E endorsed Environmental Representative (ER)	16 July 2015	Toby Hobbs
6	Department of Planning & Environment	16 July 2015	

Plan Approved By:

Andrew Mcrae

Project Director

Shannon Chisholm

Senior Environmental Manager

Amendment

Each new revision to the report will be distributed to all registered copyholders with an instruction that the superseded copy be destroyed or marked as superseded.

The revision number is included at the end of the document number, which is noted on each page. When amendments occur, the document or relevant section will be reissued with the revision number updated accordingly.

The Project Manager or Environmental Manager will approve amendments by initial in the Approval column below.

The following provides a record of amendments made to this document:

Revision	Date	Description	Page	Prepared by	Approved
1	23/04/2015	Initial Report Draft for review	All	Sam Leigh	
2	26/06/2015	Draft for review – change to format	All	Sam Leigh	
3	29/06/2015	Draft for review – incorporation of ER comments	All	Sam Leigh	SC
4	30/06/2015	Revised draft to include RMS and ER comments	All	Sam Leigh	SC
5	8/07/2015	Final Draft for submission	All	Sam Leigh	
6	16/07/2015	Final	All	Sam Leigh	SC

Abbreviations

CEMP	Construction Environmental Management Plan
CTP	Compliance Tracking Program
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPL	Environment Protection Licence
ER	Environmental Representative
DP&E	Department of Planning and Environment MCoA
NBN	National Broadband Network
NSW	New South Wales
POEO Act	Protection of the Environment Operations Act 1997
OoW	Office of Water
PPR	Preferred Project Report
SEPP	State Environmental Planning Policy
SoC	Statement of Commitments
SWTC	Scope of Work and Technical Criteria
TMP	Traffic Management Plan
RBL	Rating Background Level
ROL	Road Occupancy Licence

1 Introduction

The Foxground and Berry bypass will provide a four-lane divided highway (two lanes in each direction) with median separation for 11.6 kilometres of the Princes Highway between Toolijooa Road near Foxground and Schofields Lane south of Berry. The project crosses both Kiama and Shoalhaven local government areas.

Key concept design features include:

- Approximately 11.6 kilometres of new highway, including bypasses of the Foxground bends and the Berry township;
- Interchanges at Toolijooa Road, Austral Park Road, Tindalls Lane and the northern and southern interchanges for Berry;
- Junction arrangements at Schofields Lane and Gembrook Lane which enable both northbound and southbound access to the highway;
- A cutting about 25 metres deep at Toolijooa Ridge, bypassing the Foxground bends;
- Six lanes through the cutting at Toolijooa Ridge for a distance of 1.5 kilometres, providing two lanes and a climbing lane in each direction;
- Three bridge crossings at Broughton Creek and a bridge at Berry;
- An upgrade and extension of Austral Park Road;
- A new roundabout at the junction of Woodhill Mountain Road and the existing Princes Highway;
- A diversion of Town Creek into Bundewallah Creek;
- Proposed local road closure at North Street;
- Victoria Street to remain open with a two-way connection between Queen and Victoria streets and a southbound on-ramp south of Victoria Street;
- New property accesses and access roads (left-in/left-out only for direct property access to the upgraded highway); and
- Wildlife crossings (rope bridges and underpasses) to maintain existing wildlife corridors.

Benefits associated with the Project include:

- Improving road safety on the Princes Highway and local road network;
- Reducing total crashes on the Princes Highway in the project area by an estimated 64 per cent;
- Improving road safety through less interaction between traffic and pedestrians in the town of Berry;
- Improving the efficiency of the Princes Highway between Toolijooa Road and Schofields Lane;
- Reducing travel time by an estimated seven (7) minutes;
- Supporting regional and local economic development;
- Improving flood immunity; and

- Improving wildlife crossings.

The project is being delivered through a 'design and construct' contract process. Fulton Hogan was appointed by RMS on 11 July 2014 to deliver the project.

Further details on the project background can be sourced from the project website at (http://www.rms.nsw.gov.au/projects/south-coast/foxground-berry-bypass/index.html)

1.1 Project environmental assessment and approval

The Foxground and Berry bypass, Princes Highway upgrade was approved by the NSW Minister for Planning and Infrastructure on 22 July 2013. The project has been assessed as a transitional project under Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act). The Minister's conditions of approval have been provided to Roads and Maritime Services to guide the detailed design, construction and operation of the project.

To facilitate the assessment and determination of the Project, an Environmental Assessment was developed and issued in November 2012. This assessment (and associated specialist studies) detailed the key environmental aspects of the project and recommended management and mitigation measures to mitigate environmental risks during construction and operation of the infrastructure. The Foxground and Berry bypass environmental assessment was exhibited for 34 days from Wednesday 14 November 2012 to Monday 17 December 2012 and a total of 254 submissions were received during the exhibition period.

A Submissions and Preferred Project Report (PPR) was developed and placed on public exhibition in response to the submissions received during the Environmental Assessment consultation period. This report responded to the main issues raised during the consultation period, described amendments made to the project design since the exhibition of the Environmental Assessment, and provided additional assessment of relevant environmental issues raised in the submissions and amendments made in the public consultation phase.

Both the Environmental Assessment and Submissions and Preferred Project Report were assessed by the NSW Department of Planning and Infrastructure.

In addition to the above approval, Fulton Hogan have also acquired an Environment Protection Licence (EPL) under the Protection of the Environment Operations Act 1997 (POEO Act) to facilitate construction activities. The EPL was issued 29 August 2014.

The Project Construction Environmental Management Plan (CEMP) and sub-plans were approved by the Department of Planning and Environment on 19 September 2014.

The Department of Planning and Environment approved the following project documents on 27 October: the Biodiversity Offset Strategy; the Ecological Monitoring Program; the Water Quality Monitoring Program; the Urban Design and Landscape Plan; and the Community Consultation Strategy.

Following the above approvals, RMS formally advised the Department of Planning and Environment that construction would commence on 28 October 2014 and the CEMP has been implemented since this date.

On 28 January 2015, the Department of Planning and Environment approved the modification of Condition C13 to allow an increase in blasting limitations for non-aboriginal heritage items, subject to landholder agreement.

On 9 March 2015, the Department of Planning and Environment approved undertaking of increased blasting works at Toolijooa Ridge.

Table 1-1 Details additional approvals gained on the Foxground and Berry Bypass during the reporting period

Approval	Approved By	Date
Minor ancillary facility assessment - Ch 17500	Project ER – Toby Hobbs	20 April 2015
Out of hours works approval - Line marking	Project ER – Toby Hobbs	27 March 2015
Out of hours works approval - Willow Springs Rd	Project ER – Toby Hobbs	5 March 2015
Minor ancillary facility assessment - Ch 14800	Project ER – Toby Hobbs	2 March 2015
Minor Consistency assessment - Project Water Sources	Project ER – Toby Hobbs RMS – Graham Roche	28 January 2015
Major Consistency Assessment - Austral Pk Rd Interchange	Project ER – Toby Hobbs RMS – Graham Roche RMS – Ron Zahorodny	16th March 2015
Minor Consistency Assessment - Crozier's Rd U-turn facility	Project ER – Toby Hobbs RMS – Graham Roche	31st March 2015
Out of hours works approval - Barrier installation	Project ER – Toby Hobbs	26th March 2015

1.2 Purpose of this report

The purpose of this report is to provide a summary of the outcomes and actions obtained through the implementation of the project Compliance Tracking Program required under the Minister's Condition of Approval (MCoA) B29 which specifies:

B29 - Compliance tracking

This compliance tracking report provides a review of compliance for the six month period between the commencement of construction activities on 28 October 2014 and 30 April 2015.

"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 shall be applied during construction and for a minimum of one year following commencement of operation. The program shall 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 and the documents listed under Condition A1, including the Statement of Commitments;

(c) provisions for periodic reporting of compliance status against the requirements of this approval and the documents listed under Condition A1, including the Statement of Commitments, 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 /SO 19011:2003 - Guidelines for Quality and/ or Environmental 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."

The Foxground and Berry Bypass during the reporting period has generally been constructed complaint to the conditions of approval. Appendix A of this report contains detailed information on the status and compliance of each specific condition for the Foxground and Berry Bypass.

2 Construction activities during reporting period

The project works are proceeding in accordance with planned progress; however several major weather events have impacted some areas of the programme. The project will be completed mid 2018 weather permitting. As at 30 April 2015, all design works are on target to be issued for construction on programme.

During the reporting period construction activities were focused on enabling and establishment activities. The following works have been performed during the reporting period:

2.1 Demolition and property adjustment

House demolition works have been completed with all properties specified within the technical scope of works deconstructed. Waste from this operation has been re-used or recycled where possible.

Property adjustment works have commenced with new property accesses, services and adjustments on-going. These works will continue and are anticipated to be completed consistent with the project programme.

2.2 Utilities adjustments & diversions

Key utilities that have been adjusted via diversion, realignment, or replacement include: the east Australian gas main, Optus, Telstra, power supply, Shoalhaven potable water reticulation, and sewage infrastructure. These works will be on-going with National Broadband Network (NBN) also proposed to be relocated in future reporting periods.

2.3 Fencing

New fencing on the boundary of the project is eighty percent complete with a focus on fencing commercially operating agriculture properties to reduce project disruptions. Temporary fencing is installed around environmentally sensitive areas and retained vegetation within the project boundary.

Figure 3-1: Installed sensitive area fencing and signage

2.4 Traffic

In order to safely carry out works on the Princes highway, traffic speeds have been reduced to eighty kilometres per hour. Speeds are also modified on the highway as required during works to ensure public and construction staff safety is maintained under strict ROL conditions. Barriers, variable message sign (VMS) boards and additional signage are being used throughout the project to manage traffic safely through the construction zone. Temporary highway lanes or 'sidetracks" have been constructed tol enable commencement of bridgeworks along the existing alignment.

2.5 Cross drainage

Drainage works have commenced with the focus on transverse drainage to facilitate the carriage of clean waters from upstream of the project to the downstream waterways. Transverse drainage works have commenced at project chainages 9800, 12200, 12800 and 18500.

The early installation of upstream clean water interception drains and waterway diversions along with temporary and permanent cross drainage is consistent with best practice established in the documentation 'Soils and Construction, Managing Urban Stormwater' (Volume 1 - the Blue Book) and 'Volume 2D –Main Road Construction'. This enables clean water to runoff to flow through the construction site, without interaction with site borne runoff and associated sediment loads, which are separately channelled to sediment detention basins.

Figure 3-2 :Transverse drainage works at Austral Park Road realignment.

Figure 3-3: Clean water diversion installed at project chainage 9800 to allow the designed drainage culverts to be completed but still maintaining upstream downstream clean water connectivity.

2.5.1 Sediment basins

Thirty three sediment basins were commissioned for use during the reporting period. Sediment basin construction will continue ahead of programmed earthworks activities. All basins have been designed by a Certified Practitioner of Erosion and Sediment Control (CPESC) and constructed in accordance with the Landcom Manual 'Soils & Construction' (blue book).

Each sediment basin is designed specific for each catchment and runoff from earthworks is diverted into these basins to ensure that site sediments are controlled within the site.

Fortnightly inspections are conducted by a CPESC to ensure that progressive erosion and sediment control planning is effective and that site controls are maintained in line with the best practice standards established in the documentation 'Soils and Construction, Managing Urban Stormwater' (Volume 1 - the Blue Book) and 'Volume 2D –Main Road Construction'.

Figure 3-4: Construction of sediment basins in Cut 1, prior to bulk earthworks commencing.

Figure 3-5: Sediment basin at Cut 2b, constructed for capturing sediment laden site runoff.

2.5.2 Noise mound construction

Construction of the Berry noise mound has been prioritised in the construction programme to reduce the potential acoustic and visual impacts of construction specifically for the residents living on North Street and the adjacent community. Additionally, stabilised earth stockpiles have been established in several areas of the project to mitigate temporary impacts on adjacent residents

Figure 3-6: Earthworks continue behind the recently stabilised noise mound on North Street, Berry.

2.5.3 Temporary works

A range of temporary works activities are required to allow for safe and efficient construction of the Foxground and Berry bypass. In the reporting period this included temporary side roads, temporary services diversions, driveway accesses and temporary bridges across Broughton creek to enable safe and time efficient haul roads and safe light vehicle access tracks.

Figure 3-7: Temporary Bridge at Broughton Creek crossing no.2, adjacent to the new highway bridge site.

3 Environmental management system overview

3.1 Environmental Management System certification

The overall Environmental Management System (EMS) for the Project is described within the CEMP and relevant sub plan(s). The EMS for the Project has been designed to comply with the requirements of AS/NZS ISO 14001 Environmental Management Systems.

The Fulton Hogan EMS is periodically audited by external auditors to ensure compliance with ISO 14001:2004. The Fulton Hogan EMS is currently certified, the expiry date of the certification is 30 June 2017.

3.2 Environmental management framework

The framework of the environmental management documents has been designed to comply with the requirements of ISO 14001- 2004 and to be consistent with the Guidelines for the Preparation of an EMP (DP&I 2004).

The CEMP comprises relevant sections from Fulton Hogan's Corporate Management System as well as a number of supporting documents (i.e. issue specific environmental sub plans) providing more detailed environmental management specifications.

3.3 Construction Environmental Management Plan

The CEMP is the key management tool in relation to environmental performance during the design and construction phases. The CEMP outlines Fulton Hogan's approach to minimising and managing environmental risks associated with the construction phase of the project. The CEMP is a dynamic document that is reviewed and amended to incorporate additional requirements as required, including changes to the project team, organisational structure and responsibilities or as improvements to procedures and methodologies develop.

The CEMP has been prepared in accordance with a number of guidelines including:

- Guideline for the Preparation of Environmental Management Plans (DP&I, 2004);
- RMS Specification G36 – Environmental Protection (Management Systems);
- ISO 14001:2004 – Environmental Managements Systems; and
- ISO 19011:2003 – Guidelines for Quality and/or Environmental Management Systems Auditing.
- NSW Minister for Planning Conditions of Approval (MCoA);
- EA and PPR Statement of Commitments; and
- Environment Protection License (EPL) requirements.

The CEMP was approved by the Department of Planning and Environment in accordance with MCoA B35 on 19 September 2014.

Detailed environmental management sub plans have been prepared on key environmental elements identified for the Project through the environmental assessment and approval process. They document the aspects, impacts, safeguards and monitoring requirements for each key environmental element, nominate who is responsible for implementing controls and note the frequency/timing of implementation.

The CEMP and sub-plans are scheduled for review in the forthcoming reporting period and are listed below against the last date of comments from the project ER and corresponding compliance status.

Table 3-1: CEMP and sub- plans consistency with MCoA and ER review dates

Plan Name	DP&E Approval Date	Consistent with MCOA
Construction Environmental Management Plan (Rev C), September 2014	06 June 2014	Yes
Flora and Fauna Management Sub Plan (Rev E), September 2014	27 May 2014	Yes
Heritage Management Sub Plan (Rev D), September 2014	13 May 2014	Yes
Noise and Vibration Management Sub Plan (Rev E), September 2014	06 June 2014	Yes
Soil and Water Quality Management Sub Plan (Rev D), September 2014	06 June 2014	Yes
Air Quality Management Sub Plan (Rev D), September 2014	26 April 2014	Yes
Construction Waste and Energy Management Sub Plan (Rev E), September 2014	29 April 2014	Yes

3.4 Compliance auditing

Regular auditing of the management system (including the compliance tracking program) will be undertaken during the course of construction. Auditing will comprise of:

- Internal compliance audits undertaken by Fulton Hogan; and
- External compliance audits undertaken by the Environmental Representative and the independent Project Verifier and RMS or their nominated consultants.

The intent of these audits is to identify opportunities for improvement and any system non-conformances during the course of construction so appropriate corrective actions can be implemented in a timely manner.

During the reporting period two internal audits were conducted by the Fulton Hogan State Environmental Manager, who is independent of the project. These audits were conducted on 6 January 2015 and 24 March 2014. Details of these audits are summarised in table 3-4. The independent project CPESC, Strategic Environmental and Engineering Consulting (SEEC) is also engaged to regularly conduct audits of site documentation and implementation of progressive sediment control plans in order to ensure high levels of site controls are maintained.

External audits have been conducted by Hyder / APP and NGH Environmental on behalf of RMS. Hyder / APP are engaged as the independent Project Verifier (PV) and NGH Environmental were engaged by RMS as specialist environmental auditors. Additionally, Vantage Environmental Management, the DP&E appointed Environmental Representative (ER) conducts regular audits against the MCOA and the Fulton Hogan project CEMP implementation. Table 3-2 and Table 3-3 summarise external audits conducted during the reporting period.

Table 3-2: Summary of external audits

Date	Auditor	Type	Outcomes	Status
October 2015	Vantage Environmental Management	Quarterly	2 OC 3 OI	Closed
February 2015	Vantage Environmental Management	Quarterly	1 OC 2 OI	Open
April 2015	Vantage Environmental Management	Quarterly	1 OC 3 OI	Closed

*OC – Observation of concern, OI – Opportunity for improvement, CAR – Corrective action request.

Table 3-3: Independent verifier audits

Date	Auditor	Type	Outcomes	Status
May 2015	Hyder / APP Combined Audit with NGH Environmental	Bi-annually	Awaiting Formal Results – 0 NCRs	Open
May 2015	NGH Environmental (on behalf of RMS) Combined Audit with PV	Bi-annually	Awaiting Formal Results – 0 NCRs	Open

Table 3-4: Internal Audits

Date	Auditor	Type	Outcomes	Status
25 March 2015	Irina Kliger	CEMP Compliance	1 CAR 2 OoC	Closed
6 January 2015	Irina Kliger	*Compliance with the EPA requirements for Incident response management*	4 OoC	Closed

4 Environmental Performance

In recent discussions with key stakeholders including the RMS, the Environment Protection Authority (EPA), Shoalhaven City Council and Kiama Municipal Council, as well as the Project Environment Representative, it is agreed that the relevant environmental management objectives are being met and project works were generally consistent with Project Approval conditions during the reporting period. Based on site observations and audit results, the standard of environmental management across the site as a whole is considered to be good, with many examples of environmental best practice implementation evident on site. Further detail in regard to compliance with the MCOA can be found in Appendix A, Project Approval Compliance Table.

4.1 Effectiveness of environmental controls

Environmental controls have been designed and installed in accordance with industry best environmental practice. External specialist consultants are engaged periodically to provide specialist reviews and audit the effectiveness of installed controls. In addition to this, all controls are inspected weekly as a minimum and during and after rainfall events. Site controls are also reviewed and typically bolstered in advance of predicted heavy rainfall events.

During the reporting period, all erosion and sediment controls performed well during adverse weather, minimising potential impacts within the project catchments and adjacent sensitive receivers.

4.2 Environmental initiatives

The Foxground and Berry bypass construction team has adopted a 'Beyond Compliance' approach to the project. The aspirational goal of the project is to leave a community legacy built on 360 degrees of excellence. This philosophy promotes a positive culture of excellence whereby the project aims to exceed the contract and legal requirements to leave a legacy that all associated with the project will be proud of.

The 'Beyond Compliance' strategy has led to the development of realistic goals for each construction zone to achieve during the project. The site has been divided into three construction zones and the goals for each are broadly described below:

Foxground Zone

- Rehabilitation of the zone 20% faster than the contract and specification requires; and
- A four day turnaround of zone sediment basins one day and 20% faster than the project EPL requires.

Broughton Zone

- Partnership with local Landcare groups; and
- Timber salvaged from clearing provided to local wood turners and craftsmen.

Berry Zone

- Broughton Mill / Bundewallah Creek, diversion and rehabilitation programme; and
- No avoidable community complaints during a compliance reporting period.

Structures

- Recycle waste concrete in beneficial reuse projects.

During the reporting period a project was undertaken in association with local community led Landcare volunteer groups. The operation achieved the salvage of a wide range of native plants including; ferns, native grasses, native orchids, aquatic macrophytes and native herbs. All of the salvaged plants will contribute to the development of a new local nursery to support rehabilitation projects across the region. Many of these plants will be replanted within the project landscape.

Figure 4-1: Local Landcare group members and Fulton Hogan staff salvaging native plants from the project alignment.

5 Environmental monitoring

The Foxground and Berry bypass is undertaking a range of environmental monitoring to review the environmental effects of the project. The results of these monitoring activities are used to establish trends and drive improvements along with 'beyond compliance' construction strategies across the project. These monitoring programs are described below:

5.1 Water quality

In accordance with approval condition B16 the project has developed a Water Quality Monitoring Program has been developed and was approved 27 October 2014.

The approved *'Water Quality Monitoring. Surface Water Monitoring Plan'* (June 2014) sets out the requirements for surface water quality monitoring.

In the reporting period three water quality monitoring events were completed. Two events were triggered by more than 15mm of rain in a 24 hour period, one event was triggered by greater than 50mm of rainfall in a 24 hour period.

- 4 February 2015 (Turbidity, total suspended solids, TPH). In general, the results did not show any construction impacts. Some waterways in the southern end of the project showed high results at both the upstream and downstream locations and it was noted that other developments including subdivisions and agricultural practices unrelated to the project are active in this catchment. Another sample that measured an elevated reading of total suspended solids, this site is downstream of the construction project but at this time minimal works had been effected in the upstream construction catchments. The site is subject runoff from the Berry Township which may have contributed to the elevated reading.
- 10 and 11 February 2015 (Turbidity, total suspended solids). Results from this monitoring event indicated elevated readings at monitoring points upstream of the construction site. There were no occurrences where elevated results were observed as a result of construction activities. This is confirmed by the fact that the elevated samples were measured upstream of the construction project.
- 26 February 2015 (Turbidity, total suspended solids, heavy metals, phosphorus, total nitrogen and ammonia). Sites upstream of the construction project are measuring some elevated levels for some analytes in the Southern section of the project setting. All other readings are within the expected range.

5.2 Flora and fauna

During the reporting period the project ecologists carried out; pre clearing inspections, spotlighting, stag watches, frog monitoring, hollow bearing tree inspections, , two stage felling reviews, fauna rescues, and unattended camera monitoring.

More than one hundred and fifty nest boxes have been installed during the reporting period. All habitat was assessed by ecologists prior to clearing and where a hollow or potential habitat was identified, a nest box was provided in adjacent habitat.

The project environment team is also monitoring the placement and condition of habitat boxes with ecologist surveys due to commence in the next reporting period. In the event that previously unidentified potential habitat is encountered during the pre-clearing inspections, additional nest boxes are located in adjacent areas as substitute habitat for hollow bearing trees that are cleared for the project.

Figure 4-2: Sugar glider released into adjacent habitat after being relocated from clearing operations.

Figure 4-3: Unattended camera monitoring setup at potential wombat burrow to determine nocturnal activity and status of the burrow.

5.3 Heritage

Works were performed by registered stakeholders and the project archaeologists to salvage aboriginal cultural material from the main alignment and areas that have potential to be impacted by project works. Salvage was completed in accordance with the approved 'Princes Highway Upgrade, Foxground and Berry Bypass Project Aboriginal Cultural Heritage Investigations' Salvage excavation and detailed historical research methodology. Further, additional consultation was made and is continuing with Aboriginal knowledge holders to refine understanding of areas of cultural sensitivity and mitigate impacts.

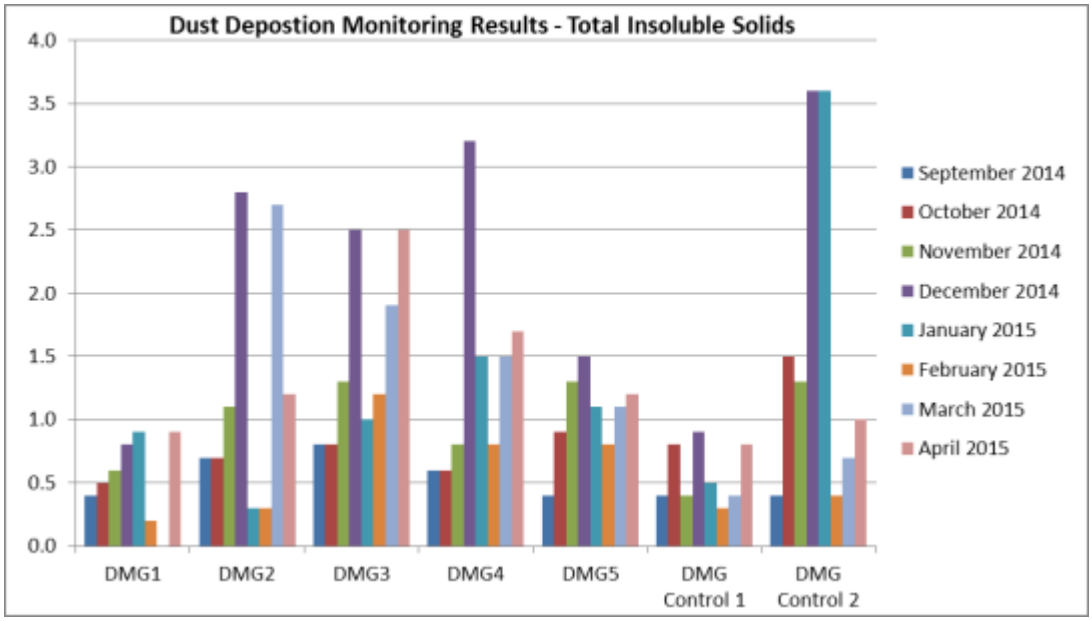
The Construction Heritage Management Plan Unexpected Finds Procedure was implemented after the discovery of animal bones during excavation on six occasions during the reporting period. On each occasion, all works ceased and the area was fenced off until investigations took place to analyse and confirm that the bones were not of human origin. In all occurrences, the bones were found to be from either cow or sheep. This is typical in the grazing lands adjacent the project and is reflective of the former agricultural use of the project land. Works were allowed to continue upon receipt of the confirmation.

5.4 Air quality

In accordance with the Construction Air Quality Management Sub-plan, ambient air quality monitoring has commenced with monthly analysis ongoing. The dust deposition gauge results are consistent with the anticipated impacts described in the Construction Air Quality Management Sub-plan (Rev D), September 2014, section 2. The results are all below the 4 g/m² anticipated maximum total deposited dust level. The results are displayed in Figure 4-4.

Dust suppression via water cart and soil stabilising polymers is ongoing. Progressive stabilisation techniques are also being employed on the project to minimise impacts to air quality.

Figure 4-4: Project ambient air quality monitoring results (dust deposition in mg/m^2)



5.5 Noise and vibration

Attended noise monitoring was undertaken during normal construction hours monthly and during approved out of hours works. The recorded levels were consistent with the anticipated levels as described in Appendix A of the approved Noise and Vibration Management Plan.

Attended vibration monitoring has been conducted twice in response to community enquiries and on both occasions, levels were within acceptable parameters established in International Standards and adopted in the approved Noise and Vibration Management Plan.

6 Community complaints

In accordance with MCoA B31, a complaint management system has been established on the project to address any community concerns or enquiries during the course of construction. There are four mechanisms that have been established to facilitate the lodgement of a complaint and / or enquiry:

- 24 hour Community Complaint / Enquiry Hotline;
- Postal Address;
- Electronic E-mail Address; and
- A community display centre open during project construction hours and for special events.

6.1 Number and types of complaints

During the reporting period, the community relations team logged 1,358 events, including telephone calls, meetings, emails, letters, doorknocks, building condition assessments, and visits to the project display centre.

Of these events, five were registered as complaints relating to environmental management issues, with one confirmed as unrelated to the project. These are summarised in section 6.2 below.

6.2 Complaints management

February 2015 – One complaint:

The complaint related to perceived noise impacts associated with demolition works. Upon receipt of the complaint, noise monitoring was conducted which confirmed construction works were dominant noise source and measured noise levels were consistent with EPL criteria and anticipated levels.

A community relations team member also attended and the resident was happy with the response, given that the demolition works were scheduled to be completed over three days only.

March 2015 – Two complaints:

The first complaint related to perceived vibration impacts associated with construction works as pavement construction including vibratory roller were in use on an adjacent work site. Upon receipt of the complaint, vibration monitoring was conducted which confirmed peak particle velocity at the complainant's property were less than the criteria listed under Condition C1 of the project approval and international standards adopted in the approved Noise and Vibration Management sub-plan.

The results were explained to the resident along with discussion about the difference between human and structural sensitivity to vibration and they were satisfied with the response.

The second complaint related to noise associated with approved 'out of hours works' associated with night time paving for shoulder widening on the Princes Highway. The complaint was received from a resident who had previously signed an agreement to allow the works to proceed in accordance with the Project EPL requirements. An offer of alternative accommodation was provided by Fulton Hogan, however the complainant declined the offer.

April 2015 – One complaint:

The complaint related to the residents perception of noisy plant adjacent their property. The resident was concerned that they had been told rock crushers would not be used opposite the property and complained about potential acoustic impacts.

Upon receipt of the complaint, attending monitoring was performed and consultation was undertaken to explain the nature and duration of the works. It was brought to the complainants attention that the plant was a wood mulcher and was proposed to be operational for one day. Based on the recorded acoustic data, noise impacts were well within acceptable limits and the residents was happy that no rock crushing was taking place.

6.3 Community engagement initiatives

On-going direct consultation with residents within the area of the project corridor regarding upcoming works was completed by the Project Community relations team from October to April 2015. The project display centre, as managed by community consultation personnel, remained open to the public during the reporting period.

The community relations team has managed presentations, workshops and sponsorships for many and various community interest groups, including the following:

Urban Design and Landscaping Community Workshop; briefings to two Berry retirement homes; Distribution of detailed design posters to all members of the community, Sponsorship of the Berry Chamber of Commerce Christmas Parade; Wildlife Rescue South Coast; Annual Regional NAIDOC Awards; Support to Berry Mens Shed; Berry Landcare Group, Foxground Landcare Group, Berry Public School, Berry Historical Society and Berry Garden Club.

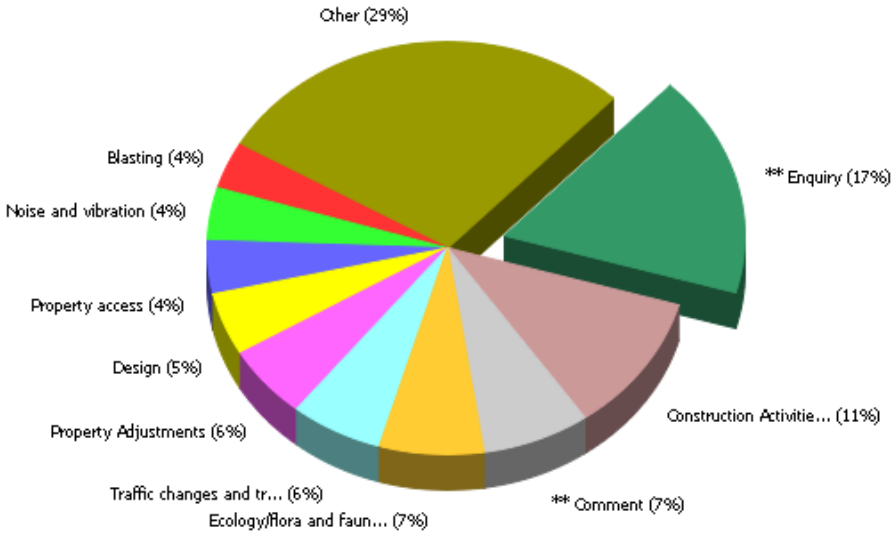
Fulton Hogan is also supporting indigenous employment opportunities on the project through the implementation of an Aboriginal Participation Plan.

The project maintains an ongoing commitment to direct consultation with residents within the area of the project corridor regarding upcoming construction works and the project community relations team record all complaints and interactions with the public and stakeholders via software known as “‘Consultation Manager”. The 1,358 community events recorded are represented overleaf.

Report Parameters:
Date Between 28 Oct 2014, 30 Apr 2015

Issues	Events	Stakeholders distinct | total	
** Enquiry	67	57	74
Construction Activities	42	100	114
** Comment	28	107	121
Ecology/flora and fauna	27	27	34
Traffic changes and traffic control	24	97	113
Property Adjustments	22	14	22
Design	19	37	47
Property access	16	8	16
Noise and vibration	16	11	18
Blasting	14	14	23
Other	111	176	208
[No Issues]	1164	264	1283
Total Event search	1358	410	1620

Issues Raised - Total Events



7 Other compliance matters

7.1 Incidents Management

During the reporting period four events that were recorded as incidents occurred, they are described in Table 4-1: Incidents, below.

Table 4-1: Incidents

DATE	DESCRIPTION	CORRECTIVE ACTIONS	STATUS
23 February 2015	Heavy construction vehicles used local roads prior to dilapidation reports being sent to local councils as required in the Ministers Conditions of Approval C27	Road dilapidation reports sent to local councils 23 February 2015	CLOSED
12 March 2015	A marked hollow bearing tree fell when an adjacent tree hit the ground, this was not strictly in accordance with the intent of the two staged clearing process	Clearing contractors will undertake additional assessments of unsound trees and further arrangements for the project ecologist to be onsite if an unsound tree exists next to other trees to be cleared.	CLOSED
17 March 2015	Demolition of locally significant heritage home G2B H13.	The inclusion of compliance conditions in construction deeds. Closer tracking of required conditions and earlier installation of sensitive area controls.	OPEN
19 March 2015	A minor ancillary facility comprising a portaloo, car park and caravan style crib room established at Rawlings lane (70m from nearest residence) without prior Environmental Representative approval.	Education of the site engineers and superintendents regarding conditions C32 & C34. Checklist completed for all sheds, Minor Ancillary Facility Assessment completed for any MAF for ER approval Assessments for future minor ancillary sites will be compliant	CLOSED

7.2 Internal and external environmental inspections

The project undertakes a range of inspections to review environmental performance and identify improvements.

The inspections have resulted in a range of improvements across the project including new erosion and sediment control installations, improved site performance and general environmental impact mitigation for the wider benefit of the local community and environment.

Figure 4-5: Out of hours inspection during services installation works at Kangaroo Valley Road Berry

Table 4-2 below summaries the inspections undertaken on the project in accordance with the requirements of project documents.

Table 4-2: Inspections

Inspection type	Attendees	Number of inspections
Weekly	Fulton Hogan staff; engineers, environmental, foreman, leading hands, labourers, superintendents, management	32
Wet weather	Fulton Hogan staff; engineers, environmental, foreman, leading hands, labourers, superintendents, management	35
Environmental Representative	Toby Hobbs Fulton Hogan staff; environmental staff, engineers, foreman and superintendents	12
Regional RMS	Michelle Toms RMS project staff Toby Hobbs Fulton Hogan staff; environmental staff, engineers, foreman and superintendents	10
NSW EPA	Michael Heinze, Julian Thompson Fulton Hogan staff; environmental staff, engineers, foreman and superintendents	3
NSW DPI (Fisheries)	Allan Lugg, Jillian Reynolds Fulton Hogan staff; environmental staff, engineers, foreman and superintendents	2
NOW (NSW Office of Water)	David Zerafa Fulton Hogan staff; environmental staff, engineers, foreman and superintendents	1
Kiama Municipal Council	David Pomery Weed Management Officer, Fulton Hogan environmental staff	2
Shoalhaven City Council	Scott Galbraith Weed Management Officer, Fulton Hogan environmental staff	1

Appendix A

Project Approval Compliance Table

Table 1: Minister for Planning and Infrastructure's Conditions of Approval (22 July 2013)

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	Administrative Conditions					
A1	The Proponent shall carry out the project generally in accordance with the: (a) Major Project Application MP10_0240; (b) Princes Highway upgrade – Foxground and Berry bypass - Environmental Assessment (Volumes 1-2), prepared by AECOM Australia Pty Ltd for Roads and Maritime Services and dated November 2012; (c) Princes Highway upgrade – Foxground and Berry bypass – Submissions Report, prepared by AECOM Australia Pty Ltd for Roads and Maritime Services and dated May 2013, including the revised Statement of Commitments contained therein; and (d) conditions of this approval.	Pre-construction, construction, and operation	RMS/Fulton Hogan	Compliant	Conditions incorporated into contract documentation and monitored and reviewed systematically Construction Environmental Management Plan (Rev C), September 2014. Section 1.2 Tracked and reported bi-annually in the Compliance Tracking Reports.	Ongoing
A2	In the event of an inconsistency between: (a) the conditions of this approval and any document listed from condition A1(a) to A1(c) 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(c) inclusive, and any other document listed from condition A1(a) to A1(c) inclusive, the most recent document shall prevail to the extent of the inconsistency.	Pre-construction, construction, and operation	RMS/Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev C), September 2014. Section 1.2	Ongoing
A3	The Proponent shall comply with any reasonable requirement(s) of the Secretary of the NSW Department of Planning & Environment (DP&E) arising from the Department's assessment of: (a) any reports, plans or correspondence that are submitted in accordance with this approval; and (b) the implementation of any actions or measures contained within these reports, plans or correspondence.	Pre-construction, construction, and operation	RMS/Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev C), September 2014. Section 1.2	Ongoing
A4	Subject to confidentiality, the Proponent shall make all documents required under this approval available for public inspection on request.	Pre-construction, construction, and operation	RMS/Fulton Hogan	Compliant	Community Consultation Strategy, 27 October 2014	Ongoing
A5	The Proponent shall notify the Secretary of the NSW Department of Planning & Environment (DP&E) and other relevant government agencies of any incident with actual or potential significant off-site environmental impacts on people or the biophysical environment as soon as practicable and within 24 hours after the occurrence of the incident. The Proponent shall provide full written details of the incident to the Secretary of the NSW Department of Planning & Environment (DP&E) within seven days of the date on which the incident occurred. Note: Where an incident also requires reporting to the OEH and/or EPA the incident report prepared for the purposes of notifying the OEH and/or EPA would meet this requirement	Pre-construction, construction, and operation	RMS/Fulton Hogan	Non-compliant.	Construction Environmental Management Plan (Rev C), September 2014. Section 6.2 Secretary of the NSW Department of Planning & Environment (DP&E) was notified of an incident where heritage item G2B H13 was removed as a part of project works. The notification was not in accordance with A5 – within 24 hours and written details within seven days This incident is detailed in table 7.1 in the main body of the compliance tracking report version 1.	Ongoing
A6	The Proponent shall meet the requirements of the Secretary of the NSW Department of Planning & Environment (DP&E) or relevant government agency (as determined by the Secretary of the NSW Department of Planning & Environment (DP&E)) to address the cause or impact of any incident, as it relates to this approval, reported in accordance with condition A5, within such period as the Secretary of the NSW Department of Planning & Environment (DP&E) may require.	Pre-construction, construction, and operation	RMS/Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev C), September 2014. Section 6.2 All requirements to address the cause of the H12 heritage item removal have been implemented.	Ongoing
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	Pre-construction,	RMS/Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev C), September 2014. Section 1.2	Ongoing

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	physically commenced on or before that date.	construction				
STATUTORY REQUIREMENTS						
A8	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.	Pre-construction, construction, and operation	RMS/Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev C), September 2014. Section 3.3 Constriction Environmental Management Plan (Rev C), September 2014. Appendix A1	Ongoing
STAGING						
A9	The Proponent may elect to construct and/ or operate the project in stages. Where staging is proposed, the Proponent shall submit a Staging Report to the Secretary of the NSW Department of Planning & Environment (DP&E) prior to the commencement of the first proposed stage. The Staging Report shall 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. (c) 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 stage(s). The Proponent shall ensure that an updated Staging Report (or advice that no changes to staging are proposed) is submitted to the Secretary of the NSW Department of Planning & Environment (DP&E) prior to the commencement of each stage, identifying any changes to the proposed staging or applicable conditions. The Proponent shall ensure that all plans, sub-plans and other management documents required by the conditions of this approval and relevant to each stage (as identified in the Staging Report) are submitted to the Secretary of the NSW Department of Planning & Environment (DP&E) no later than one month prior to the commencement of the relevant stages, unless an alternative timeframe is agreed to by the Secretary of the NSW Department of Planning & Environment (DP&E).	Pre-construction, construction	RMS/Fulton Hogan	Compliant	NA. No changes to staging are proposed from that already approved by DP&E as part of the *Toolijooa Road Fill Works Stage of the Foxground and Berry bypass Project:*	Closed
PART B PRIOR TO CONSTRUCTION						
DESIGN						
B1	The proponent shall, in consultation with the relevant council/s, investigate the need for: (a) potential future on and off ramps at Woodhill Mountain Road; and (b) a potential future left turn lane onto the new highway from Toolijooa Road. The investigation shall be undertaken to the satisfaction of Secretary of the NSW Department of Planning & Environment (DP&E), and include consideration of the relevant environmental impacts (noise, flooding, heritage, biodiversity, traffic etc.) and consider any alternative options.	Pre-construction	RMS	Compliant	RMS consulted with both Kiama Municipal Council and Shoalhaven City Council regarding the future off ramps and left turn lane. A letter regarding B1 was sent to DP&E on 30th September 2014. DP&E advised of their satisfaction in addressing B1 in a letter dated 27th October 2014.	Complete

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
B2	The bridge piers at the Connollys Creek / Bundewallah Creek / Broughton Mill Creek crossing shall be located and designed in such a way to minimise visual impacts to Berry and the bridge piers at Broughton Creek crossing 3 are located and designed in such a way to minimise visual impacts to RMB 353 Princes Highway, Broughton Village. Evidence of how visual impacts have been minimised shall be provided to the Secretary of the NSW Department of Planning & Environment (DP&E) prior to the commencement of works that would influence the design of the bridge in this location.	Pre-construction	RMS/Fulton Hogan	Compliant	Compliance has been met through the development of the detailed Urban Design and Landscaping Plan 20 November 2015 Evidence of how visual impacts have been minimised was provided to DP&E on 30th September 2014.	Complete
BIODIVERSITY						
Mitigation Measures – Fauna and Waterway Crossings						
B3	The Proponent shall design (and implement) the fauna crossings identified in Table 5.1 of Volume 2 Appendix F of the document listed under condition A1(b), at the locations and in accordance with the minimum design principles identified in Table 5.1, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E)	Pre-construction	RMS/Fulton Hogan	Compliant	Princes Highway Foxground and Berry Bypass Fauna Crossings Report 20 November 2015 The above report was provided to Office and Environment and Heritage, and Department of Primary Industries (Fisheries) through the consultation period.	Ongoing
B4	Investigations into the design of fauna crossings identified in Table 5.1 of Appendix F of the document listed under condition A1(b) during detailed design shall be undertaken with the input of a suitably qualified and experienced ecologist and in consultation with OEH and DPI (Fishing and Aquaculture).	Pre-construction	RMS/Fulton Hogan	Compliant	Princes Highway Foxground and Berry Bypass Fauna Crossings Report 20 November 2015	Ongoing
B5	The Proponent shall prepare a report on the final design of fauna and/or waterway crossings identified in Table 5.1 of Appendix F of the document listed under condition A1(b), where the location of the crossing has changed and/or the crossing does not meet the minimum design principles identified in Table 5.1. The report shall be submitted to the Secretary of the NSW Department of Planning & Environment (DP&E)prior to the commencement of construction of the relevant crossing, and shall demonstrate how the new location and/ or design would result in acceptable biodiversity outcomes. The report shall clearly identify how the fauna and/or waterway crossing will work in conjunction with complementary fauna exclusion fencing measures to be implemented for the project. The report shall be accompanied by evidence of consultation with OEH and DPI (Fishing and Aquaculture) in relation to the suitability of any changes to the location and/or crossing design.	Pre-construction	RMS/Fulton Hogan	Compliant	Princes Highway Foxground and Berry Bypass Fauna Crossings Report 20 November 2015	Ongoing
B6	The Proponent shall, in consultation with OEH and DPI (Fishing and Aquaculture), ensure that all waterway crossings are designed and constructed consistent with the principles of the Guidelines for Controlled Activities Watercourse Crossings (Department of Water and Energy, February 2008), Policy and Guidelines for Fish Friendly Waterway Crossings (NSW Fisheries, February 2004) and Policy and Guidelines for Design and Construction of Bridges, Roads, Causeways, Culverts and Similar Structures (NSW Fisheries 1999). Where multiple cell culverts are proposed for creek crossings, at least one cell shall be provided for fish passage, with an invert or bed level that mimics creek flows.	Pre-construction	RMS/Fulton Hogan	Compliant	Flora and Fauna Management Sub Plan (Rev E), September 2014 Consultation completed with the Department of Primary industries, and the New South Wales Office Of Water for the construction of the Broughton Creek temporary bridges.	Ongoing
Biodiversity Offsets						
B7	The Proponent shall, in consultation with the OEH and DPI (Fishing and Aquaculture), develop a **Biodiversity Offset Strategy** that identifies the available options for offsetting the biodiversity impacts of the project in perpetuity, with consideration to the Principles for the use of biodiversity offsets in NSW (OEH website http://www.environment.nsw.gov.au/biocertification/offsets.htm dated 17 June 2011). Unless otherwise agreed to by the OEH and DPI (Fishing and Aquaculture), 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, salt marsh, and poorly conserved vegetation communities identified	Pre-construction	RMS	Compliant	Biodiversity Offset Strategy approved by DP&E 27 October 2014	Complete

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	as being more than 75% cleared in the catchment management area) and 2:1 for the remainder of native vegetation areas (including threatened species habitat, mangroves, seagrass, and non-EEC riparian vegetation). The Strategy shall include, but not necessarily be limited to: (a) the aims and objectives of the biodiversity offset strategy; (b) confirmation of the vegetation type/ habitat (in hectares) to be cleared and their condition, and the size of offsets required (in hectares); (c) details of the type of available offset measures that have been identified to compensate for the loss of threatened species and vulnerable and endangered ecological communities and/ or their habitats, and native vegetation (including mangroves, seagrasses, salt marsh and riparian vegetation). The measures shall achieve a neutral or net beneficial outcome for all the biodiversity values likely to be impacted directly or indirectly during both the construction and operation of the project; (d) 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; (e) a process for addressing and incorporating offset measures arising from changes in biodiversity impacts (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 the footprint due to detailed design; (ii) (changes to predicted impacts as a result of changes to mitigation measures; (iii) the identification of additional species/ habitat through pre-clearance surveys and construction; (iv) addressing outcomes of the ecological monitoring program; and (v) additional impacts associated with the establishment of ancillary facilities; and (f) options for the securing and management of biodiversity offsets in perpetuity. The Biodiversity Offset Strategy shall be submitted to the Secretary of the NSW Department of Planning & Environment (DP&E) for approval no later than 6 weeks prior to the commencement of construction that would result in the disturbance of native vegetation, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E).					
B8	Within two years of the date of approval of the Biodiversity Offset Strategy, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E), the Proponent shall prepare and submit a **Biodiversity Offset Package** for the approval of the Secretary of the NSW Department of Planning & Environment (DP&E). The Package shall be developed in consultation with the OEH and DPI (Fishing and Aquaculture), and shall include, but not necessarily be limited to: (a) details of the final suite of the biodiversity offset measures to be implemented for the project demonstrating how it achieves the requirements of the Biodiversity Offset Strategy (including specified offset ratios); (b) the final selected means of securing the biodiversity values of the Package in perpetuity, including ongoing management, maintenance and monitoring requirements; and (c) timing and responsibilities for the implementation of the	Construction and operation	RMS	Compliant	Biodiversity Offset Strategy (by RMS). RMS are in the process of preparing the Biodiversity Offset Package	Ongoing

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	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, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E).					
Ecological Monitoring						
B9	The Proponent shall develop an **Ecological Monitoring Program** to monitor the effectiveness of the biodiversity mitigation measures implemented as part of the project. The program shall be developed by a suitably qualified and experienced ecologist in consultation with the OEH and DPI (Fishing and Aquaculture) and shall include but not necessarily be limited to: (a) an adaptive monitoring program to assess the effectiveness of the mitigation measures identified in conditions B3 and B36(b) and allow amendment to the measures if necessary. The monitoring program shall nominate performance parameters and criteria against which effectiveness will be measured and include operational road kill surveys to assess the effectiveness of fauna crossings and exclusion fencing implemented as part of the project; (b) mechanisms 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 three successive monitoring periods after opening of the project to traffic, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E). The monitoring period may be reduced with the agreement of the Secretary of the NSW Department of Planning & Environment (DP&E) in consultation with the OEH and DPI (Fishing and Aquaculture), depending on the outcomes of the monitoring; (d) provision for the assessment of the data to identify changes to habitat usage and whether this can be directly 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 Secretary of the NSW Department of Planning & Environment (DP&E) and the OEH and DPI (Fishing and Aquaculture), or as otherwise agreed by those agencies. The Program shall be submitted to the Secretary of the NSW Department of Planning & Environment (DP&E) for approval no later than 6 weeks prior to the commencement of construction that would result in the disturbance of native vegetation (unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E)).	Pre-construction	RMS/Fulton Hogan	Compliant	Ecological Monitoring Program approved 27 October 2014 Monitoring commitments commenced in the reporting period and will be reported once information has been assessed in the next reporting period.	Ongoing
HYDROLOGY AND FLOODING						
B10	The Proponent shall ensure, where feasible and reasonable, that the project is designed to not exceed the afflux and other flooding criteria within the vicinity of the project as identified or predicted in the	Pre-construction	RMS/Fulton Hogan	Compliant	Detailed Design - Flooding Report	Complete

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	documents listed under condition A1. New or duplicated drainage structures shall be designed to minimise changes to afflux and flooding to waterways that traverse the project alignment to the greatest extent practicable.					
B11	The Proponent shall develop a **Hydrological Mitigation Report** for properties in the Broughton Creek, Town Creek, Bundewallah Creek and Shoalhaven floodplain areas where flood impacts are predicted to increase as a result of the project. The Report shall be based on detailed floor level survey and associated assessment of potentially flood affected properties in those areas. The Report shall: (a) identify properties in those areas 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 the relevant council, NSW State Emergency Service and directly-affected property owners; and (e) identify operational and maintenance responsibilities for items (a) to (c) inclusive. The Proponent shall not commence construction of the project on or within those 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 Secretary of the NSW Department of Planning & Environment (DP&E).	Pre-construction	RMS/Fulton Hogan	Compliant	Hydrological Mitigation Report (by RMS) Detailed Design - Flooding Report 17 February 2015 Roads and Maritime Services requested construction commence prior to the completion of mitigation works at 29A Princes Highway, Berry. 9 March 2015 Department of Planning and Environmental allowed that construction commence prior to the completion of the required flood mitigation works. The DP&E has been advised in a letter dated 15th June 2015 that the mitigation works at property 76 Woodhill Mountain Road has not been completed at the request of the land owner.	Ongoing
B12	Based on the mitigation measures identified in condition B11, 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) prior to the implementation/ construction of the mitigation works, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E). A copy of each schedule of flood mitigation measures shall be provided to the Department and the relevant council prior to the implementation/ construction of the mitigation measures on the property.	Pre-construction	RMS/Fulton Hogan	Compliant	Hydrological Mitigation Report (by RMS)	Complete
B13	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 B10), the Proponent shall employ a suitably qualified and experienced independent hydrological engineer, who has been approved by the Secretary of the NSW Department of Planning & Environment (DP&E), for the purposes of this condition prior to the commencement of construction in the Broughton Creek, Town Creek, Bundewallah Creek and Shoalhaven floodplain areas affected by increased afflux from the project to advise and assist affected property owners in negotiating feasible and reasonable mitigation measures.	Pre-construction	RMS	Compliant	Mark Babister from WMA Engineers appointed and approved by DP&E	Complete
B14	The Proponent shall provide assistance to the relevant council and/ or NSW State Emergency Service, to assist in the preparation of 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.	Pre-construction	RMS/Fulton Hogan	Compliant	RMS have consulted local council and they have advised that no assistance is required	Complete
SEDIMENTATION, EROSION AND WATER						

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
B15	Prior to the commencement of construction, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E), the Proponent shall in consultation with the EPA and NOW, undertake **groundwater modelling** on the concept design for the project, subject to the modelling being revised should the detailed design have a significantly different impact on groundwater than the concept design. The modelling shall be undertaken by a suitably qualified and experienced groundwater expert and assess the construction and operational impacts of the proposal on the groundwater resources, groundwater quality, groundwater hydrology and groundwater dependent ecosystems and provide details of contingency and management measures in the groundwater management strategy required under condition B36(d).	Pre-construction	RMS/Fulton Hogan	Compliant	Detailed Design - Geotechnical Design & Interpretative Report RMS undertook groundwater modelling on the RMS Concept Design for the project. Since the detailed design will not have a significantly different impact on groundwater than the RMS Concept Design, no further groundwater modelling is required.	Complete
B16	The Proponent shall prepare and implement a **Water Quality Monitoring Program** to monitor the impacts of the project on surface and groundwater quality and resources and wetlands, during construction and operation. The Program shall be developed in consultation with the OEH, EPA, DPI (Fishing and Aquaculture) and NOW and shall include but not necessarily be limited to: (a) identification of surface and groundwater quality monitoring locations (including watercourses, water bodies and SEPP14 wetlands) which are representative of the potential extent of impacts from the project; (b) the results of the groundwater modelling undertaken under condition B15; (c) 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 of potentially affected waterways; (d) development and presentation of parameters and standards against which any changes to water quality will be assessed, having regard to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (Australian and New Zealand Environment Conservation Council, 2000); (e) representative background monitoring of surface and groundwater quality parameters for a minimum of twelve months (considering seasonality) prior to the commencement of construction, to establish baseline water conditions, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E); (f) a minimum monitoring period of three years following the completion of construction or until the affected waterways and/ or 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 basins and vegetation swales); (g) contingency and ameliorative measures in the event that adverse impacts to water quality are identified; and (h) reporting of the monitoring results to the Department, OEH, EPA and NOW. The Program shall be submitted to the Director-General for approval 6 months prior to the commencement of construction of the project, or as otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E). A copy of the Program shall be submitted to the OEH, EPA, DPI (Fishing and Aquaculture) and NOW prior to its implementation.	Pre-construction	RMS/Fulton Hogan	Compliant	Construction Soil and Water Quality Management Plan Appendix B - Water Quality Monitoring Program Surface water quality monitoring has commenced and the results are in full in appendix B of this report. Ground water quality monitoring has commenced analysed results will be reported in the Compliance Tracking Report no.2	Complete
HERITAGE IMPACTS						
Built and Landscape Heritage						

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
B17	Prior to pre-construction and construction impacts affecting 'Glen Devon' Federation Cottage (H11) and skid mounted work-site shed (H60), the Proponent shall carry out further historical research and investigate the options for relocation of these heritage items, in consultation with the department and the Heritage Council of NSW, to the satisfaction of the Secretary of the NSW Department of Planning & Environment (DP&E). Additionally, for H11, the proponent shall: (a) undertake archaeological investigations in accordance with condition B20; and (b) provide for the preparation and implementation of a heritage interpretation plan.	Prior to Pre-construction	RMS	Compliant	Glen Devon Cultural Heritage Assessment was submitted to DP&E on 16th July 2014 and was approved by DP&E in a letter dated 10th September 2014. DP&E was advised of the relocation outcome of Glen Devon in a letter dated 9th July 2015.	Complete
B18	Prior to the commencement of preconstruction and construction works in proximity to the following items G2B H11, H13, H15, H16, H17, H19, H21, H22, H23, H30, H45, H47, H53, H54, H55, H56, H62, H63, and the Southern Illawarra Coastal Plain and Hinterland Cultural Landscape (SICPH CL), and G2B A13, A14, A39, TRACL and MFT12 the Proponent shall complete all archival recordings, including photographic recording. In addition detailed historical research shall be undertaken for the following items G2B H60 H61, H63, the SICPH CL and G2B A39. This work shall be undertaken by an experienced heritage consultant, in accordance with the guidelines issued by the Heritage Council of NSW. The areas containing these items shall be clearly identified and/or fenced until the completion of the archival recordings. Within 6 months of completing the above work, the Proponent shall submit a report containing the archival recordings and the historical research, where required, to the Secretary of the NSW Department of Planning & Environment (DP&E), the Heritage Council of NSW, the local Council and the local Historical Society.	Prior to Pre-construction	RMS	Compliant	Archival recording and detailed historic research complete. Reports will be sent the DP&E independently of this Compliance Tracking Report.	Ongoing
B19	Prior to pre-construction and construction impacts affecting G2B H15, H19, H21, H22, H23, H30 and H55 the Proponent shall carry out further historical and physical archaeological investigations in relation to these road alignments , in consultation with the department and the Heritage Council of NSW, to the satisfaction of the Director-General. These investigations must: (a) undertake archaeological investigations in accordance with condition B22; (b) provide for the detailed analysis of any heritage items discovered during the investigations; (c) include management options for these heritage items (including options for relocation and display); and (d) if the findings of the investigations are significant, provide for the preparation and implementation of a heritage interpretation plan.	Prior to Pre-construction	RMS	Compliant	Historic and physical archaeological investigations complete. Reports will be sent to the DP&E independently of this Compliance Tracking Report.	Ongoing
Archaeology (Aboriginal and non-Aboriginal)						
B20	Prior to the commencement of pre-construction and construction activities affecting Aboriginal site G2B PAD 1 the Proponent shall: (a) undertake archaeological investigation of this site using a methodology generally consistent with testing undertaken for the Environmental Assessment, and prepared in consultation with the OEH (Aboriginal heritage) and the Aboriginal stakeholders; and (b) report on the results of the archaeological investigation, including recommendations (such as for further archaeological work), in consultation with the OEH and to the satisfaction of the Secretary of the NSW Department of Planning & Environment (DP&E), and shall include, but not necessarily be	Prior to Pre-construction	RMS	Compliant	A report has been prepared by Kelleher Nightingale for the PAD 1 area in March 2015. The report will be sent to the DP&E independently of this Compliance Tracking Report.	Ongoing

MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979						
Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	limited to: (i) consideration of measures to avoid or minimise disturbance to Aboriginal objects where objects of moderate to high significance are found to be present; (ii) where impacts cannot be avoided, recommendations for any further investigations under condition B21; and (iii) management and mitigation measures to ensure there are no additional impacts due to pre-construction and construction activities.					
B21	Prior to the commencement of pre-construction and construction activities affecting sites G2B A16, A18, A24, A29, A30, A31, A32, A33, A36, and G2B PAD1 the proponent shall: (a) develop a detailed salvage strategy, prepared in consultation with the OEH (Aboriginal heritage) and the Aboriginal stakeholders. The investigation program shall be prepared to the satisfaction of the Secretary of the NSW Department of Planning & Environment (DP&E); and (b) undertake any further archaeological excavation works recommended by the results of the Aboriginal archaeological investigation program. Within twelve months of completing the above work, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E), the Proponent shall submit a report containing the findings of the excavations, including artefact analysis and Aboriginal Site Impacts Recording Forms (ASIR), and the identification of final storage location for all Aboriginal objects recovered (testing and salvage), prepared in consultation with the Aboriginal stakeholders, the OEH (Aboriginal heritage) and to the satisfaction of the Secretary of the NSW Department of Planning & Environment (DP&E). Note: where archaeological testing has occurred as part of the Environmental Assessment and the results are included in the documents listed in condition A1(b) the sites tested must still form part of the final report prepared under condition B21(b).	Prior to Pre-construction	RMS	Compliant	Archaeological salvage works have been completed on behalf of RMS by the nominated project archaeologist Kelleher and Nightingale, in accordance with the approved methodology.. The report for these works will be completed in the fourth quarter of 2015.	Ongoing
B22	Prior to the commencement of pre-construction and construction activities affecting non-Aboriginal sites H11, H14, H19, H23, H28, H30, H48, H49, H53, and H55, the Proponent shall: (a) Undertake an Historic archaeological investigation program in accordance with the Heritage Council's Archaeological Assessments Guideline (1996) using a methodology prepared, in consultation with the OEH (Heritage Branch), and to the satisfaction of the Director-General. This work should be undertaken by an archaeological heritage consultant approved by the Director-General. The nomination for the Excavation Director shall demonstrate ability to comply with the Heritage Council's Criteria for the Assessment of Excavation Directors (July 2011). (b) Report on the results of the non-Aboriginal archaeological investigation program, including recommendations (such as for further archaeological work), in consultation with the Heritage Branch, OEH and to the satisfaction of the Secretary of the NSW Department of Planning & Environment (DP&E), and shall include, but not necessarily be limited to: (i) consideration of measures to avoid or minimise disturbance to archaeology, where archaeology of non-Aboriginal archaeological significance is found to be present; (ii) where impacts cannot be avoided,	Prior to Pre-construction	RMS	Compliant	Investigation and reporting is complete. Report will be sent the report for these works to DP&E independently of this Compliance Tracking Report.	Ongoing

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	recommendations for any further investigations for archaeology of historical archaeological significance; and (iii) management and mitigation measures to ensure there are no additional impacts due to pre-construction and construction activities. (c) Undertake any further archaeological excavation works recommended by the results of the non-Aboriginal archaeological investigation program. Within 12 months of completing the above work, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E), the Proponent shall submit a report containing the findings of the excavations, including artefact analysis, and the identification of a final repository for finds, prepared in consultation with the OEH (Heritage branch) and to the satisfaction of the Secretary of the NSW Department of Planning & Environment (DP&E). Note: where archaeological testing has occurred as part of the environmental assessment and the results are included in the documents listed in condition A1(b) the sites tested must still form part of the methodology and final report prepared for the non-Aboriginal archaeological investigation program.					
URBAN DESIGN AND LANDSCAPING						
B23	The Proponent shall prepare and implement an **Urban Design and Landscape Plan** for the project. The Plan 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 principal goal of achieving the urban design objectives outlined in Section 2.2 Volume 2 Appendix I of the document referred to in Condition A1(b); (b) location of existing vegetation and proposed landscaping (including use of indigenous and endemic species where possible) and design features; (c) graphics such as sections, perspective views and sketches for key elements of the project (including, but not limited to built elements such as retaining walls, cuttings, embankments, bridges, and noise barriers); (d) a description of 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.) and details of the strategies to progressively rehabilitate regenerate and/ or revegetate the locations with the objective of promoting 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; (e) an assessment of the visual screening effects of existing vegetation and the proposed landscaping. Where residences and businesses have been identified as likely to experience high visual impact as a result of the project and high residual impacts are likely to remain, the Proponent 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; (f) take into account appropriate roadside plantings and landscaping in the vicinity of heritage items and ensure no	Pre-construction	RMS	Compliant	Urban Design and Landscape Plan approved by DP&E. Works to rehabilitate the project footprint have commenced and will be ongoing throughout the phases of construction. The below list is taken from the DP&E approval letter 27 October 2014, these additional requirements are being worked through and will be reported once completed 1. RMS providing details of landscape rehabilitation of temporary access tracks and ancillary facilities in post IFC Landscape drawings; 2. RMS submitting the Fauna Crossings Report to the Department prior to the construction of any fauna crossings as part of landscaping of the project, in accordance with Condition B5 of the project approval; 3. RMS providing the final Town Park development plan to the Department, once available following negotiation with RMS and Shoalhaven City Council, as part of the Urban Design and Landscape Plan; 4. A detailed monitoring plan including monitoring periods, frequency and duration being provided in the Contractors Maintenance Management Plan; and 5. A copy of the updated Urban Design and Landscape Plan shall be provided to the Department; and	Ongoing

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	additional heritage impacts; (g) specific details on the landscape treatments for the North Street corridor, Town Creek diversion and Town Park. (h) strategies for progressive landscaping of other environmental controls such as erosion and sedimentation controls, drainage and noise mitigation; (i) location and design treatments for any associated footpaths and 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; (j) evidence of consultation with the relevant council and community on the proposed urban design and landscape measures prior to its finalisation; and (k) monitoring and maintenance procedures for the vegetated built elements, rehabilitated vegetation and landscaping (including weed control) including performance indicators, responsibilities, timing and duration and contingencies where rehabilitation of vegetation and landscaping measures fail. The Plan shall be submitted for the approval of the Secretary of the NSW Department of Planning & Environment (DP&E) prior to the commencement of construction, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E). The Plan may be submitted in stages to suit the staged construction program of the project.					
SIGNAGE POLICY						
B24	The Proponent shall prepare a **signage policy** which addresses the bypassed towns of Foxground and Berry, in consultation with the relevant council.	Operation	RMS/Fulton Hogan	Compliant	Construction Traffic Management Plan Sections 16.3.1 and 16.3.2	Complete
B25	The signage policy shall be consistent with the Guide: Signposting (RTA July 2007), Tourist Signposting guide (RMS and Destination NSW 2012) and provide information on the range of services available within Berry including advice on any parks that could be used as a rest area (and directional signage to these parks) and that that the route through the towns may be taken as an alternative to the highway.	Operation	RMS/Fulton Hogan	Compliant	Construction Traffic Management Plan 16.3.4	Complete
PROPERTY AND LANDUSE						
B26	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 landowners. Where the viability of existing agricultural operations are identified to be impacted 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 Secretary of the NSW Department of Planning & Environment (DP&E) for the purpose of this condition), to assist in identifying alternative farming opportunities for the relevant properties.	Pre-construction	RMS	Compliant	During the project development no impacts were identified to the viability of existing agricultural operations. As such, engaging an independent agricultural specialist was not required.	Ongoing
B27	The proponent shall discuss Crown Land transfer options with DPI (Crown Lands) and Shoalhaven Council, for Crown land located along the length of the project between Tannery Road and the northern interchange, with a view to reaching a mutually acceptable outcome for all parties. Evidence of consultation shall be provided to the Secretary of the NSW Department of Planning & Environment (DP&E) prior to the commencement of construction, with an agreed outcome to be reached, and submitted to the Secretary of the NSW Department of Planning & Environment (DP&E), prior to the operation of the upgraded highway. In the event that a mutually acceptable agreement cannot be reached, the Secretary of the NSW Department of Planning & Environment (DP&E) must be advised in writing, to determine whether mediation may be	Pre-construction and construction		Compliant	Evidence of consultation was sent to DP&E on 26th September 2014. An outcome will be provided to DP&E prior to operation.	Ongoing

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	required.					
B28	The proponent shall, in consultation with Shoalhaven City Council, prepare a strategy for the use of the Council land adjacent the project at North Street (presently occupied by the Berry Riding Club) investigating options to minimise impacts on the riding club both during construction and operation of the project. The final option(s) shall be determined by the proponent prior to the commencement of construction of works in the vicinity of the riding club, in consultation with Shoalhaven City Council and to the satisfaction of the Secretary of the NSW Department of Planning & Environment (DP&E).	Pre-construction		Compliant	Approved by DP&E	Complete
COMPLIANCE TRACKING						
B29	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 Secretary of the NSW Department of Planning & Environment (DP&E) 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 Secretary of the NSW Department of Planning & Environment (DP&E) 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 and the documents listed under condition A1, including the Statement of Commitments; (c) provisions for periodic reporting of compliance status against the requirements of this approval and the documents listed under condition A1, including the Statement of Commitments, to the Secretary of the NSW Department of Planning & Environment (DP&E) 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 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 Secretary of the NSW Department of Planning & Environment (DP&E) during construction and operation; and (g) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management.	Pre-construction, Construction, Operation	RMS/Fulton Hogan	Compliant	Compliance Tracking Program , Revision B 5 September 2014 Constriction Environmental Management Plan (Rev C), September 2014, Section 8.3	Complete
COMMUNITY INFORMATION AND INVOLVEMENT						
Provision of Electronic Information						
B30	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	Pre-construction	RMS/Fulton Hogan	Non-compliant	Community communication strategy, 27 October 2015, Section 7.2 Website: http://www.rms.nsw.gov.au/projects/south-coast/foxground-berry-bypass/index.html RMS has identified a number of documents required to be published on the project website in order to maintain up to date information and have also identified a number of documents not to be published due to confidentiality. There are a number of documents that have not been published on the project website in accordance with the condition.	Ongoing

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	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 B29.					
Complaints and Enquiries Procedure						
B31	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 construction and operation activities may be registered; (b) a postal address to which written complaints and enquiries may be sent; and (c) 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.	Construction	RMS/Fulton Hogan	Compliant	Community Communication Strategy, 27 October 2015, sections7.2 and 8.2	Ongoing
B32	The Proponent shall 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, shall be maintained by the Proponent and included in a complaints register. The information contained within the System shall be made available to the Secretary of the NSW Department of Planning & Environment (DP&E) on request.	Pre-construction, Construction	RMS/Fulton Hogan	Compliant	Community Communication Strategy, 27 October 2015, Sections 8.1 and 8.2	Ongoing
Community Involvement						
B33	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 delivery of the project; (d) procedures and mechanisms through which the Proponent can respond to enquiries 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 issues/ disputes that may arise between parties on the	Pre-construction	RMS/Fulton Hogan	Compliant	a) Community Communication Strategy, 27 October 2015 Section 5.2 b) Community Communication Strategy, 27 October 2015 Section 7.2 and Appendix E c) Community Communication Strategy, 27 October 2015 Section 8.2 d) Community Communication Strategy, 27 October 2015 Section 8.2 e) Community Communication Strategy, 27 October 2015 Sections 4.1 and 8.2.	Ongoing

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	matters relating to environmental management and the delivery of the project. This may include the use of an appropriately qualified and experienced independent mediator. Key issues that should be addressed in the Community Communication Strategy should include (but not necessarily be limited to): (i) traffic management (including property access, pedestrian access); (ii) landscaping/urban design matters; (iii) construction activities; and (iv) noise and vibration mitigation and management. The Proponent shall maintain and implement the Strategy throughout construction of the project. The Strategy shall be approved by the Secretary of the NSW Department of Planning & Environment (DP&E) prior to the commencement of construction, or as otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E).				Community Communication Strategy Appendix C i) Community Communication Strategy, 27 October 2015 Sections 4.1, 7.2 and 13. ii) Community Communication Strategy Sections 3.4, 7.2 and 7.5. iii) Community Communication Strategy Sections 3.4, 7.2 and 7.5. iv) Community Communication Strategy Sections 3.4, 7.2 and 7.5.	
ENVIRONMENTAL MANAGEMENT						
Environmental Representative						
B34	Prior to the commencement of construction of the project, or as otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E), the Proponent shall nominate for the approval of the Secretary of the NSW Department of Planning & Environment (DP&E) a suitably qualified and experienced **Environment Representative**(s) that is independent of the design (including preparation of documentation referred to in condition A1), and construction personnel. The Proponent shall employ the Environmental Representative(s) for the duration of construction, or as otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E). 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 where the resolution of points of conflict between the Proponent and the community is required; (c) monitor the implementation of environmental management plans and monitoring programs required under this approval; (d) monitor the outcome of environmental management plans and advise the Proponent upon the achievement of project environmental outcomes; (e) have responsibility for considering and advising the Proponent on matters specified in the conditions of this approval, and other licences and approvals related to the environmental performance and impacts of the project; (f) ensure that environmental auditing is undertaken in accordance with the requirements of condition B29 and the project's 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 B35; 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	Pre-construction, construction	RMS/Fulton Hogan	Compliant	Vantage Environmental (Toby Hobbs) has been appointed by RMS as the Environmental Representative on the Foxground and Berry Bypass.	Closed

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	likely to occur.					
Construction Environmental Management Plan						
B35	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 relevant agencies and in accordance with the Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004). The Plan shall include, but not necessarily be limited to: (a) a description of 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 approvals, consultations and agreements required from agencies and key legislation and policies. Evidence of consultation with relevant agencies shall be included identifying how issues raised by these agencies have been addressed in the Plan; (c) a description of the roles and responsibilities for relevant employees involved in the construction of the project including relevant training and induction provisions for ensuring that employees, including contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval; (d) identification of ancillary facility site locations, including an assessment against the location criteria outlined in condition C32; (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 the staging of the construction of the project and/ or concurrent construction works with adjacent Princes 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 from stockpiles, blasting, traffic on unsealed public roads and materials tracking from construction sites onto public roads; (ii) measures to minimise hydrology impacts, including measures to stabilise bed and bank structures as required, (iii) measures to monitor and manage impacts associated with the construction and operation of ancillary facilities, (iv) measures for the handling, treatment and management of contaminated materials, (v) measures to monitor and manage waste generated during construction including but not necessarily limited to: general procedures for waste classification, handling, reuse, and disposal; use of secondary waste material in construction wherever feasible and reasonable; procedures for dealing with green waste including timber and mulch from clearing activities; and measures for reducing demand on water resources (including the potential for reuse of treated water from sediment control	Preconstruction	RMS/Fulton Hogan	Compliant	Constriction Environmental Management Plan (Rev C), September 2014, Appendices and Sub Plans	Ongoing

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	basins); (vi) measures to monitor and manage spoil, fill and materials stockpile sites including details of how spoil, fill or material would be handled, stockpiled, reused and disposed and a stockpile management protocol detailing locational criteria that would guide the placement of stockpiles and management measures that would be implemented to avoid/ minimise amenity impacts to surrounding residents and environmental risks (including to surrounding water courses). Stockpile sites that affect heritage, threatened species, populations or endangered ecological communities require the approval of the Secretary of the NSW Department of Planning & Environment (DP&E), in consultation with the OEH; (vii) measures to monitor and manage hazard and risks including emergency management; and (viii) the issues identified in condition B36; (f) details of community involvement and complaints handling procedures during construction, consistent with the requirements of conditions B30 to B33; (g) details of compliance and incident management consistent with the requirements of condition B29; and (h) procedures for the periodic review and update of the Construction Environmental Management Plan and sub-plans required under condition B35 and B36 respectively, as necessary (including where minor changes can be approved by the Environmental Representative). The Plan shall be submitted for the approval of the Secretary of the NSW Department of Planning & Environment (DP&E) no later than one month prior to the commencement of construction, or within such period otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E). Construction works shall not commence until written approval has been received from the Secretary of the NSW Department of Planning & Environment (DP&E).					
B36	As part of the Construction Environment Management Plan for the project required under condition B35, the Proponent shall prepare and implement the following sub plan(s): (a) a **Construction Traffic Management Sub-plan**, prepared in accordance with the Roads and Maritime Service's QA Specification G10 – Control of Traffic and Traffic Control at Work Sites Manual (2003) to manage disruptions to traffic movements as a result of construction traffic associated with the project. The sub-plan shall be developed in consultation with the relevant 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) details of potential impacts to traffic on the existing highway, the 'Sandtrack', and associated local roads, including, intersection level of service and potential disruptions to pedestrians, public transport, parking, cyclists and property access (iv) details of temporary and interim traffic	Preconstruction	RMS/Fulton Hogan	Compliant	a) Construction Traffic Management Plan and Appendices b) Flora and Fauna Management Sub Plan (Rev E), September 2014 and Appendices c) Noise and Vibration Management Sub Plan (Rev E), September 2014 and Appendices d) Soil and Water Quality Management Sub Plan (Rev D), September 2014 and Appendices e) Heritage Management Sub Plan (Rev D), September 2014 and Appendices	Ongoing

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	arrangements to address potential impacts; (v) details of evidence based mitigation measures to address potential impacts on the 'Sandtrack'; (vi) a response procedure for dealing with traffic incidents; and (vii) mechanism for the monitoring, review and amendment of this sub-plan. (b) a **Construction Flora and Fauna Management Sub-plan** to detail how construction impacts on ecology will be minimised and managed. The sub-plan shall be developed in consultation with the OEH and DPI (Fishing and Aquaculture) and shall include, but not necessarily be limited to: (i) details of pre-construction surveys undertaken by a suitably qualified and experienced ecologist 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 and riparian vegetation); (ii) updated sensitive area/ vegetation maps based on (i) above and previous survey work; (iii) details of general work practices and mitigation measures to be implemented during construction to minimise impacts on native fauna and native vegetation (particularly threatened species and EECs) not proposed to be cleared as part of the project, including, but not necessarily limited to: fencing of sensitive areas, a protocol for the removal and relocation of fauna during clearing, engagement of a suitably qualified and experienced ecologist to identify locations where they would be present and 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 (including controls to prevent the introduction or spread of Phytophthora cinnamomi), erosion and sediment control and progressive re-vegetation; (iv) 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; (v) a procedure for dealing with unexpected EEC/threatened species identified during construction including cessation of work and notification of the OEH, determination of appropriate mitigation measures in consultation with the OEH (including relevant re-location measures) and update of ecological monitoring and/ or biodiversity offset requirements consistent with conditions B7 and B8; and (vi) mechanism for the monitoring, review and amendment of this sub-plan; (c) a **Construction Noise and Vibration Management Sub-plan**					

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	to detail how construction noise and vibration impacts will be minimised and managed. The sub-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 to the project; (ii) identification of key noise and/or vibration generating construction activities (based on representative construction scenarios, including at ancillary facilities) that have the potential to impact on surrounding sensitive receivers including expected noise/ vibration levels; (iii) identification of feasible and reasonable measures proposed to be implemented to minimise construction noise and vibration impacts (including construction traffic noise impacts); (iv) procedures for dealing with out-of-hour works in accordance with condition C4 and C6, including procedures for notifying the Secretary of the NSW Department of Planning & Environment (DP&E) concerning complaints received in relation to the extended hours approved under condition C4(e); (v) procedures and mitigation measures to ensure relevant vibration and blasting criteria are achieved, including a suitable blast program, 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 damage to buildings and structures (including surveys being undertaken immediately following a monitored exceedance of the criteria); (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 exceedances of relevant noise and vibration goals are detected; (d) a **Construction Soil and Water Quality Management Sub-plan** to manage surface and groundwater impacts during construction of the project. The sub-plan shall be developed in consultation with the OEH, EPA, DPI (Fishing and Aquaculture) and NOW and include, but not necessarily be limited to: (i) identification of potential sources of erosion and sedimentation, and water pollution (including those resulting from maintenance activities); (ii) details of how construction activities would be managed and mitigated to minimise erosion and sedimentation consistent with condition C20; (iii) where construction activities have the potential to					

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	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 stream hydrology impacts as far as practicable, including measures to stabilise bed and/ or bank structures where feasible and reasonable, and to rehabilitate affected riparian vegetation to existing or better condition. The timing of rehabilitation of the waterways shall be identified in the sub-plan; (iv) a contingency plan, consistent with the Acid Sulphate Soils Manual, to deal with the unexpected discovery of actual or potential acid sulphate soils, including procedures for the investigation, handling, treatment and management of such soils and water seepage; (v) a tannin leachate management protocol to manage the stockpiling of mulch and use of cleared vegetation and mulch filters for erosion and sediment control; (vi) construction water quality monitoring requirements consistent with condition B16; and (vii) a groundwater management strategy, including (but not necessarily limited to): i. description and identification of groundwater resources (including depths of the water table and water quality) potentially affected by the project based on baseline groundwater monitoring undertaken in accordance with condition B15; 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 methods, locations, frequency, duration and analysis requirements; and (e) a **Construction Heritage Management Sub-plan** to detail how construction impacts on Aboriginal and non-Aboriginal heritage will be avoided, minimised and managed. The sub-plan shall be prepared by an appropriately qualified heritage consultant(s) and be developed in consultation with the Heritage Council of NSW, the OEH (Aboriginal heritage), and registered Aboriginal stakeholders (for Aboriginal heritage), and include, but not necessarily be limited to: (i) In relation to Aboriginal Heritage: i. details of management measures and					

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	strategies for protection, salvage, and/or conservation of sites and items that will be directly or indirectly impacted during construction (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 cessation 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 suitably qualified archaeologist in consultation with the department, OEH and registered Aboriginal stakeholders and assessment of the consistency of any new Aboriginal heritage impacts against the approved impacts of the project, and notification to the OEH, in accordance with section 89A of the National Parks and Wildlife Act 1974, and the department; iii. procedures for dealing with human remains, including cessation of works in the vicinity and notification of the department, NSW Police Force, OEH and registered Aboriginal stakeholders and not recommencing any works in the area unless authorised by the department and/ or the NSW Police Force); and iv. induction processes (identification, protection) for construction personnel (including procedures for keeping records of inductions) and procedures for ongoing Aboriginal consultation and involvement; and (ii) In relation to non-Aboriginal Heritage: i. details of management measures and strategies for protection, excavation, archival recording and/or conservation of heritage items that will be directly or indirectly impacted during construction (including measures to protect unaffected items during construction works in the vicinity); ii. procedures for dealing with previously unidentified items of heritage significance, including cessation 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 suitably qualified and experienced archaeologist in consultation with the department and the Heritage Council of NSW and assessment of the consistency of any					

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Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	new non-Aboriginal heritage impacts against the approved impacts of the project and notification of the Heritage Council of NSW, in accordance with Section 146 of the NSW Heritage Act 1977, and the department; iii. procedures for dealing with human remains, including cessation of works in the vicinity and notification of the department, NSW Police Force, the Heritage Council of NSW and not recommencing any works in the area unless authorised by the department, and/ or the NSW Police Force); and iv. heritage induction processes (identification, protection) for construction personnel (including procedures for keeping records of inductions).					
PART C DURING CONSTRUCTION						
BIODIVERSITY						
C1	The Proponent shall employ feasible and reasonable measures to minimise the clearing of native vegetation during the construction of the project.	Construction	Fulton Hogan	Compliant	The project has only cleared areas required directly for construction activities. Concept designs have been modified to allow for additional vegetation to be retained at the following locations; North Street Berry, Berry North entrance Princes Highway project chainage 15600, South of Berry project chainage 18200, Cut 2 work area project chainage 9200, project chainage 12800	Ongoing
AIR QUALITY IMPACTS						
C2	The Proponent shall employ feasible and reasonable measures (including cessation of relevant works, as appropriate) to ensure that the project is constructed in a manner that minimises dust generation, including wind-blown dust, traffic-generated dust, dust from stockpiles and material tracking from construction and ancillary facility sites onto public roads.	Construction	Fulton Hogan	Compliant	Air Quality Management Sub Plan (Rev D), September 2014 Active air quality mitigation measures are in place on the project and for the reporting period ambient air quality results were compliant	Ongoing
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) For the area south of Tindalls Lane (including Berry township) (i) 7:00am to 6:00pm Mondays to Fridays, inclusive; and (ii) 8:00am to 1:00pm Saturdays; and (iii) at no time on Sundays or public holidays.	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev E), September 2014 Chapter 7	Ongoing
C4	Works outside of the standard construction hours identified in condition C3 may be undertaken in the following circumstances: (a) works that generate noise that is: (i) no more than 5 dB(A) above rating background level at any residence; or (ii) (no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) at other sensitive land uses; or (b) for delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev E), September 2014 Appendix E Additional approved out of hours works have been completed and are compliant to the requirements of the individual supplementary approval	Ongoing

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	(c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or (d) For the area between Toolijooa Road and Tindalls Lane, encompassing Toolijooa cut, Broughton Creek floodplain and major bridge works (outside of Berry township): (i) between 6:00am and 7:00am Monday to Friday; and (ii) between 6:00pm and 7:00pm Monday to Friday; and (iii) 1:00pm and 5:00pm on Saturdays; and (iv) at no time after 6pm on a day preceding a public holiday long weekend. (e) with the approval of the Secretary of the NSW Department of Planning & Environment (DP&E) in accordance with condition C6.					
C5	Except as expressly permitted by an Environment Protection Licence issued for the project, high noise impact activities and works shall only be undertaken: (a) between the hours of 8:00am to 6:00pm Mondays to Fridays; (b) between the hours of 8:00am to 1:00pm Saturdays; and (c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block. For the purposes of this condition 'continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev E), September 2014 Chapter 7 Respite periods are effected onsite	Ongoing
C6	Construction activities (Out of Hours work) may be allowed to occur outside the construction hours specified in condition C3 with the prior written approval of the Secretary of the NSW Department of Planning & Environment (DP&E). Requests for Out of Hours approval will be considered for construction activities which cannot be undertaken during the construction hours specified in condition C3 for technical or other justifiable reasons and will be considered on a case by case or activity-specific basis. Request for Out of Hours work 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 Secretary of the NSW Department of Planning & Environment (DP&E) that activities undertaken during the varied construction hours are justified, appropriate consultation with potentially affected receivers and notification of the relevant 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 work may also occur in accordance with an approved Construction Environment Management Plan or Construction Noise and Vibration Management Sub-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.	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev E), September 2014 Appendix E	Ongoing
C7	Blasting associated with the project shall only be undertaken during the following hours: (a) 9:00am to 5:00pm, Mondays to Fridays, inclusive; (b) 9:00am to 1:00pm on Saturdays; and (c) at no time on Sundays or public holidays. This condition does not apply in the event of a direction from the NSW	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev E), September 2014 Appendix D	Ongoing

<table>
<tr><th colspan="6">MCoA – Ministers Conditions of Approval Section 75J of the Environmental Planning and Assessment Act 1979</th></tr>
<tr><th>Ref</th><th>Condition Requirement</th><th>Phase</th><th>Responsibility</th><th>Compliance status</th><th>Compliance notes</th><th>Close out</th></tr>
<tr><td></td><td>Police Force or other relevant authority for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="7">Construction Noise and Vibration Goals</td></tr>
<tr><td>C8</td><td>The Proponent shall implement feasible and reasonable noise mitigation measures with the aim of achieving the construction noise management levels detailed in the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) during construction activities. Any activities that could exceed the construction noise management levels shall be identified and managed in accordance with the Construction Noise and Vibration Management Sub-plan required under condition B36.</td><td>Construction</td><td>Fulton Hogan</td><td>Compliant</td><td>Noise and Vibration Management Sub Plan (Rev E), September 2014, Section 4.1 and Chapter 7</td><td>Ongoing</td></tr>
<tr><td>C9</td><td>The Proponent shall implement all feasible and reasonable mitigation measures with the aim of achieving the following construction vibration goals:
(a) for structural damage to heritage structures, the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures;
(b) for damage to other buildings and/or structures, the vibration limits set out in the British Standard BS 7385-1:1990 – Evaluation and measurement for vibration in buildings. Guide for measurement of vibration and evaluation of their effects on buildings; and
(c) for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006).</td><td>Construction</td><td>Fulton Hogan</td><td>Compliant</td><td>Noise and Vibration Management Sub Plan (Rev E), September 2014 Section 4.2 and Chapter 7</td><td>Ongoing</td></tr>
<tr><td>C10</td><td>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.
Table 1 - Airblast overpressure criteria:
<table><tr><th>Airblast overpressure (dB(Lin Peak))</th><th>Allowable exceedance</th></tr><tr><td>115</td><td>5% of total number of blasts over a 12 month period</td></tr><tr><td>120</td><td>0%</td></tr></table></td><td>Construction</td><td>Fulton Hogan</td><td>Compliant</td><td>Noise and Vibration Management Sub Plan (Rev E), September 2014 , Section 4.2, Chapter 7 and Appendix D
Blasting will commence in the following reporting period</td><td>Ongoing</td></tr>
<tr><td>C11</td><td>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.
Table 2 – Peak particle velocity criteria
<table><tr><th>Receiver</th><th>Peak particle velocity (mm/s)</th><th>Allowable exceedance</th></tr><tr><td rowspan="2">Residence on privately owned land</td><td>5</td><td>5% of total number of blasts over a 12 month period</td></tr><tr><td>10</td><td>0%</td></tr><tr><td>Non- Aboriginal Heritage Item</td><td>3</td><td>0%</td></tr></table></td><td>Construction</td><td>Fulton Hogan</td><td>Compliant</td><td>Noise and Vibration Management Sub Plan (Rev E), September 2014 , Section 4.3, Chapter 7 and Appendix D
Blasting will commence in the following reporting period</td><td>Ongoing</td></tr>
</table>

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Ref	**Condition Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
C12	To ensure that the criteria specified in conditions C10 and C11 are satisfied at the most affected residence or other sensitive receiver, blasting trials shall be undertaken prior to the commencement of the project's blasting program, with results from the trial blasts used to determine site specific blast design to satisfy the relevant criteria.	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev E), September 2014 Section 4.3, Chapter 7 and Appendix D Blasting will commence in the following reporting period	Ongoing
C13	The blasting criteria identified in conditions C10 and/or C11 may be exceeded where the Proponent has written approval from the Director General. In obtaining the Director General's approval for any such exceedance the Proponent shall submit to the Director General: (a) a written agreement from the EPA and the relevant landowner to exceed the criteria; (b) details of the proposed blasting program and justification for the proposed increase to blasting criteria including alternatives considered (where relevant); (c) 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; (d) in relation to any identified non-Aboriginal heritage items in the vicinity of blasting works, an assessment of heritage impacts; (e) details of the blast management, mitigation and monitoring procedures to be implemented; (f) details of consultation undertaken (including clear identification of proposed blast limits and potential property impacts) and agreement reached with the relevant landowners and EPA (including a copy of the agreement in relation to increased blasting limits). Unless otherwise agreed by the Director General, 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; and (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.	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev E), September 2014 Section 4.3, Chapter 7 and Appendix D Modification to C13 was approved on 28th January 2015 Revised blasting criteria for Cut 2 was approved 9 March 2015 Blasting will commence in the following reporting period	Ongoing
Operational Noise Mitigation Review						
C14	Unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E), within 6 months of commencing construction, the Proponent shall, in consultation with the EPA, prepare and submit for the approval of the Secretary of the NSW Department of Planning & Environment (DP&E), 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); (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 *Road Noise Policy* (DECCW, 2011), based on the operational noise performance	Construction	RMS/Fulton Hogan	Compliant	Operational Noise Management Design Report Rev 3 dated 16 March 2015. Approved by DP&E on 12th June 2015	Complete

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	of the project predicted under (a) above; and (c) where necessary, investigate additional feasible and reasonable noise mitigation measures to achieve the criteria outlined in the Road Noise Policy (DECCW, 2011).					
Heritage Impacts						
C15	This approval does not allow the Proponent to destroy, modify or otherwise physically affect human remains as part of the project.	Construction	RMS/Fulton Hogan		Heritage Management Sub Plan (Rev D), September 2014 Chapter 5 and Appendix A	
C16	The Proponent shall not destroy, modify or otherwise physically affect Aboriginal sites A3, A20, A37 – A39, and MFT 13-23 and non-Aboriginal sites H25, H26, H51, H52, H58, and H59.	Construction	RMS/Fulton Hogan		Heritage Management Sub Plan (Rev D), September 2014 Chapter 5	
C17	Identified impacts to heritage (both Aboriginal and non-Aboriginal), shall be minimised to the greatest extent practicable through both detailed design and construction, particularly with regard to Aboriginal sites A13, A14, A18 and TRACL, and historic sites H13, H20, H54, H62, H63 and the Southern Illawarra Coastal Plain and Hinterland Cultural Landscape. Where impacts are unavoidable, works shall be undertaken in accordance with the actions to manage heritage construction impacts required by condition B36(e) and under the guidance of an appropriately qualified heritage specialist.	Construction	RMS/Fulton Hogan	Non-compliant	Heritage Management Sub Plan (Rev D), September 2014 Chapter 5 Detailed design of the Foxground and Berry Bypass Urban Design and Landscaping Plan 20 November 2015 Demolition of H13 as mentioned in Table 7 of the Compliance Status Report	
C18	The proponent shall not destroy, modify or otherwise physically affect any heritage items outside the approved project footprint, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E) in accordance with Condition C32 of this project approval.	Construction	RMS/Fulton Hogan		CEMP Section 3.7 and Appendix A5 Heritage Management Sub Plan (Rev D), September 2014 Chapter 5	
C19	The measures to protect Aboriginal or historic heritage sites near or adjacent to the project during construction shall be detailed in the Heritage Management Sub-plan required under condition B36(e).	Construction	RMS/Fulton Hogan		Heritage Management Sub Plan (Rev D), September 2014 Chapter 5	
SEDIMENTATION, EROSION AND WATER						
C20	Soil and water management measures consistent with *Managing Urban Stormwater - Soils and Construction Volumes 1 and 2, 4th Edition* (Landcom, 2004) and *Managing Urban Stormwater Soils And Construction Vols 2A and 2D Main Road Construction* (Department of Environment and Climate Change, 2008) shall be employed during the construction of the project for erosion and sediment control.	Construction	RMS/Fulton Hogan		Soil and Water Quality Management Sub Plan (Rev D), September 2014 Section 2.2 and Chapter 5	
C21	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	RMS/Fulton Hogan		Soil and Water Quality Management Sub Plan (Rev D), September 2014 Chapter 5	
C22	All surface water and groundwater must be adequately treated prior to entering the stormwater system to protect the receiving water source quality.	Construction	RMS/Fulton Hogan		Soil and Water Quality Management Sub Plan (Rev D), September 2014 Chapter 5	
PROPERTY AND LANDUSE						
C23	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 such property or structure, the Proponent shall arrange and fund repair of the damage to a standard comparable to that in existence prior to the damage occurring, unless otherwise agreed by the relevant property or utility owner.	Construction	RMS/Fulton Hogan		Constriction Communication Strategy Appendices C and E. Noise and Vibration Management Sub Plan (Rev E), September 2014Chapter 7 Dilapidation Reports have been undertaken	
C24	Access to private property shall be maintained during construction unless otherwise agreed with the property owner in advance. A landowner's access that is physically affected by the Project shall be reinstated to meet at least equivalent standard and/or relevant road safety standards, in consultation with the property owner.	Construction	RMS/Fulton Hogan		Constriction Communication Strategy Sections 3.4 and 7.2	

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C25	Any damage caused to property as a result of the project shall be rectified or the property owner compensated, within a reasonable timeframe, with the costs borne by the Proponent. This condition is not intended to limit any claims that the property owner may have against the Proponent.	Construction	RMS/Fulton Hogan		Constriction Communication Strategy Section 7.2	
C26	The Proponent shall, in consultation with relevant property owners, construct the project in a manner that minimises intrusion and disruption to agricultural operations/ activities in surrounding properties (e.g. stock access, access to farm dams etc.), unless otherwise agreed by the relevant property owner.	Construction	RMS/Fulton Hogan		Constriction Communication Strategy Section 7.2	
TRAFFIC IMPACTS						
C27	The roads likely to be used by the project's heavy construction vehicles shall be identified in the Construction Traffic Management Sub-plan required under condition B36(a). (a) Road dilapidation reports shall be prepared for local roads likely to be used by the project's construction traffic, and a copy of the report(s) shall be provided to the relevant council, prior to use by the project's heavy construction vehicles. Any damage resulting from the use of the identified local roads by the project's heavy construction vehicles, aside from that resulting from normal wear and tear, shall be repaired at the cost of the Proponent, unless otherwise agreed by the relevant council. (b) A road dilapidation report shall be prepared for the 'Sandtrack' and a copy of the report shall be provided to the relevant council, prior to commencement of construction. Should monitoring in accordance with Condition B36(a) reveal higher than anticipated volumes of traffic (as defined in the document referred to in Condition A1(b)) resulting in a higher rate of deterioration in the condition of local road infrastructure, consultation with the relevant Council shall be undertaken to determine mitigation measures in accordance with condition B36(a). A report shall be prepared and submitted to the Secretary of the NSW Department of Planning & Environment (DP&E) at 12 months and 24 months after commencement of construction, and prior to operation, unless otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E).	Pre-construction	RMS/Fulton Hogan	Non-compliant	a) Construction Traffic Management Plan Section 2 b) Construction Traffic Management Plan Section 2 Road dilapidation reports not sent to council's prior to use of roads by heavy construction vehicles. Details provided in table 7 of the Compliance status report.	
C28	The Proponent shall not cause, permit or allow 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	RMS/Fulton Hogan		Waste and Energy Management Sub Plan (Rev E), September 2014 Chapters 4 and 5	
WASTE MANAGEMENT						
C29	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	RMS/Fulton Hogan		Waste and Energy Management Sub Plan (Rev E), September 2014 Chapters 4 and 5	
C30	The Proponent shall ensure that liquid and/or non-liquid waste generated on the site is assessed and classified in accordance with Waste Classification Guidelines (Department of Environment and Climate Change, 2008) and where removed from the site is directed to a waste management facility lawfully permitted to accept the materials.	Construction	RMS/Fulton Hogan		Waste and Energy Management Sub Plan (Rev E), September 2014 Chapters 4 and 5	
HAZARDS AND RISKS						
C31	The Proponent shall store and handle dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with: (a) relevant Australian Standards; (b) for liquids, a minimum bund volume requirement of 110% of	Pre-construction, Construction	RMS/Fulton Hogan		Project Work Health and Safety Management Plan Section 8.4 Soil and Water Quality Management Sub Plan (Rev D), September 2014 Section 5.11	

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	the volume of the largest single stored volume within the bund; and (c) the Environment Protection Manual for Authorised Officers: Bunding and Spill Management, Technical Bulletin (Environment Protection Authority, 1997). In the event of an inconsistency between the requirements listed from (a) to (c) above, the most stringent requirement shall prevail to the extent of the inconsistency.					
ANCILLARY FACILITIES						
C32	Unless otherwise approved by the Secretary of the NSW Department of Planning & Environment (DP&E) in accordance with this condition, the sites for ancillary facilities (except stockpiles) 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) not require native vegetation clearing beyond that already required by the project; (d) be sited 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) not unreasonably affect the land use of adjacent properties; (g) be above the 20 ARI flood level unless a contingency plan to manage flooding is prepared and implemented; (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) not impact on heritage items beyond those already impacted by project (including identified Aboriginal cultural value and archaeological sensitivity).	Pre-construction and Construction	RMS/Fulton Hogan		Construction Environmental Management Plan Section 2.4 and Appendix A5	
C33	Ancillary sites that do not meet the criteria set out under condition C32 of this approval shall be approved by the Secretary of the NSW Department of Planning & Environment (DP&E) prior to establishment. In obtaining this approval, the Proponent shall assess the ancillary facility against the criteria set out under condition C32 of this approval to demonstrate how the potential environmental impacts can be mitigated and managed to acceptable standards. Such assessment(s) can be submitted separately or as part of the Construction Environmental Management Plan required under B35 of this approval. The assessment shall include, but not necessarily be limited to: (a) a description of the ancillary facility, its components and the surrounding environment; (b) details on the activities to be carried out at the facility, including the hours of use and the storage of dangerous and hazardous goods; (c) an assessment of the environmental impacts on the site and the surrounding environment, including, but not limited to noise, vibration, air quality, traffic access, flora and fauna, heritage and light spill; (d) details on the mitigation, monitoring and management procedures specific to the ancillary facility that would be implemented to minimise the environmental impacts or, where this is not possible, feasible and reasonable measures to offset these impacts and an assessment of the adequacy of the mitigation or offsetting measures. This shall include consideration of restrictions on the hours of use or exclusion of certain activities;	Pre-construction and Construction	RMS/Fulton Hogan		Construction Environmental Management Plan Section 2.4 and Appendix A5 Operation and construction of sites D and H was approved 15 January 2015 subject to the implementation of *Ancillary facilities assessment for proposed ancillary facilities at Broughton Creek (Site D) and Austral Park Road (Site H): Foxground and Berry Bypass, November 2014*	

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	(e) details on the timing for the completion of activities at the ancillary facility and how the site will be decommissioned (including any necessary rehabilitation); and (f) demonstrated overall consistency with the approved project. The Proponent shall demonstrate to the satisfaction of the Secretary of the NSW Department of Planning & Environment (DP&E) that there will be no significant adverse impact from that facility's construction or operation.					
C34	The Secretary of the NSW Department of Planning & Environment (DP&E)'s approval is not required for minor ancillary facilities (e.g. lunch sheds, office sheds, and portable toilet facilities, etc.) that do not comply with the criteria set out in condition C32 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.	Construction	RMS/Fulton Hogan	Compliant	Construction Environmental Management Plan Section 2.4 and Appendix A5 One non-conformity was observed during the reporting periods pertaining to the incorrect procedure followed for the installation of a minor ancillary facility. Installed prior to ER approval.	
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 systems.	Construction	RMS/Fulton Hogan	Compliant	By RMS	Ongoing
PART E DURING OPERATIONS						
OPERATIONAL NOISE						
E1	Within 12 months of the commencement of operation of the project, or as otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E), 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 C14, 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 C14 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	Operation	RMS/Fulton Hogan	Compliant	Operational Noise Management Design Report and Appendices A, C and D revision 4 16 March 2015	Ongoing

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	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, reassessment of all feasible and reasonable mitigation measures; and (g) identification of additional feasible and reasonable measures to those identified in the review of noise mitigation measures required by condition C14, 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 Secretary of the NSW Department of Planning & Environment (DP&E) and the EPA. The Proponent shall provide the Secretary of the NSW Department of Planning & Environment (DP&E) and the EPA with a copy of the Operational Noise Report within 60 days of completing the operational noise monitoring referred to in (a) above or as otherwise agreed by the Secretary of the NSW Department of Planning & Environment (DP&E).					

Table 2: Revised statement of commitments (May 2013)

SoC – Revised statement of commitments (May 2013)						
No.	**Commitment Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
Environmental management						
EM1	The head contractor for the project will have an Environmental Management System (EMS).	Pre-construction and construction	Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev D) and Sub-plans	Ongoing
EM2	Environmental management plans will be developed and implemented by suitably qualified and experienced personnel and will incorporate as a minimum the mitigation and management measures in the environmental assessment.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev D) and Sub-plans	Ongoing
EM3	Environmentally sensitive areas (such as native vegetation, river flat eucalypt forest and cultural heritage) within the construction site boundary will be marked on sensitive area maps, demarcated and signposted where necessary. Maps will be made available during all on-site inductions to construction personnel.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev D), Appendix A6	Ongoing
EM4	All construction personnel will receive training regarding environmental management.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev D), Chapter 5	Ongoing
Community consultation						
CC1	The community will be kept informed with measures such as: Letter box drops, media releases and community updates. An internet site established and maintained for the duration of the project. Variable message signs. The project office. Email to registered stakeholders. Targeted consultation with affected individuals or groups. Information to be provided will include: Changes to access and traffic conditions. A detail of future works programs. General construction progress.	Pre-construction and construction	Fulton Hogan	Compliant	Community Communication Strategy (Rev 3), Section 7.2	Ongoing
CC2	Communication management will include: A 24 hour toll-free contact telephone number. Directions on how to register a complaint or make an inquiry. Acknowledgement of complaints within 24 hours. A complaint recording and tracking system.	Pre-construction and construction	Fulton Hogan	Compliant	Community Communication Strategy (Rev 3), Sections 8.1 and 8.2	Ongoing
Traffic and transport						
TT1	Construction vehicle movements and works programs will incorporate traffic control measures to minimise traffic and transport impacts on local roads and the existing highway.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Traffic Management Plan (Rev3), Chapter 3	Ongoing
TT2	Road safety on 'the Sandtrack' will be monitored during construction. Should additional road safety issues be identified appropriate road safety measures will be implemented where reasonable and feasible, in consultation with Kiama Municipal Council and Shoalhaven City Council.	Construction	RMS	Compliant	Construction Traffic Management Plan (Rev3), Chapter 2	Ongoing
TT3	Traffic levels and operational performance will be monitored during peak periods, at approximately 6 and 12 months following completion of the project.	Operation	RMS	NA at this stage – relates to operation.	Nil.	NA
Noise and vibration						
NV1	Mitigation and management measures, such as noise barriers, pre-dilapidation surveys and monitoring, will be used to minimise construction noise and vibration at sensitive receivers.	Construction	Fulton Hogan	Compliant	Construction Noise and Vibration Management Sub-plan (Rev E), Chapter 7 and Section 8.3	Ongoing

SoC – Revised statement of commitments (May 2013)						
No.	**Commitment Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
NV2	If required due to ground conditions, impact piling ('driven piles') will be conducted during standard working hours.	Construction	Fulton Hogan	Compliant	Construction Noise and Vibration Management Sub-plan (Rev E), Chapter 7	Ongoing
NV3	Reasonable and feasible mitigation measures, such as noise barriers in the vicinity of North Street and Huntingdale Park Road and architectural treatments, will be developed and implemented to meet the noise criteria applicable to the project in consultation with the sensitive receiver.	Pre-construction	Fulton Hogan	Compliant	Developed but not yet implemented. Refer to Detailed Design - Signage, Linemarking & Road Furniture Report	Ongoing
NV4	Operational noise monitoring will be undertaken approximately one year after project opening, in accordance with RMS' Environmental Noise Management Manual (RTA, 2001). If monitoring indicates a clear trend that traffic noise levels exceed those predicted, further feasible and reasonable measures will be investigated in consultation with a qualified and experienced acoustic specialist and affected property owners.	Construction and Operation	Fulton Hogan	NA at this stage – relates to operation.	Detailed Design - Operational Noise Management Design Report	Ongoing
NV5	The feasibility of constructing noise protection on the western side of Mark Radium Park will be investigated.	Pre-construction and construction	Fulton Hogan	Compliant	Tender Submission Documents	Complete
Biodiversity						
BD1	Areas of vegetation identified to be retained will be managed as environmentally sensitive areas.	Pre-construction	Fulton Hogan	Compliant	Construction Flora and Fauna Management Sub-plan (Rev E), Chapter 5	Ongoing
BD2	Pre-clearing fauna surveys, clearing procedures, including staged clearing where there are hollow trees, and methods to control noxious and environmental weeds and pests will be developed and implemented prior to clearing activities, in consultation with a suitably qualified and experienced ecologist.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Flora and Fauna Management Sub-plan (Rev E), Chapter 5, Appendices A and F	Ongoing
BD3	Natural and artificial habitat features, such as bat roost and nest boxes, will be installed to replace hollow-bearing trees that are removed.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Flora and Fauna Management Sub-plan (Rev E), Chapter 5, Appendices A	Ongoing
BD4	A fauna monitoring program will be developed in consultation with OEH. This program will allow the assessment of the effectiveness of fauna mitigation measures including nest boxes, bat roost boxes, fauna underpasses, rope bridges and fauna fencing.	Pre-construction, construction and operation	RMS	Compliant	Construction Flora and Fauna Management Sub-plan (Rev E), Chapter 5, Appendix A Ecological Monitoring Program (by RMS)	Complete
BD5	Soil that has been stripped, stockpiled and/or reinstated as part of the construction works will be appropriately managed to maintain available seed bank.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Flora and Fauna Management Sub-plan (Rev E), Chapter 5, Appendix A Construction Soil and Water Quality Management Sub-plan (Rev D), Appendix F	Ongoing
BD6	Fauna mitigation structures, such as fauna underpasses, fauna overpasses and fauna fencing will be provided where reasonable and feasible. These structures will be designed to assist the safe passage of fauna underneath or over the highway.	Pre-construction, construction and operation	Fulton Hogan	In progress	Fauna Crossings Report (CoA B5).	Ongoing
BD7	Vegetation will be retained, where practicable, under bridges, at temporary creek crossing sites, adjacent to ancillary sites and in the vicinity of rope bridges.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Construction Flora and Fauna Management Sub-plan (Rev E), Chapter 5 and Appendix A. Landscape Drawings	Ongoing
BD8	Permanent and temporary waterway crossings will be designed and constructed in accordance with the fish classification of each waterway.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Flora and Fauna Management Sub-plan (Rev E), Chapter 5	Ongoing
BD9	A biodiversity offset package will be developed in consultation with the biodiversity offset strategy and in consultation with OEH and DTIRIS. The area of restoration or offsetting would be guided by a simulated assessment of the project impacts and potential offsets using the BioBanking Assessment Methodology with a minimum of 2:1 for riparian vegetation.	Pre-construction and construction	RMS	Compliant	Biodiversity Offset Strategy (by RMS) Biodiversity Offset Package being prepared (by RMS)	Ongoing
Surface water and groundwater						
SG1	Water quality measures such as water quality basins, swales or bioretention systems at sensitive receiving environments will be designed and installed to respond to the project water quality design criteria.	Pre-construction and construction	Fulton Hogan	Design compliant; installation in progress.	Construction Soil and Water Quality Management Sub-plan (Rev D), Chapter 5 Detailed Design – Drainage Report	Ongoing
SG2	A design and revegetation strategy for the Town Creek diversion will be	Pre-construction	Fulton Hogan	Compliant	Detailed Design – Drainage Report	Ongoing

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No.	**Commitment Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	developed during detailed design and will include measures to: Maintain flushing efficiency. Mitigate erosion risk at the connection with Bundewallah Creek. The design of the diversion will be finalised in consultation with directly affected landowners. The Town Creek diversion will be stabilised to mitigate erosion risk prior to operation.	and construction			Urban Design and Landscape Plan (Rev 5)	
SG3	Permanent losses to farm dam catchments and inflows will be identified during detailed design. Mitigation strategies will be developed in consultation with affected landowners and implemented where reasonable and feasible.	Pre-construction	RMS/ Fulton Hogan	Compliant	Detailed Design – Drainage Report	Complete
SG4	Drinking water drawn from Broughton Creek will be maintained through measures identified in commitment AQ1. In the event that water drawn from Broughton Creek does not meet existing drinking water quality standards, an appropriate source of potable water will be made available to affected residents, following consultation.	Construction	Fulton Hogan	Compliant	Construction Air Quality Management Sub-plan (Rev E), Chapter 5 Residents have been consulted directly during construction about upcoming and ongoing construction activities. Sensitive water receivers are managed through targeted site works and the implementation of specific erosion and sediment controls. Any waters drawn from Broughton Creek will be done in consultation with Department of Primary industries and environmental flows will be maintained	Ongoing
SG5	RMS will consult with landholders along the existing Town Creek alignment, below the proposed diversion, to confirm that there are no Basic Landholder Rights (under the Water Management Act 2000) to access water for domestic or stock purposes.	Pre-construction	RMS	Compliant	RMS consulted with landowners and confirmed no Basic Landholder Rights exist along the Town Ck alignment.	Complete
SG6	Waterway structures will be designed to maintain existing flow regimes, where practicable.	Pre-construction	Fulton Hogan	Compliant	Detailed Design – Drainage Report	Complete
SG7	Detailed design will seek to minimise increases in peak flood levels in the 1 in 100 year flood event.	Pre-construction	Fulton Hogan	Compliant	Detailed Design – Drainage Report	Complete
SG8	Changes to flood impacts on property will be identified as part of detailed design. Where increased flood impacts to structures, such as residences, are identified, mitigation measures will be proposed and implemented where reasonable and feasible.	Pre-construction and construction	Fulton Hogan	In progress - Draft Hydrological Mitigation Report prepared by WMA. Detailed Design ongoing.	Hydrological Mitigation Report (by RMS) Detailed Design – Drainage Report	Ongoing
SG9	Impacts on stream channel structure diversion will be minimised during detailed design. Measures to be considered may include culvert sizing, energy dissipation measures, scour protection and other design features to control flow intensity and direction.	Pre-construction	Fulton Hogan	Compliant	Detailed Design – Drainage Report	Complete
SG10	Groundwater monitoring of water levels and water quality will be undertaken. Where levels and/or quality indicate that the project is potentially having an adverse impact, mitigation measures will be considered and implemented where reasonable and feasible.	Construction	Fulton Hogan	Compliant	Soil and Water Quality Management Sub Plan (Rev D), September 2014 Appendix B	Ongoing
SG11	Water efficient work practices, such as water reuse and recycling for road construction and revegetation irrigation will be implemented, where feasible. In the event that surface water from watercourses or groundwater is required to supply water to the project, a site specific impact assessment will be carried out in consultation with the NSW Office of Water and potentially affected stakeholders.	Construction	Fulton Hogan	Compliant	Soil and Water Quality Management Sub Plan (Rev D), September 2014 Chapter 5	Ongoing
Landscape character and visual amenity						
VL1	The detailed design will be developed with reference to the minimum reference design requirements and the findings of the CM+ Urban Design Study for the following project components: All bridges within the project, with consideration of the Bridge Aesthetics Design Guidelines (RTA 2003). Embankments across Broughton Creek west of Toolijooa Ridge. Noise attenuation measures barriers along the length of the project.	Pre-construction	Fulton Hogan	Compliant	Urban Design and Landscape Plan (Rev 5) Detailed Design - Structures Report	Complete
VL2	Councils and the local community will be engaged during detailed design to receive feedback on an urban and landscape design strategy for the project and the integration of existing pedestrian access and mobility	Pre-construction	Fulton Hogan	Compliant	Community Display Session Sat 26/07/2014. Detailed Design - Roads Report	Complete

SoC – Revised statement of commitments (May 2013)						
No.	**Commitment Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	plans for Berry.					
VL3	To respect the rural and historic character of Foxground and Berry, noise barriers and bridges will be designed using forms, materials, colour and texture that are sensitive to the area, that complement the existing rural character and, where possible and desirable, that recede into the landscape. Planting and revegetation will be used to help blend the project into its setting and screen and visually soften built elements.	Pre-construction	Fulton Hogan	Compliant	Urban Design and Landscape Plan (Rev 5) In the reporting period the gently graded earth noise mound on North street was commenced to provide visual screening and noise attenuation to the berry township	Ongoing
VL4	Landscaping treatments will include native plant species endemic to the local area and where practicable, locally sourced seed and propagated plant stock will be used to supplement the plant materials required for the project.	Pre-construction and construction	Fulton Hogan	Compliant	Urban Design and Landscape Plan (Rev 5)	Ongoing
VL5	A lighting strategy and design will be undertaken during detailed design to minimise the impacts of light spill. Detailed design will address mechanisms for reducing the impacts of headlight glare from vehicles travelling on the bridges at Berry and Broughton Creek	Pre-construction	Fulton Hogan	Compliant	Detailed Design - Signage, Linemarking & Road Furniture Report	Complete
Aboriginal heritage						
AH1	Aboriginal sites identified to be conserved will be managed as environmentally sensitive areas.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Heritage Management Sub-plan (Rev D), Chapter 5 Construction Environmental Management Plan (Rev D), Appendix A6	Ongoing
AH2	Disturbance to the natural soil profile of G2B A13 and G2B A14 will be avoided, where practicable.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Heritage Management Sub-plan (Rev D), Chapter 5 Alignment Report	Ongoing
AH3	Conduct a program of archaeological salvage at sites G2B A16, G2B A18, G2B A24, G2B A29, G2B A30, G2B A31, G2B A32, G2B A32, G2B A33, G2B A36, and G2B PAD1.	Construction	RMS	Compliant	Archaeological salvage works have been completed on behalf of RMS by the nominated project archaeologist, Kelleher and Nightingale. Note: The report for these works will be completed in the fourth quarter of 2015.	Complete
AH4	If any skeletal remains or unknown Aboriginal objects or places are encountered, works that would potentially impact the find will stop immediately. Works will not re-commence until appropriate clearance has been received.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Heritage Management Sub-plan (Rev D), Chapter 5 and Appendix A	Ongoing
AH5	All construction personnel will receive training in the management of Aboriginal cultural materials, including legal obligations, the application of protocols and the recognition of Aboriginal cultural materials.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Heritage Management Sub-plan (Rev D), Section 6.2	Ongoing
Non-Aboriginal heritage						
NA1	Mitigation (archival record, test/salvage excavation) will be completed for impacted heritage items.	Pre-construction and construction	RMS	Compliant	Archival recording and detailed historic research complete. Note: Reports will be sent to DP&E independently of this Compliance Tracking Report.	Complete
NA2	An archival recording of Glen Devon (G2B H11) and its grounds will be conducted prior to the commencement of construction	Pre-construction and construction	RMS	Compliant	Archival recording complete	Complete
NA3	Non-Aboriginal sites identified to be conserved will be managed as environmentally sensitive areas.	Pre-construction and construction	Fulton Hogan	Non-compliant	Construction Heritage Management Sub-plan (Rev D), Chapter 5 H13 was demolished not in accordance with the Environmentally Sensitive Area Plan	Ongoing
NA4	If any unknown non-Aboriginal heritage items are encountered, all works that would potentially impact the find will stop immediately. Works will not recommence until appropriate clearance has been received.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Heritage Management Sub-plan (Rev D), Chapter 5 and Appendix A	Ongoing
NA5	An archival record will be prepared for any directly impacted heritage item. Copies will be kept in RMS' library and distributed to the Kiama library and Shoalhaven library (Nowra branch).	Pre-construction and construction (as relevant)	RMS	Compliant	Archival recording completed. Copies to be sent to Kiama and Shoalhaven libraries.	Ongoing
Land use and property						
P1	Negotiation for all property acquisitions will be in accordance with RMS' Land Acquisition Information Guide (RTA, 2011). Compensation assessment will be in accordance with the Land Acquisition (Just Terms Compensation) Act 1991.	Pre-construction	RMS	Compliant	Complete	Complete

SoC – Revised statement of commitments (May 2013)						
No.	**Commitment Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
P2	Property access will be maintained during construction. If temporary or alternative access is required, it will be provided in consultation with the affected landowner/s.	Construction.	Fulton Hogan	Compliant	Community Communication Strategy (Rev 3), Section 7.2	Ongoing
P3	Affected property owners will be consulted during detailed design regarding long term access requirements via underpasses.	Pre-construction and construction	Fulton Hogan	Compliant	Community Communication Strategy (Rev 3), Section 7.2	Ongoing
Socio-economic						
SE1	Negotiations for property acquisition will include consideration of property adjustments, where required, to maintain farm management practices.	Pre-construction	RMS	Compliant	Complete	Ongoing
SE2	Stock refuge will be maintained at Broughton Creek bridge 2 and will be determined during detailed design in consultation with landowners.	Pre-construction	RMS/ Fulton Hogan	Compliant	Community Communication Strategy (Rev 3), Section 7.2 Detailed Design – Alignment Report	Complete
SE3	Appropriate destination signage will be provided near to interchanges.	Operation	Fulton Hogan	NA at this stage – relates to operation.	Construction Traffic Management Plan (Rev3), Sections 16.3.1 & 16.3.2 Detailed Design - Signage, Linemarking & Road Furniture Report	Ongoing
SE4	Consultation with Shoalhaven City Council will continue through detailed design and construction regarding assistance towards the development of strategies to address the continued economic viability of Berry.	Pre-construction and construction	RMS	Compliant	Ongoing	Ongoing
SE5	Access to recreational facilities will be maintained during construction and operation of the project, where practicable, including consideration of assistance to the relocation of the Berry equestrian centre during construction.	Pre-construction, construction and operation	RMS/ Fulton Hogan	Compliant	Community Communication Strategy (Rev 3), Section 7.2	Ongoing
SE6	Access to local creeks, including access to the existing Broughton Creek bridge will be maintained during construction and operation to provide access for recreational fishers, where safe and practicable.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Community Communication Strategy (Rev 3), Section 7.2 Detailed Design - Drainage Report	Ongoing
Soil and water quality						
SW1	Management measures will be designed, installed and maintained to minimise erosion and sedimentation from construction activities.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Chapter 5	Ongoing
SW2	A soil conservation specialist will be engaged to provide advice on erosion and sedimentation control.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Chapter 5 SEEC have been engaged as the nominated soil conservationist and have attended the project throughout high risk phases and at a minimum of every two weeks	Complete
SW3	Stabilisation of exposed areas will be undertaken progressively.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Chapter 5	Ongoing
SW4	Monitoring of water quality upstream and downstream of the project site will be undertaken before and during construction.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Appendix B Water quality monitoring results are attached in appendix B of this report	Ongoing
SW5	Areas of ASS to be avoided will be fenced and signposted as exclusion zones before and during any works in the vicinity.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Appendix E	Ongoing
SW6	Exposed ASS will be neutralised and surface run-on will be minimised. Any acid runoff or acid material will be contained and treated.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Appendix E	Ongoing
SW7	Targeted soil contamination investigations will be undertaken during detailed design, if required. A remedial action plan will be developed if contamination is found to pose unacceptable risks to the environment and human health.	Pre-construction, construction and operation	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Appendix C Detailed Design - Geotechnical Report No contamination identified	Complete

SoC – Revised statement of commitments (May 2013)						
No.	**Commitment Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
Air quality						
AQ1	Standard dust and emission control measures will be implemented to manage construction air quality impacts at sensitive receivers.	Construction	Fulton Hogan	Compliant	Construction Air Quality Management Sub-plan (Rev E), Chapter 5	Ongoing
AQ2	Monitoring will be undertaken to assess the effectiveness of the air quality environmental management measures. Where required, additional feasible and reasonable environmental management measures will be used.	Construction	Fulton Hogan	Compliant	Construction Air Quality Management Sub-plan (Rev E), Section 6.3	Ongoing
Hazards and risks						
HR1	Spills will be contained immediately. Bunded areas within the construction site and ancillary facilities, or other areas where suitable containment measures are in place to prevent discharge into watercourses, will be used for storage of potentially hazardous and/or contaminating materials and activities.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Chapter 5	Ongoing
HR2	Not used.	NA	NA	NA	NA	NA
HR3	Protection measures for the eastern gas pipeline and suitable construction methods when working in the vicinity of the pipeline will be implemented in consultation with Jemena (Eastern Gas Pipeline).	Pre-construction and construction	Fulton Hogan	Compliant	Detailed Design - Signage, Linemarking & Road Furniture Report Gas protection slab works completed as early works during this reporting period	Ongoing
HR4	Permanent water quality basins, swales or other appropriate controls will be designed during the detailed design phase to protect waterways from spills.	Pre-construction and operation	Fulton Hogan	Compliant	Detailed Design – Drainage Report	Complete
Waste and management						
SM1	Not used.	NA	NA	NA	NA	NA
SM2	The waste minimisation hierarchy principles of avoid, reduce, reuse, recycle or dispose will apply to all aspects of the project.	Construction	Fulton Hogan	Compliant	Construction Waste and Energy Management Plan (Rev E), Chapters 4 and 5	Ongoing
Greenhouse gas emissions						
GG1	Energy efficient work practices will be implemented, including consideration of: Energy efficient design of site buildings. Design of site compounds and the batch plant to minimise unnecessary vehicle movement. Regular servicing of site plant and equipment. Training of construction personnel in energy efficient plant operation. The use of accredited GreenPower. Use of locally sourced materials where available and of suitable quality.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Waste and Energy Management Plan (Rev E), Chapters 4 and 5	Ongoing
Ancillary facilities						
AF1	Ancillary facilities (excluding temporary stockpiles) not identified in the environmental assessment will be located in areas: More than 50 metres from waterways for the active area of the ancillary facility. Where there is no significant clearing of native vegetation beyond that already required for the project. That minimise impact on amenity of the closest sensitive receiver (unless a negotiated agreement is in place). On relatively level ground.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev D), Section 2.4 and Appendix A5	Ongoing
AF2	Ancillary chemical storage facilities will be located above the 1 in 100 year flood level unless otherwise identified the construction environmental management plan.	Pre-construction and construction	Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev D), Section 2.4 and Appendix A5	Ongoing
AF3	Temporary stockpiles will be located in areas:	Pre-construction	Fulton Hogan	Compliant	Construction Soil and Water Quality Management Sub-plan (Rev D), Appendix F	Ongoing

SoC – Revised statement of commitments (May 2013)						
No.	**Commitment Requirement**	**Phase**	**Responsibility**	**Compliance status**	**Compliance notes**	**Close out**
	Of low ecological and heritage conservation significance. At least 50 metres from waterways. Outside the 10 year ARI floodplain. On relatively level ground.	and construction				

04 March 2015

James Diamond
Environmental Coordinator
Fulton Hogan Construction Pty Ltd
P.O. Box 353
Berry NSW 2535

Our ref: 21/24306 206933

Your ref:

Dear James,

Surface Water Monitoring
Construction Event 1

1 Scope and limitations

In accordance with the Princes Highway upgrade for Foxground and Berry Bypass (FBB) - Water Monitoring Project Brief (*Contract No. 12.2574.3019)*, GHD completed a monthly round of surface water monitoring at seventeen locations (SW01 to SW017) after a minor rainfall event. This report discusses the first surface water sampling event (Event 1) since construction has started.

This report presents the control charts and discusses results in respect to exceedances of criteria or inconsistencies for surface water results for Event 1 in accordance with the limitations provided in Section 4.

2 Field Program

Surface water sampling was undertaken at all surface water sampling locations on 4 February 2015; refer to Figure 1, Attachment A for sampling locations. This monthly surface water sampling event was conducted in accordance with the sampling program and protocols provided in:

- GHD 2014, Foxground to Berry Bypass Water Quality Management - Surface Water and Groundwater Sampling Protocol, prepared for Roads and Maritime Services.
- GHD 2014, Foxground to Berry Bypass Water Quality Management - Surface Water Quality Management Plan, prepared for Roads and Maritime Services.
- GHD 2014, Princes Highway Upgrade – Foxground to Berry Bypass Project, Final Interpretive Water Monitoring Report, prepared for Roads and Maritime Services.

Field parameters were measured during sampling including temperature, pH, electrical conductivity (EC), dissolved oxygen (DO), and reduction-oxidation potential (redox), and are provided in Table B1, Attachment B. Field sheets are provided in Attachment C.

Water samples were submitted to a NATA certified testing laboratory (Eurofins | Mgt) to be analysed for the schedule of minor suite analysis of:

- Turbidity.
- Total suspended solids.
- TPH (limited to SW11).

3 Results and Discussion

3.1 Field observations

The rainfall within Broughton Creek catchment and the surface water flows within Broughton Creek are presented in Figure 2, Attachment A. This information was obtained from the NSW office of water website (http://realtimedata.water.nsw.gov.au/water.stm). The location of this gauge is on Broughton Mill Creek approximately 2 km upstream of SW04. During the construction phase, minor events are classified as at least 15 mm of rainfall in the past 24 hours and major events are classified as at least 50 mm of rainfall in the past 24 hours.

The data in Figure 2 illustrates a high correlation between rainfall and river flow, with a spike in rainfall coinciding with the spike in river flow. The surface water sampling events are also marked on Figure 2, Attachment A.

3.2 Surface water quality sampling results

In situ water quality parameters observed during sampling are presented in Table B1, Attachment B

Surface water analytical results for the suite listed in Section 2, are tabulated against selected criteria (in accordance with the protocols detailed in Section 2) in Table B2, Attachment B. Laboratory certificates are provided in Attachment D.

A field quality control and laboratory control assessment of the results from this monthly monitoring round (Event 1) is provided in Attachment E.

3.2.1 Control charts

The surface water locations have been grouped into separate control charts by the specific surface water bodies they are located within and whether they are up and down gradient of the FBB alignment. The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction and operation). By comparing upstream water quality with down-stream water quality using the control chart methods it is expected that impacts will be able to be adequately characterised during construction and operation. The groupings used for the control charts are summarised in Table 1.

Table 1 Surface water locations within specific surface water bodies

Surface water	Upstream of Alignment (reference site)	Downstream of Alignment (test site)
Broughton Creek	SW01	SW02, SW03, SW05
Connelly's Creek and Broughton Mill Creek and Bundewallah Creek	SW04, SW06	SW07, SW09
Bundewallah Creek and Connelly's Creek	SW08	SW06
Town Creek	SW10	SW11
Hitchcocks Lane Creek Tributary	SW12	SW13
Hitchcocks Lane Creek	SW14	SW15
Unnamed Tributary	SW16	SW17

The primary control chart indicators for assessing potential impacts associated with the FBB upgrade works during construction are limited to pH, turbidity and total suspended solids. The primary control charts for Event 1 are presented in Attachment F.

The control charts suggest that the results are generally consistent with pre-construction monitoring conditions. There are downstream median values that are greater than the up gradient reference site 80th percentile values which were present in previously sampling events. Event 1 test results which have either exceeded reference results or are inconsistent with results from previous monitoring rounds are discussed below.

pH at Hitchcocks Lane Creek Tributary for the test site (SW13 median) exceeded pH at the reference site (SW12 80th percentile). These results are attributed to very low flow conditions that are likely to limit the relationship between the up-stream reference site and downstream test site and which limits the potential to get a representative and consistent sample of the water migrating between the two locations.

Event 1 results suggest that construction works are currently having no significant impact on surface water quality at the site.

4 Limitations

This report has been prepared by GHD Pty Ltd (GHD) for Fulton Hogan and may only be used and relied on by Fulton Hogan for the purpose agreed between GHD and the Fulton Hogan as set out in Section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Fulton Hogan arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Fulton Hogan and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

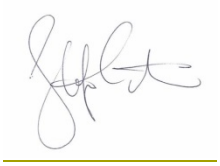
Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any

change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

Please contact the undersigned if you have any questions or require further information.

Kind Regards,



Ashlee La Fontaine
Environmental Scientist
02 9239 7122

Stefan Charteris
Senior Hydrogeologist
02 9239 7472

Attachment A - Figures

1:25,000 (at A3)

0 125 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Surface Water Sampling Locations
- Berry to Foxground upgrade alignment
- Roads
- Railways
- Waterways
- Lakes and dams

Fulton Hogan Pty Ltd
Water Quality Monitoring

Job Number	21-24306
Revision	A
Date	03 Mar 2015

Surface water sampling locations

Figure 1

\\ghdnet\ghd\AU\Sydney\Projects\21\24306\GIS\Maps\MXD\21_24306_Z001_SurfaceWatersamplingLocations.mxd

Data Source: NSW Department of Lands: DTDB and DCDB - 2012. Created by: mweber

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

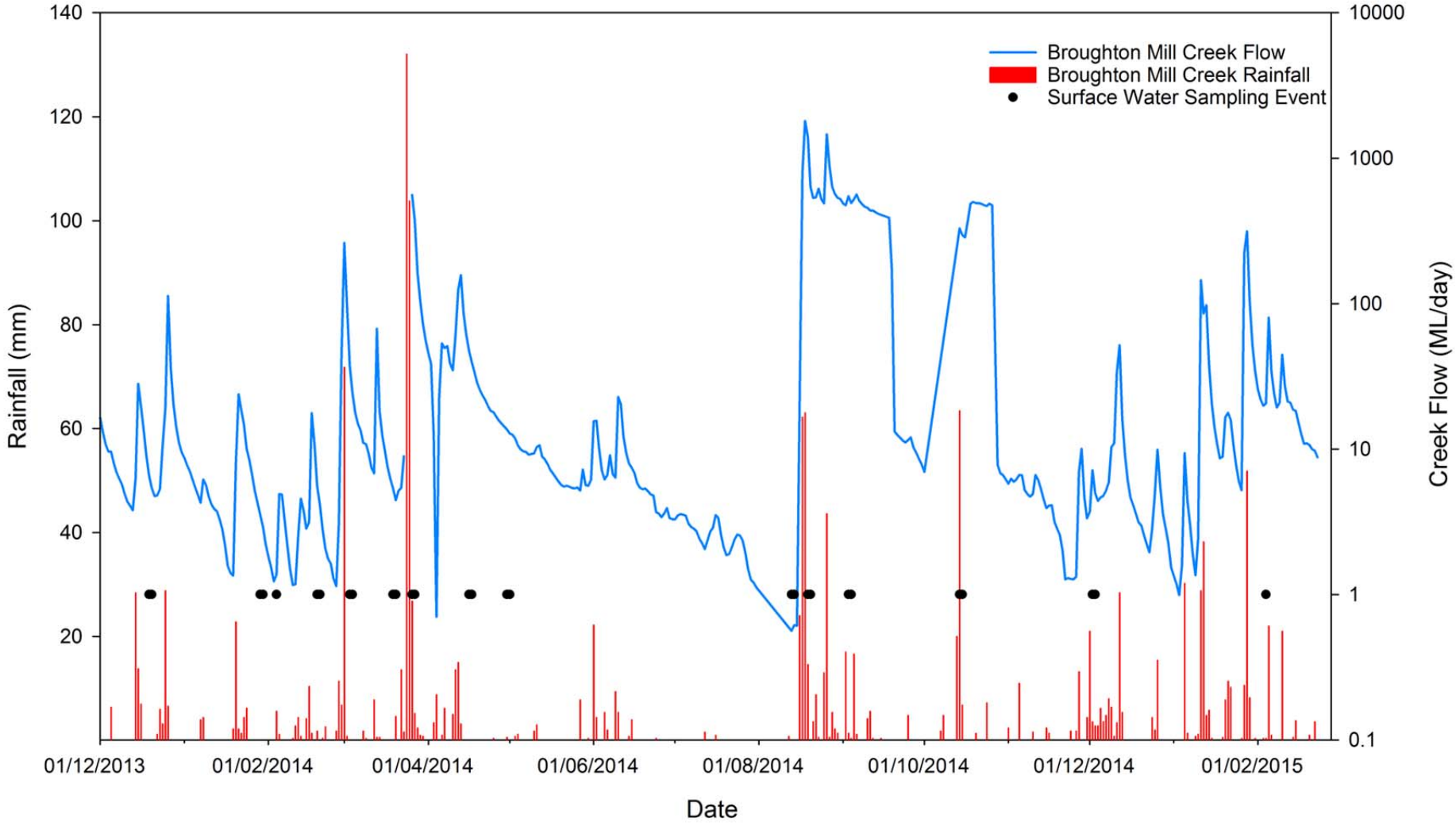


Figure 2 Rainfall vs Flow within Broughton Mill Creek

Attachment B - Tabulated Results

Attachment B
Table B1
Event 1 Field Parameters

				Field				
				Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox	Temp (Field)
				mg/L	µS/cm	pH Units	mV	oC
EQL								
ADWG 2011 Aesthetic						*6.5-8.5* [#1]		
Lowland rivers (ANZECC 2000)					**300**	**6.5-8**		
SampleCode	**Field_ID**	**LocCode**	**Sampled_Date-Time**					
SW01_04 Feb 15_-	SW01__4/02/2015	SW01	04-Feb-15	4.57	101.1	6.61	78.5	17.8
SW03_04 Feb 15_-	SW03__4/02/2015	SW03	04-Feb-15	4.77	112	6.67	104.3	18.6
SW04_04 Feb 15_-	SW04__4/02/2015	SW04	04-Feb-15	5.23	91.2	6.69	104.3	18.3
SW05_04 Feb 15_-	SW05__4/02/2015	SW05	04-Feb-15	4.01	112.6	6.64	73.3	18.5
SW06_04 Feb 15_-	SW06__4/02/2015	SW06	04-Feb-15	1.08	134.6	***6.31***	-73.8	18.5
SW07_04 Feb 15_-	SW07__4/02/2015	SW07	04-Feb-15	3.25	106	6.66	46.6	18.2
SW08_04 Feb 15_-	SW08__4/02/2015	SW08	04-Feb-15	6.34	131.6	6.51	35.2	17.9
SW09_04 Feb 15_-	SW09__4/02/2015	SW09	04-Feb-15	3.9	134	***6.4***	78.2	18.3
SW10_04 Feb 15_-	SW10__4/02/2015	SW10	04-Feb-15	1.01	193.6	6.55	49.5	17
SW11_04 Feb 15_-	SW11__4/02/2015	SW11	04-Feb-15	1.08	224.8	***6.09***	107.8	16.9
SW12_04 Feb 15_-	SW12__4/02/2015	SW12	04-Feb-15	0.61	**372.1**	***6.45***	-40.9	17.5
SW13_04 Feb 15_-	SW13__4/02/2015	SW13	04-Feb-15	3.68	**462**	6.73	-5.6	20.1
SW14_04 Feb 15_-	SW14__4/02/2015	SW14	04-Feb-15	0.29	**384.4**	***6.21***	70.9	17.2
SW15_04 Feb 15_-	SW15__4/02/2015	SW15	04-Feb-15	0.32	**336.4**	***6.44***	-74.4	16.8
SW16_04 Feb 15_-	SW16__4/02/2015	SW16	04-Feb-15	5.23	178.6	6.64	78.5	17.9
SW17_04 Feb 15_-	SW17__4/02/2015	SW17	04-Feb-15	2.97	191	7	46	18.9
Statistical Summary								
Number of Results				16	16	16	16	16
Number of Detects				16	16	16	16	16
Minimum Concentration				0.29	91.2	6.09	5.6	16.8
Minimum Detect				0.29	91.2	6.09	5.6	16.8
Maximum Concentration				6.34	462	7	107.8	20.1
Maximum Detect				6.34	462	7	107.8	20.1
Average Concentration				3	204	6.5	67	18
Median Concentration				3.465	156.6	6.58	73.55	18.05
Standard Deviation				2	119	0.22	28	0.85
Number of Guideline Exceedances				0	4	6	0	0
Number of Guideline Exceedances(Detects Only)				0	4	6	0	0

Env Stds Comments
#1:While extreme ph values (<4 and >11) may adversely affect health.

Attachment B
Table B2
Event 1 Analytical Results

				Inorganics		TRH - NEPM 2013						TPH - NEPM 1999					PAH
				Total Suspended Solids	Turbidity	C6 - C10 less BTEX (F1)	C6 - C10 Fraction	>C10 - C16 less Naphthalene (F2)	>C10 - C16 Fraction	>C16 - C34 Fraction (F3)	>C34 - C40 Fraction (F4)	C6 - C 9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 (Sum of Total) - Lab calc	Naphthalene
				mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
EQL				1	1	0.02	0.02	0.05	0.05	0.1	0.1	0.02	0.05	0.1	0.1	0.1	20
ADWG 2011 Aesthetic					*5* [#1]												
ANZECC 2000 FW 95%																	16
Lowland rivers (ANZECC 2000)				**50**	**6-50**												
SampleCode	**Field_ID**	**LocCode**	**Sampled_Date-Time**														
M15-Fe06197	SW01	SW01	04-Feb-15	2.3	**1.6**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06198	SW02	SW02	04-Feb-15	<1	**1.3**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06215	DUPL2	SW02	04-Feb-15	<1	**1.8**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06199	SW03	SW03	04-Feb-15	<1	**1.9**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06200	SW04	SW04	04-Feb-15	3.4	**2**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06201	SW05	SW05	04-Feb-15	<1	**1.6**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06202	SW06	SW06	04-Feb-15	<1	**1.4**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06214	DUPL1	SW06	04-Feb-15	<1	**1.2**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06203	SW07	SW07	04-Feb-15	**69**	**3.9**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06204	SW08	SW08	04-Feb-15	9.5	**2.4**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06205	SW09	SW09	04-Feb-15	<1	**1.6**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06206	SW10	SW10	04-Feb-15	40	*7.4*	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06207	SW11	SW11	04-Feb-15	19	*7.3*	<0.02	<0.02	<0.05	<0.05	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.1	<20
M15-Fe06208	SW12	SW12	04-Feb-15	**810**	***610***	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06209	SW13	SW13	04-Feb-15	**54**	**3.6**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06210	SW14	SW14	04-Feb-15	**68**	*22*	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06211	SW15	SW15	04-Feb-15	**220**	***180***	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06212	SW16	SW16	04-Feb-15	<1	**1.6**	-	-	-	-	-	-	-	-	-	-	-	-
M15-Fe06213	SW17	SW17	04-Feb-15	<1	**2**	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																	
Number of Results				19	19	1	1	1	1	1	1	1	1	1	1	1	1
Number of Detects				10	19	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration				<1	1.2	<0.02	<0.02	<0.05	<0.05	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.1	<20
Minimum Detect				2.3	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration				810	610	<0.02	<0.02	<0.05	<0.05	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.1	<20
Maximum Detect				810	610	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration				68	45												
Median Concentration				2.3	2	0.01	0.01	0.025	0.025	0.05	0.05	0.01	0.025	0.05	0.05	0.05	10
Standard Deviation				187	143												
Number of Guideline Exceedances				5	19	0	0	0	0	0	0	0	0	0	0	0	1
Number of Guideline Exceedances(Detects Only)				5	19	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:5 ntu is just noticeable in a glass. <0.2 ntu is the target for effective filtration of Cryptosporidium and Giardia. <1 ntu is the target for effective disinfection.

Attachment B
Table B3
Event 1 RPD Results

Field Duplicates (WATER)
Filter: Lab_Report_Number in('446857')

Lab Report Number	446857	446857		446857	446857	
Field ID	SW06	DUPL1	**RPD**	SW02	DUPL2	**RPD**
Sampled Date/Time	4/02/2015	4/02/2015		4/02/2015	4/02/2015	
Chem_Group	**ChemName**	**Units**	**EQL**						
Inorganics	Total Suspended Solids	mg/l	1	<1.0	<1.0	0	<1.0	<1.0	0
	Turbidity	NTU	1	1.4	1.2	15	1.3	1.8	32

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 50 (1-5 x EQL); 50 (5-30 x EQL); 50 (> 30 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate

Attachment C– Field Sheets

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	1.30pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW01		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.8
CONDUCTIVITY (uS/cm)	101.1
pH	6.61
DO (ppm)	48.1 %, 4.57 mg/L
REDOX (mV)	74.5

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW01	1	chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/14
PROJECT NAME:	Berry to Foxground	**TIME:**	1.45pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW02		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.0
CONDUCTIVITY (uS/cm)	103.2
pH	6.72
DO (ppm)	41.1% 3.90 mg/L
REDOX (mV)	91.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW02	2	Chilled	Yes	clear, DUPL 2

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	2.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW03		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.6
CONDUCTIVITY (uS/cm)	112.0
pH	6.67
DO (ppm)	50.6 %, 4.77 mg/L
REDOX (mV)	104.3

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW03	1	Chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	2.30pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW04		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.3
CONDUCTIVITY (uS/cm)	91.2
pH	6.69
DO (ppm)	55.3%, 5.23 mg/L
REDOX (mV)	104.3

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW04	1	chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	11.00am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW06		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	low flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.5
CONDUCTIVITY (uS/cm)	134.6
pH	6.31
DO (ppm)	12.4%, 1.08mg/L
REDOX (mV)	-73.8

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW06	2	Chilled	Yes	Clear, DUPL 1

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	12.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW05		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.5	
CONDUCTIVITY (uS/cm)	112.6	
pH	6.64	4.01
DO (ppm)	43.7%	mg/L
REDOX (mV)	73.3	

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW05	1	chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/14
PROJECT NAME:	Berry to Foxground	**TIME:**	12.05pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW07		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Low flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.2
CONDUCTIVITY (uS/cm)	106.0
pH	6.66
DO (ppm)	34.5%, 3.25mg/L
REDOX (mV)	46.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW07	1	chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	16.30am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW06		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.9
CONDUCTIVITY (uS/cm)	131.6
pH	6.51
DO (ppm)	~~56%~~, 66.9%, 6.34 mg/L
REDOX (mV)	35.2

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW06	1	Chilled	N/A	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	11.30am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW09		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately blowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.3
CONDUCTIVITY (uS/cm)	134.0
pH	6.4
DO (ppm)	41.4%, 3.9 mg/L
REDOX (mV)	78.2

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW09	1	chilled	No	Clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	10.10am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW10		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.0
CONDUCTIVITY (uS/cm)	193.6
pH	6.55
DO (ppm)	10.5 %, 1.01 mg/L
REDOX (mV)	49.5

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW10	1	chilled	No	a little brown

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	10.40am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW11		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water – no flow ; oil/grease layer on surface.

FIELD MEASUREMENTS

TEMPERATURE (°C)	16.9
CONDUCTIVITY (uS/cm)	224.8
pH	6.09
DO (ppm)	11.14o, 1.08 mg/L
REDOX (mV)	107.8

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW11	4	chilled	No	Clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/02/15
PROJECT NAME:	Berry to Foxground	**TIME:**	2:45pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW12		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water – no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.5°C
CONDUCTIVITY (uS/cm)	372.1
pH	6.45
DO (ppm)	6.5% 0.61 mg/L
REDOX (mV)	-40.9

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW 12	1	chilled	no	brown

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	3.15pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW13		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	Note: large rocks have been added to creek either side of bridge
OTHER	Water - no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.1
CONDUCTIVITY (uS/cm)	462.0
pH	6.73
DO (ppm)	40.6%, 3.68 mg/L
REDOX (mV)	-5.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW13	1	Chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	9.50 am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW14		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	A little rain
VEGETATION	
SLOPE	
EROSION	
OTHER	Water but no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.2
CONDUCTIVITY (uS/cm)	384.4
pH	6.21
DO (ppm)	3.0 % 0.29 mg/L
REDOX (mV)	70.9

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW14	1	chilled	No	a little brown.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	3.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW15		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	16.8
CONDUCTIVITY (uS/cm)	336.4
pH	6.44
DO (ppm)	3.3 %, 0.32 mg/L
REDOX (mV)	-74.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW15	1	Chilled	No	Browns.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	9.30am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC, SB
SITE:	SW16		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water Clear. Low flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	17.9
CONDUCTIVITY (uS/cm)	178.6
pH	6.64
DO (ppm)	5.23mg/L, 54.5%
REDOX (mV)	78.5

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW16	1	chilled	NA	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.		**DATE:**	4/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	3.45pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SB
SITE:	SW17		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Low flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	18.9
CONDUCTIVITY (uS/cm)	191.0
pH	7.00
DO (ppm)	31.7%, 2.97mg/L
REDOX (mV)	46.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW17	1	chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

Attachment D - Laboratory Certificates

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☐ **Brisbane**
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☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name : Jane Curran**	**Purchase Order :**	**COC Number :**
Office Address :	**Project Manager : Stefan Charteris**	**PROJECT Number : 21/23174**	**Eurofins | mgt quote ID :** 131015GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000	**Email for results : stefan.charteris@ghd.com nicole.rosen@ghd.com**	**PROJECT Name : Foxground to Berry**	**Data output format:**

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Turbidity	TSS	Total Phosphorus	Heavy Metals (m8)	Total Nitrogen	Ammonia	TPH
1	SW01	4/2	W	x	x					
2	SW02	〃	W	x	x					
3	SW03	〃	W	x	x					
4	SW04	〃	W	x	x					
5	SW05	〃	W	x	x					
6	SW06	〃	W	x	x					
7	SW07	〃	W	x	x					
8	SW08	〃	W	x	x					
9	SW09	〃	W	x	x					
10	SW10	〃	W	x	x					
11	SW11	〃	W	x	x					X
12	SW12	〃	W	x	x					
13	SW13	〃	W	x	x					
14	SW14	〃	W	x	x					
15	SW15	〃	W	x	x					
16	SW16	〃	W	x	x					

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	
1							

Sample comments:

Laboratory Staff

Relinquished By: Jane Curran
Date & Time : 5/02/15 10.00am
Signature:

Received By:
Date & Time :
Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number: 446857

Eurofins mGT 10/2/15 8:30Am

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☑ **Sydney**
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☐ **Brisbane**
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☐ **Melbourne**
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Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name : Jane Curran	Purchase Order :	COC Number :
Office Address :	Project Manager : Stefan Charteris	PROJECT Number : 21/23174	Eurofins | mgt quote ID : 131015GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : stefan.charteris@ghd.com nicole.rosen@ghd.com	PROJECT Name : Foxground to Berry	Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Turbidity	TSS	Total Phosphorus	Heavy Metals (m8)	Total Nitrogen	Ammonia	TPH	Containers: 1LP	250P	125P	1LA	40mL vial	125mL A	Jar
1	SW17	4/2	W	x	x						1						
2	DUPL 1	"	W	x	x						1						
3	DUPL 2	"	W	x	x						1						
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Sample comments:

Laboratory Staff

Relinquished By: Jane Curran
Date & Time : 5/02/15 10.00am
Signature:

Received By:
Date & Time :
Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number:

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Certificate of Analysis

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Stefan Charteris**

Report **446857-W**
Project name FOXGROUND TO BERRY
Project ID 21/23174
Received Date Feb 10, 2015

Client Sample ID			**SW01**	**SW02**	**SW03**	**SW04**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M15-Fe06197**	**M15-Fe06198**	**M15-Fe06199**	**M15-Fe06200**
Date Sampled			**Feb 04, 2015**	**Feb 04, 2015**	**Feb 04, 2015**	**Feb 04, 2015**
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	2.3	< 1	< 1	3.4
Turbidity	1	NTU	1.6	1.3	1.9	2.0

Client Sample ID			**SW05**	**SW06**	**SW07**	**SW08**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M15-Fe06201**	**M15-Fe06202**	**M15-Fe06203**	**M15-Fe06204**
Date Sampled			**Feb 04, 2015**	**Feb 04, 2015**	**Feb 04, 2015**	**Feb 04, 2015**
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	< 1	< 1	69	9.5
Turbidity	1	NTU	1.6	1.4	3.9	2.4

Client Sample ID			**SW09**	**SW10**	**SW11**	**SW12**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M15-Fe06205**	**M15-Fe06206**	**M15-Fe06207**	**M15-Fe06208**
Date Sampled			**Feb 04, 2015**	**Feb 04, 2015**	**Feb 04, 2015**	**Feb 04, 2015**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	< 0.02	-
TRH C10-C14	0.05	mg/L	-	-	< 0.05	-
TRH C15-C28	0.1	mg/L	-	-	< 0.1	-
TRH C29-C36	0.1	mg/L	-	-	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	-	-	< 0.1	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.02	mg/L	-	-	< 0.02	-
TRH C6-C10	0.02	mg/L	-	-	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	-	-	< 0.02	-
TRH >C10-C16	0.05	mg/L	-	-	< 0.05	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	-	-	< 0.05	-
TRH >C16-C34	0.1	mg/L	-	-	< 0.1	-
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	-

Client Sample ID			SW09	SW10	SW11	SW12
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M15-Fe06205	M15-Fe06206	M15-Fe06207	M15-Fe06208
Date Sampled			Feb 04, 2015	Feb 04, 2015	Feb 04, 2015	Feb 04, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	< 1	40	19	810
Turbidity	1	NTU	1.6	7.4	7.3	610

Client Sample ID			SW13	SW14	SW15	SW16
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M15-Fe06209	M15-Fe06210	M15-Fe06211	M15-Fe06212
Date Sampled			Feb 04, 2015	Feb 04, 2015	Feb 04, 2015	Feb 04, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	54	68	220	< 1
Turbidity	1	NTU	3.6	22	180	1.6

Client Sample ID			SW17	DUPL1	DUPL2
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			M15-Fe06213	M15-Fe06214	M15-Fe06215
Date Sampled			Feb 04, 2015	Feb 04, 2015	Feb 04, 2015
Test/Reference	LOR	Unit			
Suspended Solids	1	mg/L	< 1	< 1	< 1
Turbidity	1	NTU	2.0	1.2	1.8

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Feb 11, 2015	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Feb 11, 2015	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Suspended Solids	Melbourne	Feb 10, 2015	7 Day
- Method: APHA 2540D Total Suspended Solids			
Turbidity	Melbourne	Feb 12, 2015	2 Day
- Method: APHA 2130 Turbidity			

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Site # 1254 & 14271

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NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: FOXGROUND TO BERRY
Project ID: 21/23174

Order No.:
Report #: 446857
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Feb 10, 2015 8:30 AM
Due: Feb 17, 2015
Priority: 5 Day
Contact Name: Stefan Charteris

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Suspended Solids	Turbidity	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
SW01	Feb 04, 2015		Water	M15-Fe06197	X	X	
SW02	Feb 04, 2015		Water	M15-Fe06198	X	X	
SW03	Feb 04, 2015		Water	M15-Fe06199	X	X	
SW04	Feb 04, 2015		Water	M15-Fe06200	X	X	
SW05	Feb 04, 2015		Water	M15-Fe06201	X	X	
SW06	Feb 04, 2015		Water	M15-Fe06202	X	X	
SW07	Feb 04, 2015		Water	M15-Fe06203	X	X	
SW08	Feb 04, 2015		Water	M15-Fe06204	X	X	
SW09	Feb 04, 2015		Water	M15-Fe06205	X	X	

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Sample Detail					Suspended Solids	Turbidity	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
SW10	Feb 04, 2015		Water	M15-Fe06206	X	X	
SW11	Feb 04, 2015		Water	M15-Fe06207	X	X	X
SW12	Feb 04, 2015		Water	M15-Fe06208	X	X	
SW13	Feb 04, 2015		Water	M15-Fe06209	X	X	
SW14	Feb 04, 2015		Water	M15-Fe06210	X	X	
SW15	Feb 04, 2015		Water	M15-Fe06211	X	X	
SW16	Feb 04, 2015		Water	M15-Fe06212	X	X	
SW17	Feb 04, 2015		Water	M15-Fe06213	X	X	
DUPL1	Feb 04, 2015		Water	M15-Fe06214	X	X	
DUPL2	Feb 04, 2015		Water	M15-Fe06215	X	X	

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

eurofins | mgt

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.02			0.02	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH C6-C10 less BTEX (F1)	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Suspended Solids	mg/L	< 1			1	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	95			70-130	Pass	
TRH C10-C14	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	80			75-125	Pass	
TRH C6-C10	%	98			70-130	Pass	
TRH >C10-C16	%	99			70-130	Pass	
LCS - % Recovery							
Suspended Solids	%	105			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M15-Fe06113	NCP	%	103			70-130	Pass	
TRH C10-C14	M15-Fe07515	NCP	%	123			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M15-Fe06113	NCP	%	124			70-130	Pass	
TRH C6-C10	M15-Fe06113	NCP	%	93			70-130	Pass	
TRH >C10-C16	M15-Fe07515	NCP	%	121			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	M15-Fe06197	CP	mg/L	2.3	1.6	36	30%	Fail	Q15
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M15-Fe06105	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M15-Fe07379	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M15-Fe07379	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M15-Fe07379	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M15-Fe06105	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10	M15-Fe06105	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	M15-Fe06105	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	M15-Fe07379	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M15-Fe07379	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M15-Fe07379	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	M15-Fe06207	CP	mg/L	19	14	32	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	M15-Fe06209	CP	NTU	3.6	3.5	1.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins | mgt's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Charl Du Preez	Analytical Services Manager
Carroll Lee	Senior Analyst-Organic (VIC)
Carroll Lee	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)

Glenn Jackson

National Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Attachment E - Laboratory Quality Assurance and Quality Control Results

Field Program surface water

Intra-laboratory duplicate samples were collected and analysed as part of the surface water sampling program and the relative percentage differences (RPD) were calculated. Intra-laboratory measures the reproducibility of measurements under a given set of conditions. The precision of the data is assessed by calculating the Relative Percent Difference (RPD) between duplicate sample pairs.

$$RPD(\%) = \frac{|C_o - C_d|}{C_o + C_d} \times 200$$

Where Co = Analyte concentration of the original sample
Cd = Analyte concentration of the duplicate sample

GHD adopts a nominal acceptance criterion of 30% RPD for field duplicates and splits for inorganics and a nominal acceptance criterion of 50% RPD for field duplicates and splits for organics, however it is noted that this may not always be achieved, or at low analyte concentrations. Surface water QA/QC results are presented as Table B3, Attachment B.

Discrepancies in GHD's adopted criterion for RPDs calculated for the intra laboratory duplicate pairs for the analytes testes (turbidity and total suspended solids) are:

- Duplicate sample SW02, turbidity failed the internal lab duplicate analysis (RPD 33%), however Eurofins Mgt state that the RPD reported passes the acceptance criteria as stipulated in SOP 05.

Laboratory Program

The NATA certified laboratories utilised for this assessment (Eurofins | Mgt) undertook their own quality assurance and quality control procedures for sample analysis. GHD has reviewed the internal laboratory control data provided within the laboratory reports, which are attached in the individual monitoring reports as Attachment D**.**

All samples were noted to be correctly preserved.

Samples were received on the 10th February 2015, six days after sampling on the 4th of February 2015. The following sample was not received by the laboratory within the sample holding time as recommended by testing laboratories, based on holding times set out in Schedule B(3) of the NEPM (1999):

- Turbidity (24 hr holding time).

Method blank results were less than the PQL, and surrogate spike and laboratory control sample recoveries were within laboratory acceptance criteria for majority of the samples collected over the event, with the exception of the following:

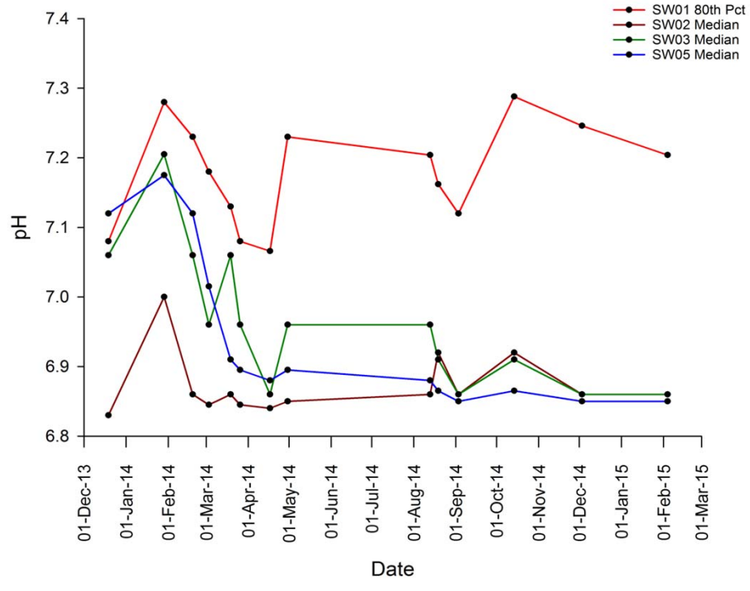
- Report 446857- Duplicate sample SW01, suspended solids failed the internal lab duplicate analysis (RPD 36%), however Eurofins | Mgt state that the RPD reported passes the acceptance criteria as stipulated in SOP 05.
- Report 446857- Duplicate sample SW11, turbidity failed the internal lab duplicate analysis (RPD 32%), however Eurofins | Mgt state that the RPD reported passes the acceptance criteria as stipulated in SOP 05.

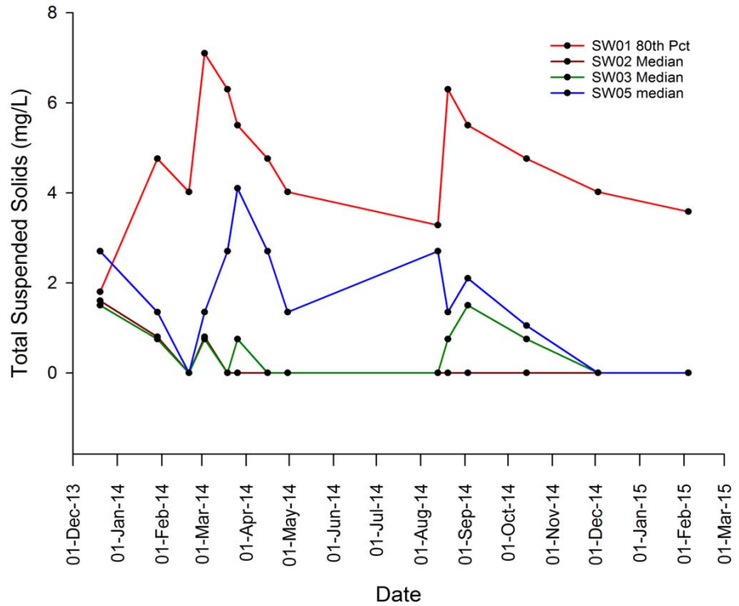
Summary of Quality Assurance / Quality Control Results

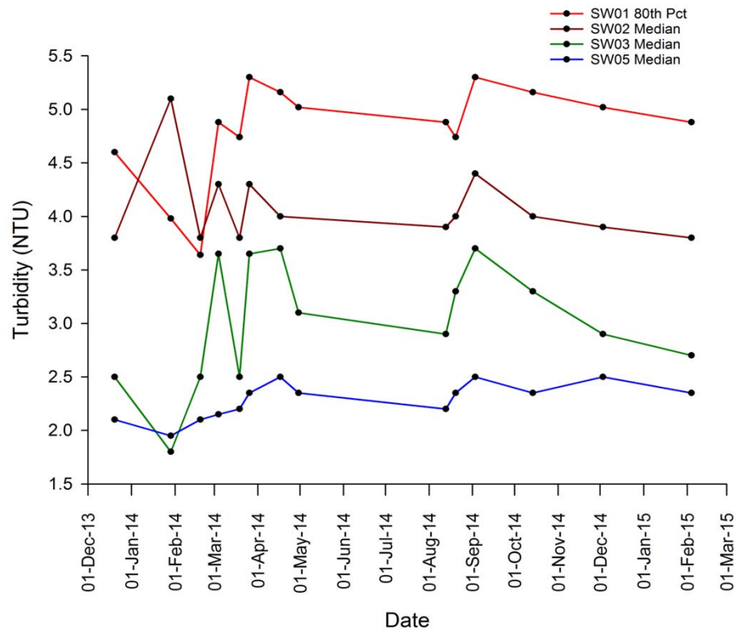
The QA/QC results show that most of the samples collected have met the appropriate standards and therefore, the data was considered to be valid and of sufficient quality to meet the data quality objectives for the assessment.

Attachment F - Control Charts

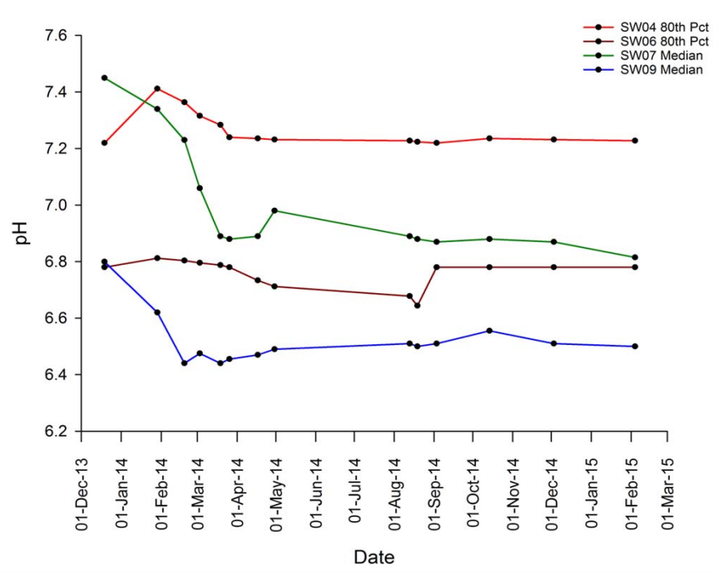
1. Broughton Creek

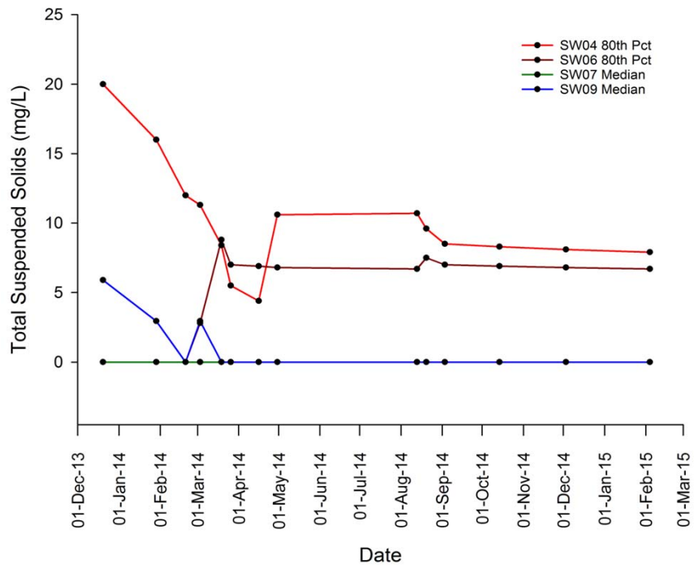


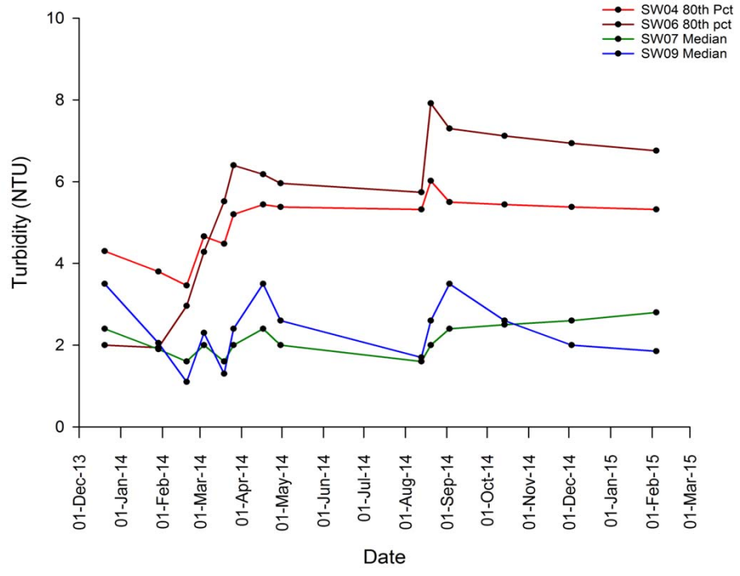




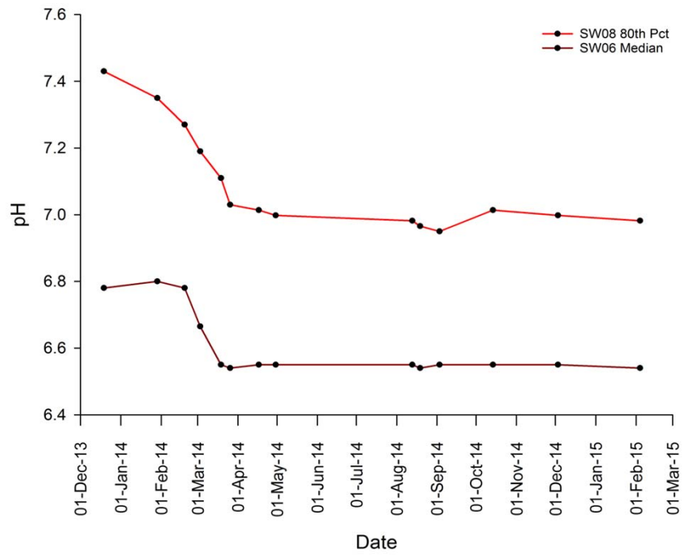
2. Connelly’s Creek and Broughton Mill Creek and Bundewallah Creek

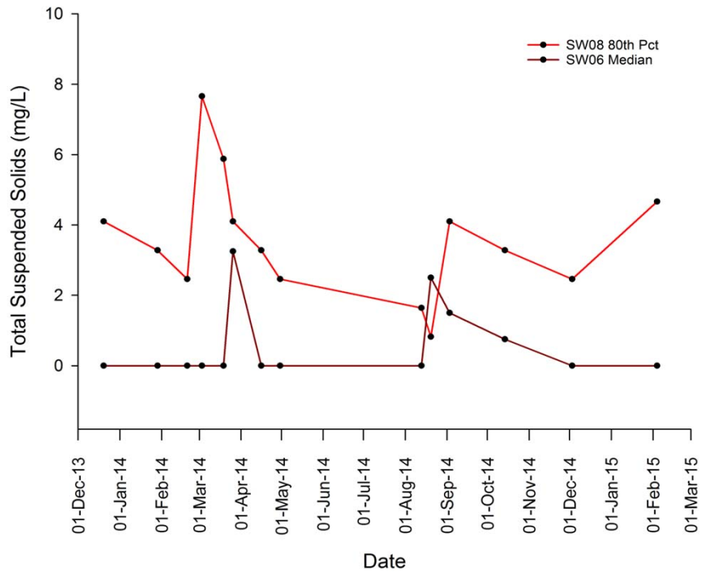


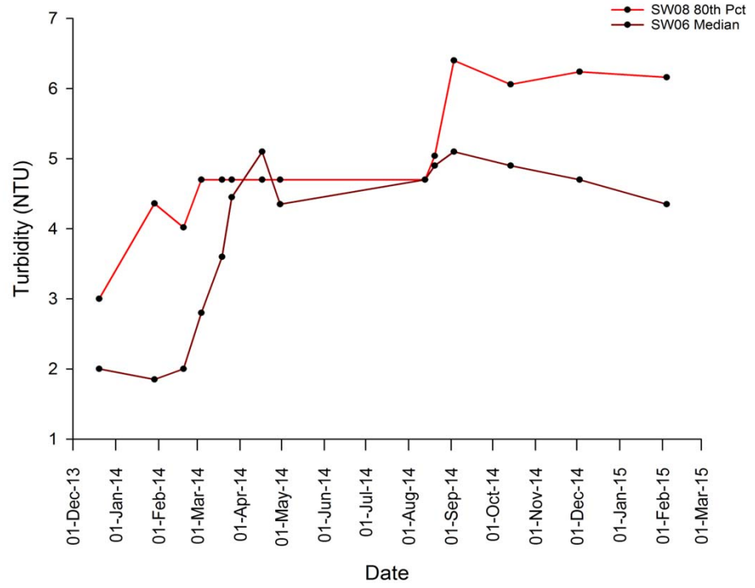




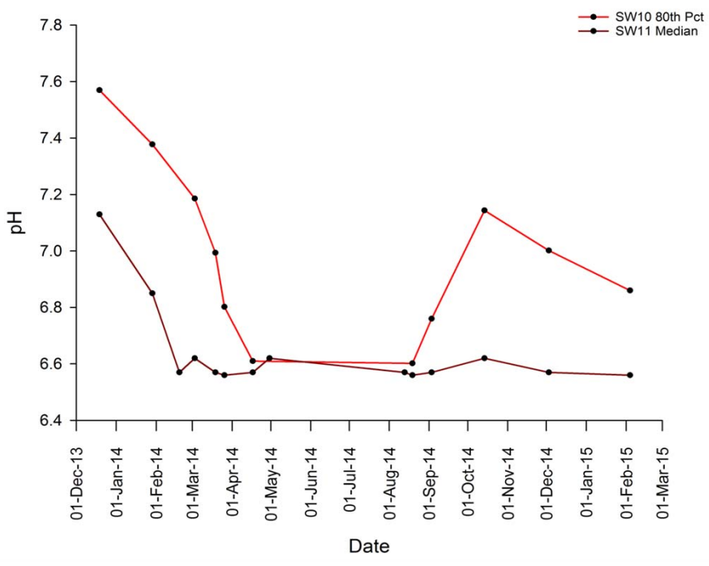
3. Bundewallah Creek and Connelly's Creek

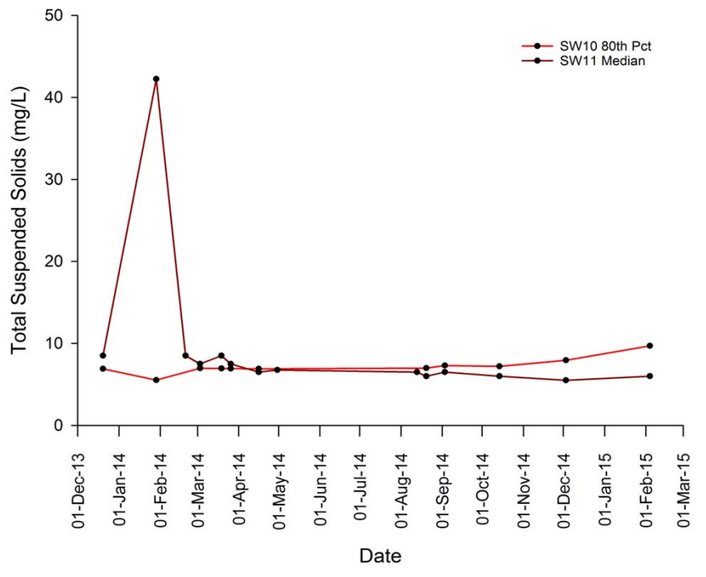


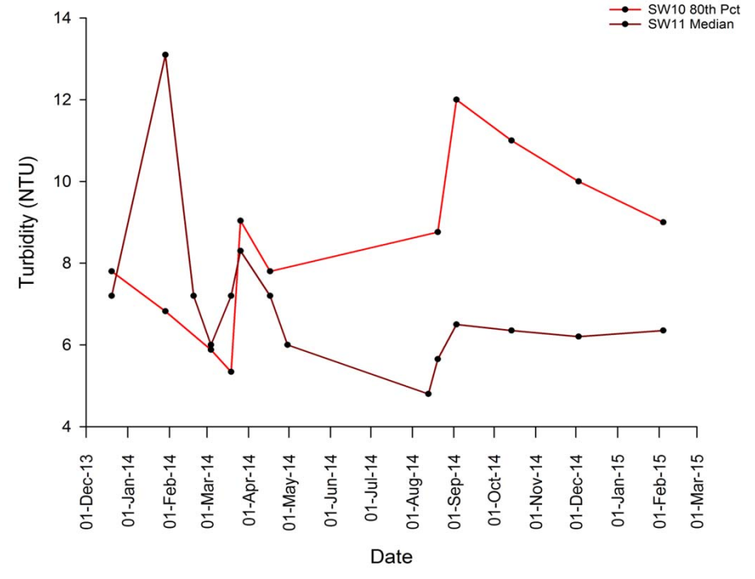




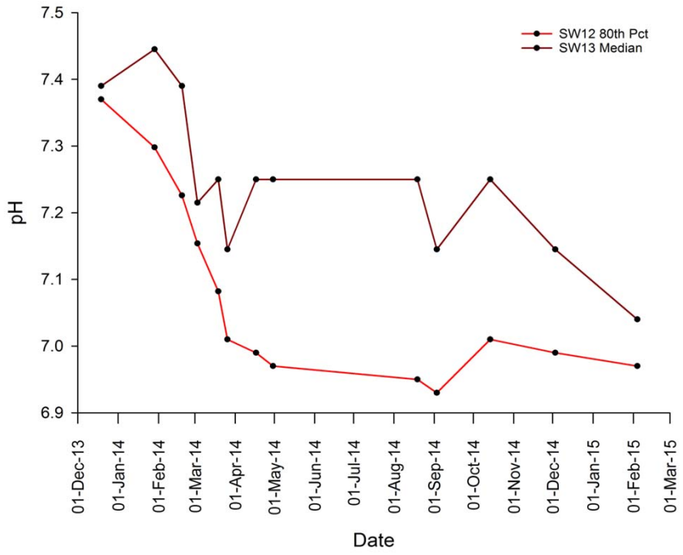
4. Town Creek

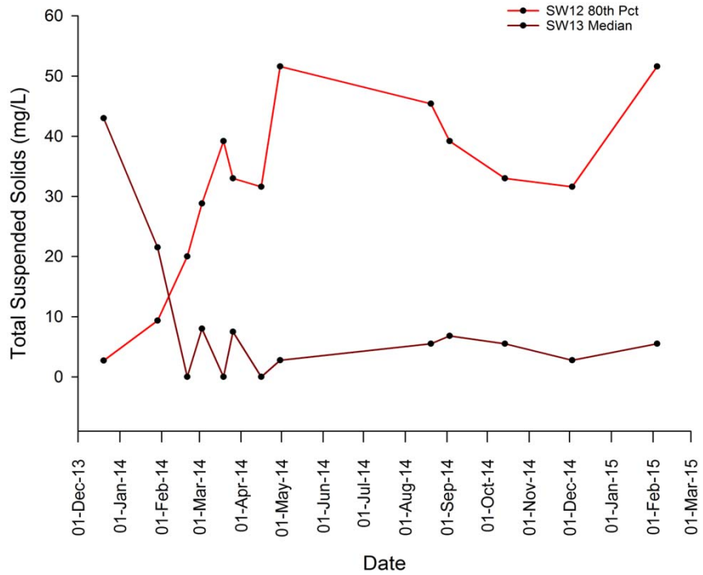


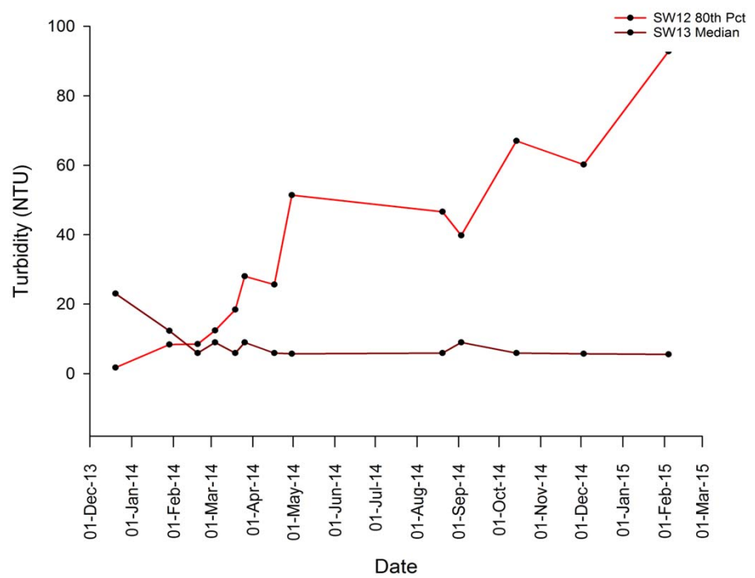




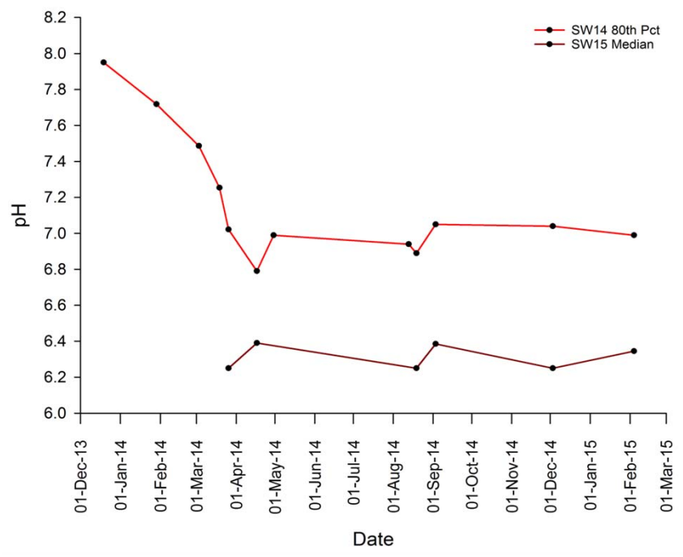
5. Hitchcocks Lane Creek Tributary

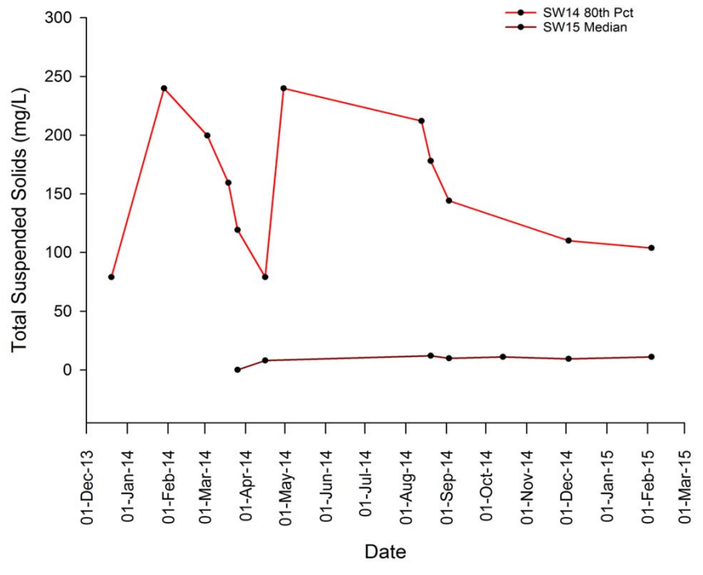


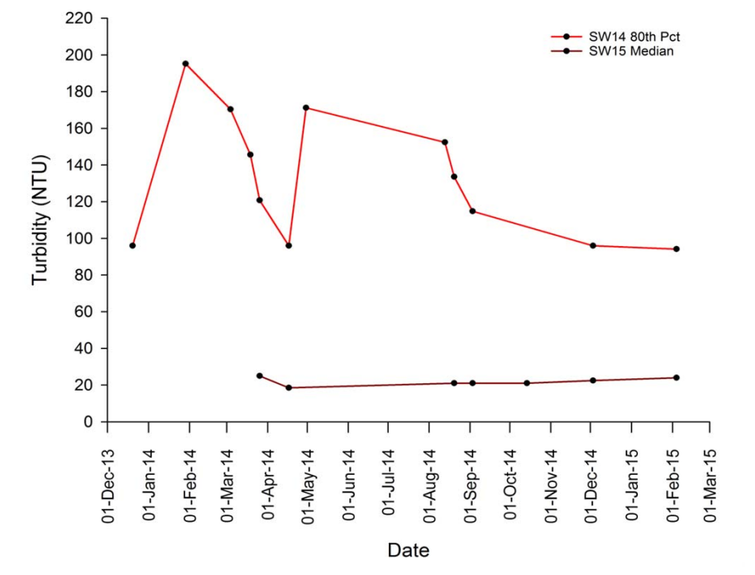




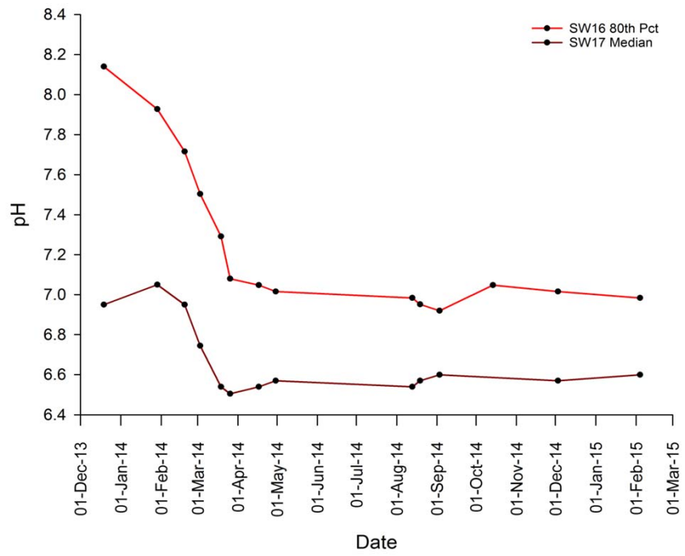
6. Hitchcocks Lane Creek

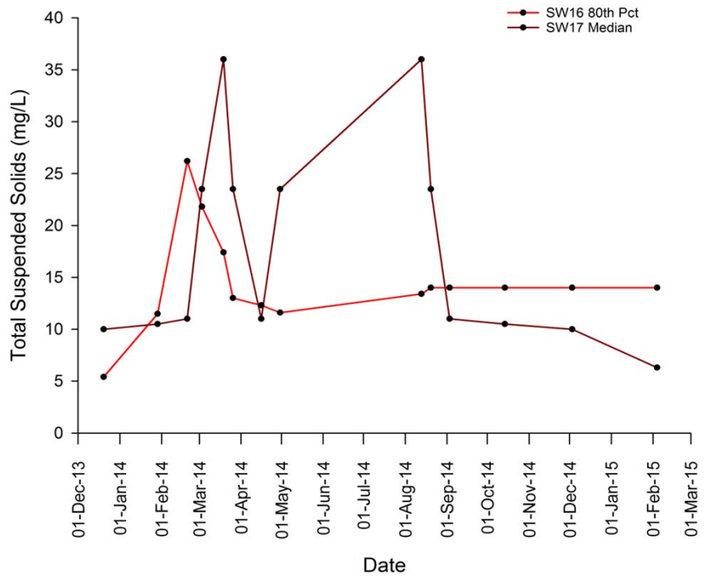


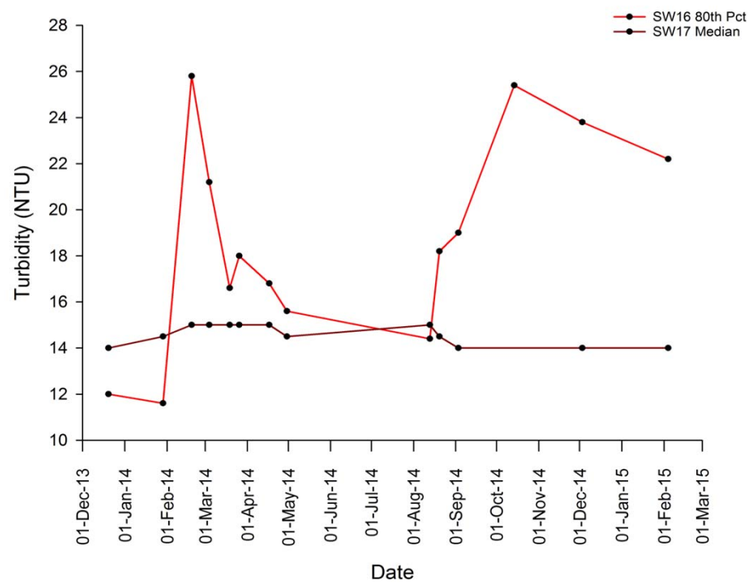




7. Unnamed Tributary







13 March 2015

James Diamond
Environmental Coordinator
Fulton Hogan Construction Pty Ltd
P.O. Box 353
Berry NSW 2535

Our ref: 21/24306 207193

Your ref:

Dear James,

Surface Water Monitoring
Construction Event 2

1 Scope and limitations

In accordance with the Princes Highway upgrade for Foxground and Berry Bypass (FBB) - Water Monitoring Project Brief (*Contract No. 12.2574.3019)*, GHD completed a monthly round of surface water monitoring at seventeen locations (SW01 to SW017) after a minor rainfall event. This report discusses the second surface water sampling event (Event 2) since construction has started.

This report presents the control charts and discusses results in respect to exceedances of criteria or inconsistencies for surface water results for Event 2 in accordance with the limitations provided in Section 4.

2 Field Program

Surface water sampling was undertaken at all surface water sampling locations on 10 and 11 February 2015; refer to Figure 1, Attachment A for sampling locations. This monthly surface water sampling event was conducted in accordance with the sampling program and protocols provided in:

- GHD 2014, Foxground to Berry Bypass Water Quality Management - Surface Water and Groundwater Sampling Protocol, prepared for Roads and Maritime Services.
- GHD 2014, Foxground to Berry Bypass Water Quality Management - Surface Water Quality Management Plan, prepared for Roads and Maritime Services.
- GHD 2014, Princes Highway Upgrade – Foxground to Berry Bypass Project, Final Interpretive Water Monitoring Report, prepared for Roads and Maritime Services.

Field parameters were measured during sampling including temperature, pH, electrical conductivity (EC), dissolved oxygen (DO), and reduction-oxidation potential (redox), and are provided in Table B1, Attachment B. Field sheets are provided in Attachment C.

Water samples were submitted to a NATA certified testing laboratory (Eurofins | Mgt) to be analysed for the schedule of minor suite analysis of:

- Turbidity.
- Total suspended solids.

3 Results and Discussion

3.1 Field observations

The rainfall within Broughton Creek catchment and the surface water flows within Broughton Creek are presented in Figure 2, Attachment A. This information was obtained from the NSW office of water website (http://realtimedata.water.nsw.gov.au/water.stm). The location of this gauge is on Broughton Mill Creek approximately 2 km upstream of SW04. During the construction phase, minor events are classified as at least 15 mm of rainfall in the past 24 hours, and major events are classified as at least 50 mm of rainfall in the past 24 hours.

The data in Figure 2 illustrates a high correlation between rainfall and river flow, with a spike in rainfall coinciding with the spike in river flow. The surface water sampling events are also marked on Figure 2, Attachment A.

3.2 Surface water quality sampling results

In situ water quality parameters observed during sampling are presented in Table B1, Attachment B

Surface water analytical results for the suite listed in Section 2, are tabulated against selected criteria (in accordance with the protocols detailed in Section 2) in the Table B2, Attachment B. Laboratory certificates are provided in Attachment D.

A field quality control and laboratory control assessment of the results from this monthly monitoring round (Event 2) is provided in Attachment E.

3.2.1 Control charts

The surface water locations have been grouped into separate control charts by the specific surface water bodies they are located within and whether they are up and down gradient of the FBB alignment. The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction and operation). By comparing upstream water quality with down-stream water quality using the control chart methods it is expected that impacts will be able to be adequately characterised during construction and operation. The groupings used for the control charts are summarised in Table 1**.**

Table 1 Surface water locations within specific surface water bodies

Surface water location	Upstream of Alignment (reference site)	Downstream of Alignment (test site)
Broughton Creek	SW01	SW02, SW03, SW05
Connelly's Creek and Broughton Mill Creek and Bundewallah Creek	SW04, SW06	SW07, SW09
Bundewallah Creek and Connelly's Creek	SW08	SW06
Town Creek	SW10	SW11
Hitchcocks Lane Creek Tributary	SW12	SW13
Hitchcocks Lane Creek	SW14	SW15
Unnamed Tributary	SW16	SW17

The primary control chart indicators for assessing potential impacts associated with the FBB upgrade works during construction are limited to; pH, turbidity and total suspended solids. The primary control charts for Event 2 are presented in Attachment F.

The control charts suggest that the results are generally consistent with pre-construction monitoring conditions. There are downstream median values that are greater than the up gradient reference site 80th percentile values which were present in previously sampling events. Event 2 test results which have either, exceeded reference results, or, are inconsistent with results from previous monitoring rounds are discussed below.

pH at Hitchcocks Lane Creek Tributary for the test site (SW13 median) exceeded pH at the reference site (SW12 80th percentile). These results are attributed to very low flow conditions that are likely to limit the relationship between the up-stream reference site and downstream test site and which limits the potential to get a representative and consistent sample of the water migrating between the two locations.

Table 2 Summary of surface waters with inconsistencies for Event 2

Surface water location	pH	TSS	Turbidity	Comments
Bundewallah Creek and Connelly's	✓			The 80th percentile pH at SW08 spiked, whilst median pH at SW06 remained constant.
Hitchcocks Lane Creek Tributary	✓	✓		The 80th percentile pH and TSS concentrations at SW12 spiked, whilst median pH and TSS concentrations at SW13 remained constant.
Hitchcocks Lane Creek		✓	✓	The 80th percentile TSS and turbidity concentrations at SW14 spiked, whilst median TSS and turbidity concentrations at SW15 remained constant.

The spikes detailed in Table 2 are not associated with construction activities, but attributed to the change in background conditions at the site (refer to Attachment C).

Event 2 results suggest that construction works are currently having no significant impact on surface water quality at the site.

4 Limitations

This report has been prepared by GHD Pty Ltd (GHD) for Fulton Hogan and may only be used and relied on by Fulton Hogan for the purpose agreed between GHD and the Fulton Hogan as set out in Section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Fulton Hogan arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Fulton Hogan and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

Please contact the undersigned if you have any questions or require further information.

Kind Regards,

Ashlee La Fontaine
Environmental Scientist
02 9239 7122

Stefan Charteris
Senior Hydrogeologist
02 9239 7472

Attachment A - Figures

1:25,000 (at A3)

0 125 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Surface Water Sampling Locations
- Berry to Foxground upgrade alignment
- Roads
- Railways
- Waterways
- Lakes and dams

Fulton Hogan Pty Ltd
Water Quality Monitoring

Job Number	21-24306
Revision	A
Date	03 Mar 2015

Surface water sampling locations

Figure 1

\\ghdnet\ghd\AU\Sydney\Projects\21\24306\GIS\Maps\MXD\21_24306_Z001_SurfaceWatersamplingLocations.mxd

Data Source: NSW Department of Lands: DTDB and DCDB - 2012. Created by: mweber

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

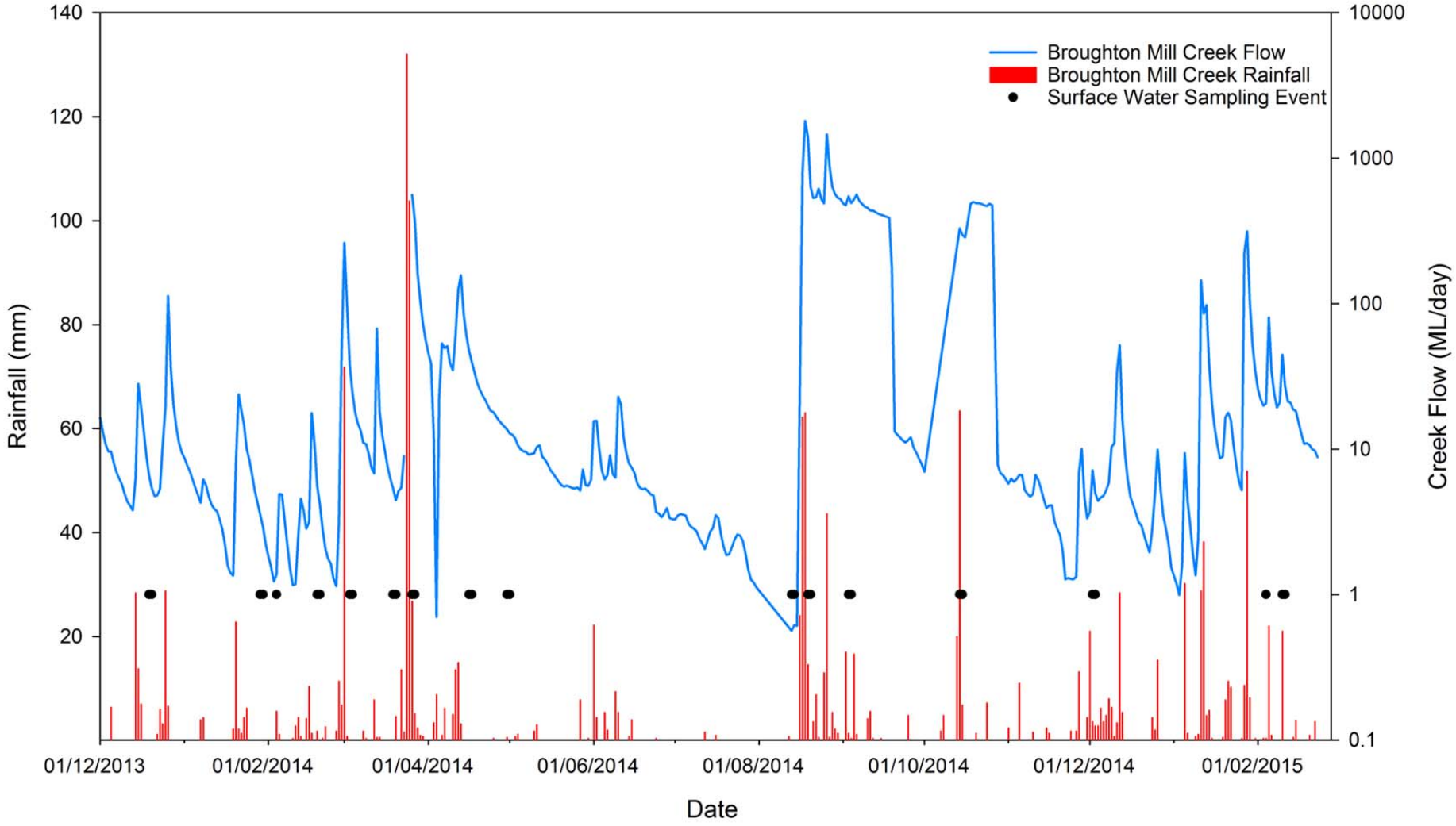


Figure 2 Rainfall vs Flow within Broughton Mill Creek

Attachment B - Tabulated Results

Attachment B
Table B1
Event 2 - Field Parameters

				Field				
				Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox	Temp (Field)
				mg/L	µS/cm	pH Units	mV	oC
EQL								
ADWG 2011 Aesthetic						*6.5-8.5 #1*		
Lowland rivers (ANZECC 2000)					**300**	**6.5-8**		
SampleCode	**Field_ID**	**LocCode**	**Sampled_Date-Time**					
SW01_11 Feb 15_-	SW01__11/02/2015	SW01	11-Feb-15	8.31	106.3	6.84	89	21.5
SW02_11 Feb 15_-	SW02__11/02/2015	SW02	11-Feb-15	9.1	110.7	6.87	94.7	21.6
SW03_11 Feb 15_-	SW03__11/02/2015	SW03	11-Feb-15	8.66	123.2	6.85	92.5	22.1
SW04_11 Feb 15_-	SW04__11/02/2015	SW04	11-Feb-15	9	92.3	6.5	89	20.6
SW05_11 Feb 15_-	SW05__11/02/2015	SW05	11-Feb-15	8.66	124.9	6.67	84.4	22.1
SW06_11 Feb 15_-	SW06__11/02/2015	SW06	11-Feb-15	6.42	139.8	***6.42***	-8.8	20.5
SW07_11 Feb 15_-	SW07__11/02/2015	SW07	11-Feb-15	5.59	106.7	6.8	46	21.1
SW08_10 Feb 15_-	SW08__10/02/2015	SW08	10-Feb-15	7.7	132.3	**8.31**	106	21.8
SW10_11 Feb 15_-	SW10__11/02/2015	SW10	11-Feb-15	3.25	190.4	6.54	130.2	20.5
SW11_10 Feb 15_-	SW11__10/02/2015	SW11	10-Feb-15	2.02	223.1	6.62	104.4	20.1
SW12_10 Feb 15_-	SW12__10/02/2015	SW12	10-Feb-15	4.73	257.1	7.6	-92.1	20.7
SW13_10 Feb 15_-	SW13__10/02/2015	SW13	10-Feb-15	3.12	**302.8**	6.73	-10.4	20.8
SW14_11 Feb 15_-	SW14__11/02/2015	SW14	11-Feb-15	0.11	**586**	***6.36***	-87.4	19.9
SW15_10 Feb 15_-	SW15__10/02/2015	SW15	10-Feb-15	0.1	291.1	6.62	-31.6	19.5
SW16_11 Feb 15_-	SW16__11/02/2015	SW16	11-Feb-15	8.06	192.3	6.93	108.3	20.9
SW17_11 Feb 15_-	SW17__11/02/2015	SW17	11-Feb-15	3.42	201.4	7.02	67.4	20.9
Statistical Summary								
Number of Results				16	16	16	16	16
Number of Detects				16	16	16	16	16
Minimum Concentration				0.1	92.3	6.36	8.8	19.5
Minimum Detect				0.1	92.3	6.36	8.8	19.5
Maximum Concentration				9.1	586	8.31	130.2	22.1
Maximum Detect				9.1	586	8.31	130.2	22.1
Average Concentration				5.5	199	6.9	78	21
Median Concentration				6.005	165.1	6.765	89	20.85
Standard Deviation				3.2	123	0.48	35	0.76
Number of Guideline Exceedances				0	2	3	0	0
Number of Guideline Exceedances(Detects Only)				0	2	3	0	0

Env Stds Comments

#1:While extreme ph values (<4 and >11) may adversely affect health.

Attachment B
Table B2
Event 2 Analytical Results

				Inorganics	
				Total Suspended Solids	Turbidity
				mg/L	NTU
EQL				5	0.1
ADWG 2011 Aesthetic					5[#1]
ADWG 2011 Health					
ANZECC 2000 - Stock Watering					
ANZECC 2000 FW 95%					
Australian Drinking Water (2004)					
Lowland rivers (ANZECC 2000)				50	6-50
SampleCode	**Field_ID**	**LocCode**	**Sampled_Date-Time**		
S15-Fe09091	SW01	SW01	11/02/2015	<5	1.9
S15-Fe09092	SW02	SW02	11/02/2015	<5	1.8
S15-Fe09093	SW03	SW03	11/02/2015	<5	2
S15-Fe09094	SW04	SW04	11/02/2015	5.5	9.6
S15-Fe09095	SW05	SW05	11/02/2015	<5	2.1
S15-Fe09096	SW06	SW06	11/02/2015	<5	3.1
S15-Fe09097	SW07	SW07	11/02/2015	<5	11
S15-Fe09098	SW08	SW08	11/02/2015	<5	1.2
S15-Fe09100	SW10	SW10	11/02/2015	<5	2.7
S15-Fe09101	SW11	SW11	11/02/2015	<5	2.7
S15-Fe09102	SW12	SW12	11/02/2015	130	100
S15-Fe09103	SW13	SW13	11/02/2015	<5	3.4
S15-Fe09104	SW14	SW14	11/02/2015	430	220
S15-Fe09105	SW15	SW15	11/02/2015	<5	3.3
S15-Fe09106	SW16	SW16	11/02/2015	33	4.6
S15-Fe09107	SW17	SW17	11/02/2015	21	13
S15-Fe09108	DUPL 1	SW17	11/02/2015	35	16
S15-Fe09109	DUPL 2	SW04	11/02/2015	16	13

Statistical Summary

Number of Results	18	18
Number of Detects	7	18
Minimum Concentration	<5	1.2
Minimum Detect	5.5	1.2
Maximum Concentration	430	220
Maximum Detect	430	220
Average Concentration	39	23
Median Concentration	2.5	3.35
Standard Deviation	102	54
Number of Guideline Exceedances	2	18
Number of Guideline Exceedances(Detects Only)	2	18

Env Stds Comments

#1:5 ntu is just noticeable in a glass. <0.2 ntu is the target for effective filtration of Cryptosporidium and Giardia. <1 ntu is the target for effective disinfection.

Attachment B
Table B2
Event 2 Analytical Results

				Inorganics	
				Total Suspended Solids	Turbidity
				mg/L	NTU
EQL				5	0.1
ADWG 2011 Aesthetic					5[#1]
ADWG 2011 Health					
ANZECC 2000 - Stock Watering					
ANZECC 2000 FW 95%					
Australian Drinking Water (2004)					
Lowland rivers (ANZECC 2000)				50	6-50
SampleCode	**Field_ID**	**LocCode**	**Sampled_Date-Time**		
S15-Fe09091	SW01	SW01	11/02/2015	<5	1.9
S15-Fe09092	SW02	SW02	11/02/2015	<5	1.8
S15-Fe09093	SW03	SW03	11/02/2015	<5	2
S15-Fe09094	SW04	SW04	11/02/2015	5.5	9.6
S15-Fe09095	SW05	SW05	11/02/2015	<5	2.1
S15-Fe09096	SW06	SW06	11/02/2015	<5	3.1
S15-Fe09097	SW07	SW07	11/02/2015	<5	11
S15-Fe09098	SW08	SW08	11/02/2015	<5	1.2
S15-Fe09100	SW10	SW10	11/02/2015	<5	2.7
S15-Fe09101	SW11	SW11	11/02/2015	<5	2.7
S15-Fe09102	SW12	SW12	11/02/2015	130	100
S15-Fe09103	SW13	SW13	11/02/2015	<5	3.4
S15-Fe09104	SW14	SW14	11/02/2015	430	220
S15-Fe09105	SW15	SW15	11/02/2015	<5	3.3
S15-Fe09106	SW16	SW16	11/02/2015	33	4.6
S15-Fe09107	SW17	SW17	11/02/2015	21	13
S15-Fe09108	DUPL 1	SW17	11/02/2015	35	16
S15-Fe09109	DUPL 2	SW04	11/02/2015	16	13

Statistical Summary

Number of Results	18	18
Number of Detects	7	18
Minimum Concentration	<5	1.2
Minimum Detect	5.5	1.2
Maximum Concentration	430	220
Maximum Detect	430	220
Average Concentration	39	23
Median Concentration	2.5	3.35
Standard Deviation	102	54
Number of Guideline Exceedances	2	18
Number of Guideline Exceedances(Detects Only)	2	18

Env Stds Comments

#1:5 ntu is just noticeable in a glass. <0.2 ntu is the target for effective filtration of Cryptosporidium and Giardia. <1 ntu is the target for effective disinfection.

Attachment C– Field Sheets

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	12.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW01		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.5
CONDUCTIVITY (uS/cm)	106.3
pH	6.464
DO (ppm)	94.2 %, 8.31 mg/L
REDOX (mV)	89.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW01	1	chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	**Berry to Foxground**	**TIME:**	12.30pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW02		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.6
CONDUCTIVITY (uS/cm)	110.7
pH	6.87
* DO (ppm)	9.10 mg/L
REDOX (mV)	94.7

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW02	1	Chilled	No	Clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	12.45pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW03		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.1
CONDUCTIVITY (uS/cm)	123.2
pH	6.85
DO (ppm)~~%~~	8.66 mg/L, 99.9%
REDOX (mV)	92.5

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW03	1	Chilled	No	Clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	11.00am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW04		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.6
CONDUCTIVITY (uS/cm)	92.3
pH	6.50
DO (ppm)	9.00 mg/L
REDOX (mV)	89.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW04	2	chilled	Yes	clear, DUPL2

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	**Berry to Foxground**	**TIME:**	11.30am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW05		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy + some rain
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	22.1
CONDUCTIVITY (uS/cm)	124.9
pH	6.67
* DO (ppm)	8.66 mg/L, 99.2 %
REDOX (mV)	84.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW05	1	chilled	No	clear.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	10.30am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW06		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Sampled ~50m downstream due to inaccessibil from overgrown veg. & construction		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.5
CONDUCTIVITY (uS/cm)	139.6
pH	6.42
DO (ppm)	71.3%, 6.42mg/L
REDOX (mV)	-6.8

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW06	1	chilled	no	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	1.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW07		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.1
CONDUCTIVITY (uS/cm)	106.7
pH	6.80
DO (ppm)	5.59 mg/L, 62.7 %
REDOX (mV)	46.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW07	1	chilled	no	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	10/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	2:30pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	LC
SITE:	SW08		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS

TEMPERATURE (°C)	21.8
CONDUCTIVITY (uS/cm)	132.3
pH	6.31
DO (ppm)	90.9% SAT, 7.7mg/L
REDOX (mV)	106.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW08	1	Chilled	No	Clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	11.10am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW09		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Snake was sighted in long grass & its direction of movement could not be seen.		

ENVIRONMENTAL OBSERVATIONS ∴ no sample was taken as a cautionary measure.

WEATHER

VEGETATION

SLOPE

EROSION

OTHER

FIELD MEASUREMENTS

TEMPERATURE (°C)

CONDUCTIVITY (uS/cm)

pH

DO (ppm)

REDOX (mV)

HYDROLOGICAL DATA

FLOW MEASUREMENT
(or stream height if rating table available)

CROSS SECTION WIDTH (m)

DEPTH (m)

OTHER

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	10/2/15
PROJECT NAME:	**Berry to Foxground**	**TIME:**	3.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	LC
SITE:	SW10		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.5
CONDUCTIVITY (uS/cm)	190.4
pH	6.54
DO (ppm)	36.1%, 3.25mg/L
REDOX (mV)	130.2

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW10	1	chilled	No	a little brown

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	10/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	2.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	LC
SITE:	SW11		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water – no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.1
CONDUCTIVITY (uS/cm)	223.1
pH	6.62
DO (ppm)	22.3%, 2.02mg/L
REDOX (mV)	104.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW11	1	Chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	10/2/15
PROJECT NAME:	**Berry to Foxground**	**TIME:**	4.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	LC
SITE:	SW12		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.7
CONDUCTIVITY (uS/cm)	257.1
pH	7.6
DO (ppm)	53.6%, 4.73mg/L
REDOX (mV)	-92.1

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW12	1	chilled	No	brown

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	16/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	3.30pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	LC
SITE:	SW13		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	low flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.8
CONDUCTIVITY (uS/cm)	302.8
pH	6.73
DO (ppm)	35.6%, 3.12 mg/L
REDOX (mV)	-10.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW13	1	Chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	10.00am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW14		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - no flow.

FIELD MEASUREMENTS

TEMPERATURE (°C)	19.9
CONDUCTIVITY (uS/cm)	566
pH	6.36
DO (ppm)	[illegible] mg/L 1.2%, 0.11 mg/L
REDOX (mV)	-87.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW14	1	chilled	No	brown

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	10/2/15
PROJECT NAME:	**Berry to Foxground**	**TIME:**	3.45pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	CC
SITE:	SW15		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - no flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	19.5
CONDUCTIVITY (uS/cm)	291.1
pH	6.62
DO (ppm)	1.2 % 0.1mg/L
REDOX (mV)	-31.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW15	1	Chilled	N8	brown

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	**Berry to Foxground**	**TIME:**	9.45am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW16		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Low flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.9
CONDUCTIVITY (uS/cm)	192.3
pH	6.93
DO (ppm)	90.3%, 8.06mg/L
REDOX (mV)	106.3

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW16	1	chilled	No	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/23174/01	**DATE:**	11/2/15
PROJECT NAME:	**Berry to Foxground**	**TIME:**	9.30am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW17		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Low flow

FIELD MEASUREMENTS

TEMPERATURE (°C)	20.9
CONDUCTIVITY (uS/cm)	201.4
pH	7.02
DO (ppm)	38.4%, 3.42 mg/L
REDOX (mV)	67.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW17	2	chilled	Yes	clear, DUP 1

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

Attachment D - Laboratory Certificates

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Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

☐ **Brisbane**
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Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name : Jane Curran	Purchase Order :	COC Number :
Office Address :	Project Manager : Stefan Charteris	PROJECT Number : 21/23174	Eurofins | mgt quote ID : 131015GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : stefan.charteris@ghd.com nicole.rosen@ghd.com	PROJECT Name : Foxground to Berry	Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix	Turbidity	TSS	Total Phosphorus	Heavy Metals (m8)	Total Nitrogen	Ammonia	TPH	Containers: 1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Sample comments:
1	SW01	11/02/15	w	x	x						1							
2	SW02	11/02/15	w	x	x						1							
3	SW03	11/02/15	w	x	x						1							
4	SW04	11/02/15	w	x	x						1							
5	SW05	11/02/15	w	x	x						1							
6	SW06	11/02/15	w	x	x						1							
7	SW07	11/02/15	w	x	x						1							
8	SW08	10/02/15	w	x	x						1							
9	SW10	10/02/15	w	x	x						1							
10	SW11	10/02/15	w	x	x						1							
11	SW12	10/02/15	w	x	x						1							
12	SW13	10/02/15	w	x	x						1							
13	SW14	11/02/15	w	x	x						1							
14	SW15	10/02/15	w	x	x						1							
15	SW16	11/02/15	w	x	x						1							
16	SW17	11/02/15	w	x	x						1							

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Laboratory Staff

Relinquished By: Jane Curran	Received By:
Date & Time : 11/02/15 3.00pm	Date & Time :
Signature:	Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 13.5°

Report number:

12 FEB 2015 08:52

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☑ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name : Jane Curran**	**Purchase Order :**	**COC Number :**
Office Address :	**Project Manager : Stefan Charteris**	**PROJECT Number : 21/23174**	**Eurofins | mgt quote ID :** 131015GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000	**Email for results : stefan.charteris@ghd.com nicole.rosen@ghd.com**	**PROJECT Name : Foxground to Berry**	**Data output format:**

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Turbidity	TSS	Total Phosphorus	Heavy Metals (m8)	Total Nitrogen	Ammonia	TPH
1	DUPL 1	11/02/15	W	x	x					
2	DUPL 2	11/02/15	W	x	x					
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar		Sample comments:
1								
1								
1								

Laboratory Staff

Relinquished By: Jane Curran	**Received By:**
Date & Time : 11/02/15 3.00pm	**Date & Time :**
Signature:	**Signature:**

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number:

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Attention: **Stefan Charteris**

Report **447283-W**
Project name FOXGROUND TO BERRY
Project ID 21/23174
Received Date Feb 12, 2015

Client Sample ID			**SW01**	**SW02**	**SW03**	**SW04**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Fe09091**	**S15-Fe09092**	**S15-Fe09093**	**S15-Fe09094**
Date Sampled			**Feb 11, 2015**	**Feb 11, 2015**	**Feb 11, 2015**	**Feb 11, 2015**
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	< 5	< 5	< 5	5.5
Turbidity	0.1	NTU	1.9	1.8	2.0	9.6

Client Sample ID			**SW05**	**SW06**	**SW07**	**SW08**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Fe09095**	**S15-Fe09096**	**S15-Fe09097**	**S15-Fe09098**
Date Sampled			**Feb 11, 2015**	**Feb 11, 2015**	**Feb 11, 2015**	**Feb 11, 2015**
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	< 5	< 5	< 5	< 5
Turbidity	0.1	NTU	2.1	3.1	11	1.2

Client Sample ID			**SW10**	**SW11**	**SW12**	**SW13**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Fe09100**	**S15-Fe09101**	**S15-Fe09102**	**S15-Fe09103**
Date Sampled			**Feb 11, 2015**	**Feb 11, 2015**	**Feb 11, 2015**	**Feb 11, 2015**
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	< 5	< 5	130	< 5
Turbidity	0.1	NTU	2.7	2.7	100	3.4

Client Sample ID			**SW14**	**SW15**	**SW16**	**SW17**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Fe09104**	**S15-Fe09105**	**S15-Fe09106**	**S15-Fe09107**
Date Sampled			**Feb 11, 2015**	**Feb 11, 2015**	**Feb 11, 2015**	**Feb 11, 2015**
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	430	< 5	33	21
Turbidity	0.1	NTU	220	3.3	4.6	13

Client Sample ID			DUPL 1	DUPL 2
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Fe09108**	**S15-Fe09109**
Date Sampled			**Feb 11, 2015**	**Feb 11, 2015**
Test/Reference	LOR	Unit		
Suspended Solids	5	mg/L	35	16
Turbidity	0.1	NTU	16	13

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Suspended Solids	Sydney	Feb 16, 2015	7 Day
- Method: 4100 Total Suspended Solids dried at 103-105°C			
Turbidity	Sydney	Feb 18, 2015	2 Day
- Method: 4040 Turbidity			

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3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	GHD Pty Ltd NSW	**Order No.:**		**Received:**	Feb 12, 2015 8:52 AM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	**Report #:**	447283	**Due:**	Feb 19, 2015
		Phone:	02 9239 7100	**Priority:**	5 Day
		Fax:	02 9239 7199	**Contact Name:**	Stefan Charteris
Project Name:	FOXGROUND TO BERRY				
Project ID:	21/23174				

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217					X	X
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
SW01	Feb 11, 2015		Water	S15-Fe09091	X	X
SW02	Feb 11, 2015		Water	S15-Fe09092	X	X
SW03	Feb 11, 2015		Water	S15-Fe09093	X	X
SW04	Feb 11, 2015		Water	S15-Fe09094	X	X
SW05	Feb 11, 2015		Water	S15-Fe09095	X	X
SW06	Feb 11, 2015		Water	S15-Fe09096	X	X
SW07	Feb 11, 2015		Water	S15-Fe09097	X	X
SW08	Feb 11, 2015		Water	S15-Fe09098	X	X
SW10	Feb 11, 2015		Water	S15-Fe09100	X	X

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ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com.au web : www.eurofins.com.au

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Project ID:	21/23174				

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217					X	X
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW11	Feb 11, 2015		Water	S15-Fe09101	X	X
SW12	Feb 11, 2015		Water	S15-Fe09102	X	X
SW13	Feb 11, 2015		Water	S15-Fe09103	X	X
SW14	Feb 11, 2015		Water	S15-Fe09104	X	X
SW15	Feb 11, 2015		Water	S15-Fe09105	X	X
SW16	Feb 11, 2015		Water	S15-Fe09106	X	X
SW17	Feb 11, 2015		Water	S15-Fe09107	X	X
DUPL 1	Feb 11, 2015		Water	S15-Fe09108	X	X
DUPL 2	Feb 11, 2015		Water	S15-Fe09109	X	X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Suspended Solids	mg/L	-0.5			5	Pass	
Turbidity	NTU	< 0.1			0.1	Pass	
LCS - % Recovery							
Turbidity	%	99			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	S15-Fe09094	CP	NTU	9.6	9.8	8.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	S15-Fe09097	CP	mg/L	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	S15-Fe09107	CP	mg/L	21	20	7.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Charl Du Preez	Analytical Services Manager
Bob Symons	Senior Analyst-Inorganic (NSW)

Glenn Jackson
National Laboratory Manager

Final report - this Report replaces any previously issued Report

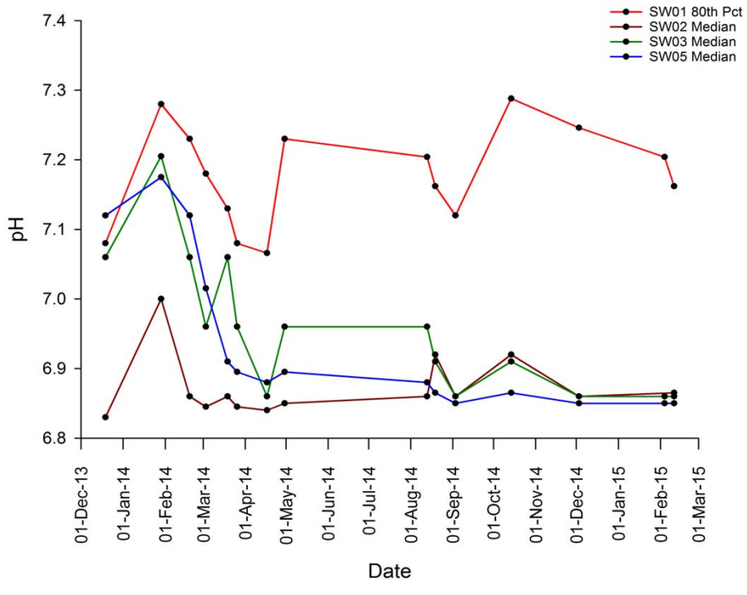
- Indicates Not Requested

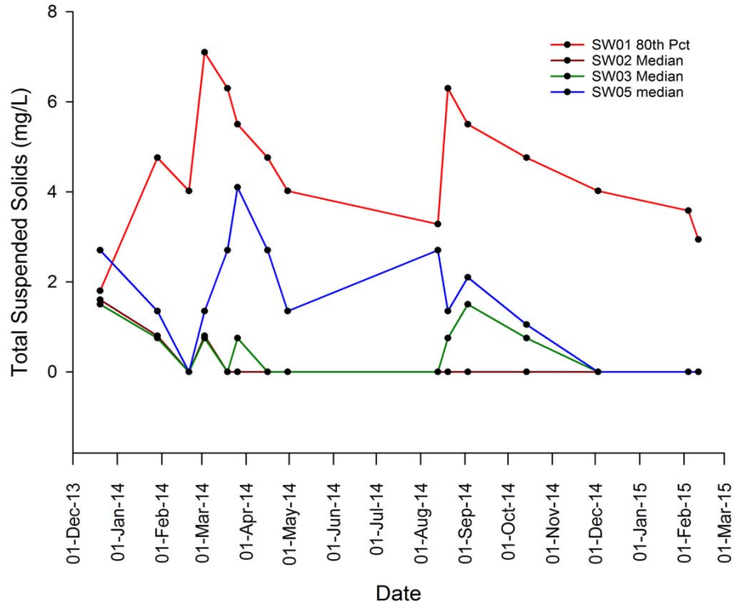
* Indicates NATA accreditation does not cover the performance of this service

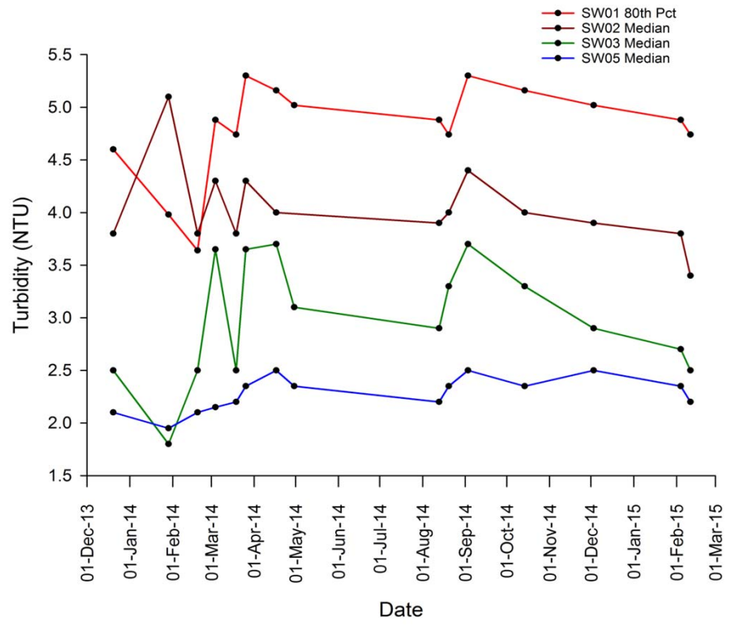
Uncertainty data is available on request

Attachment F - Control Charts

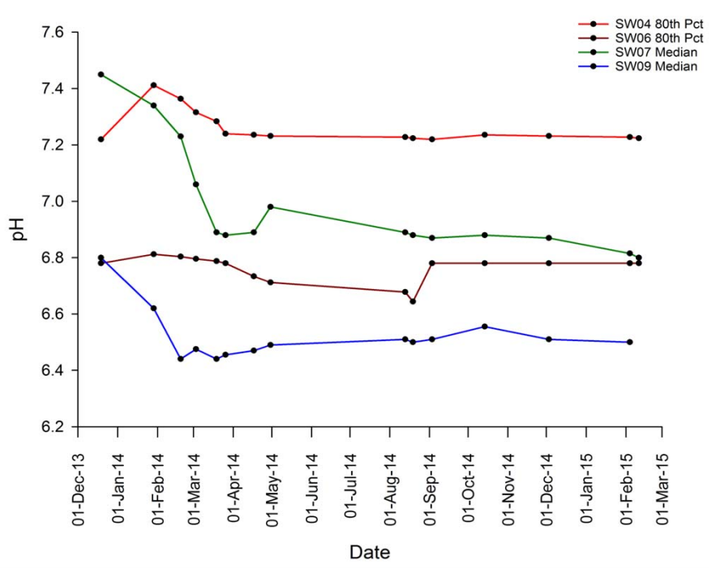
1. Broughton Creek

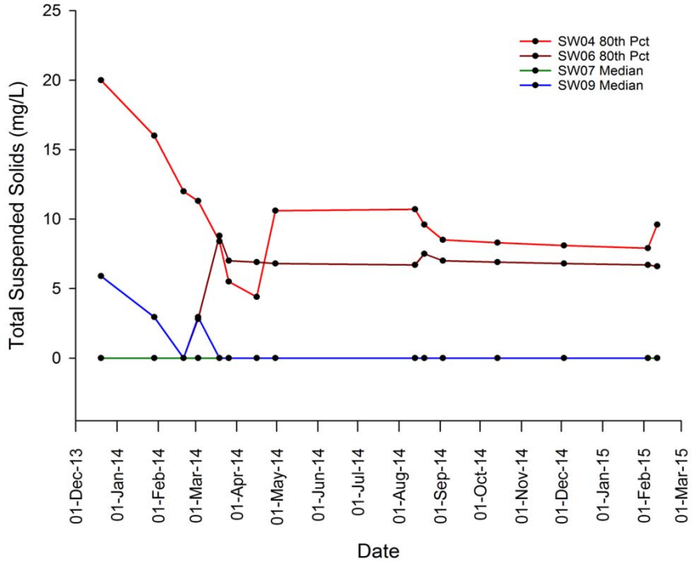


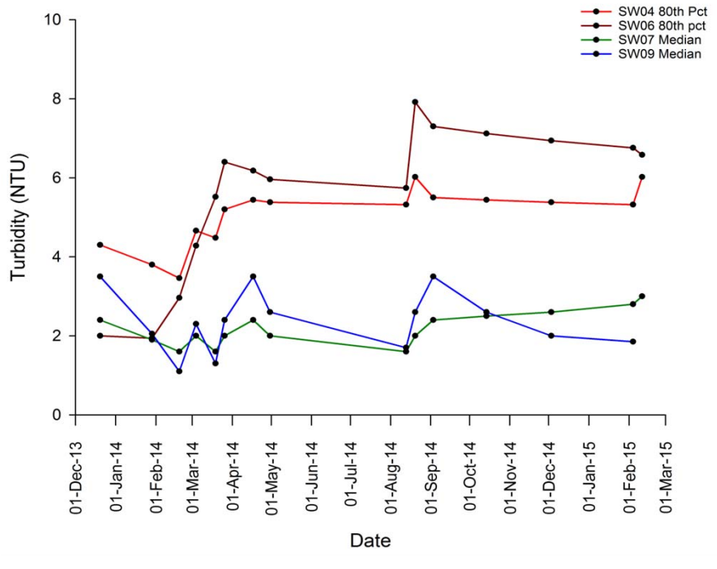




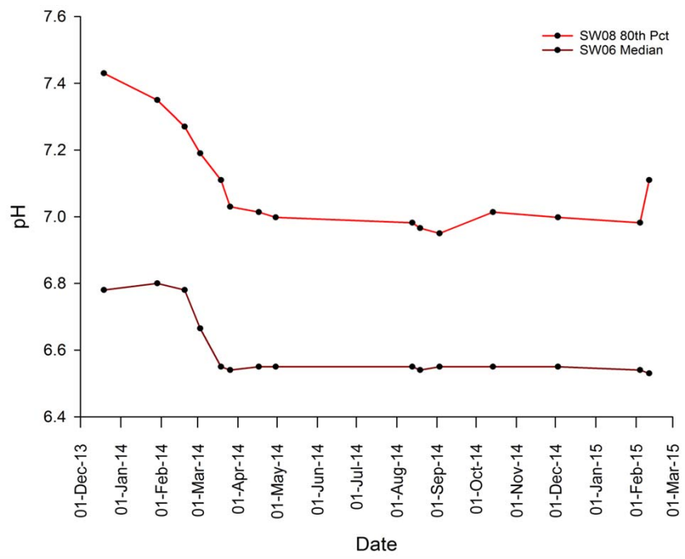
2. Connelly’s Creek and Broughton Mill Creek and Bundewallah Creek

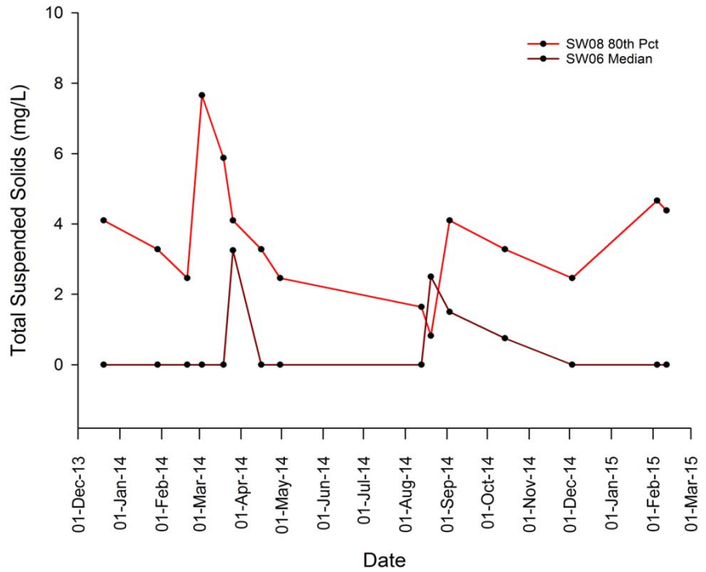


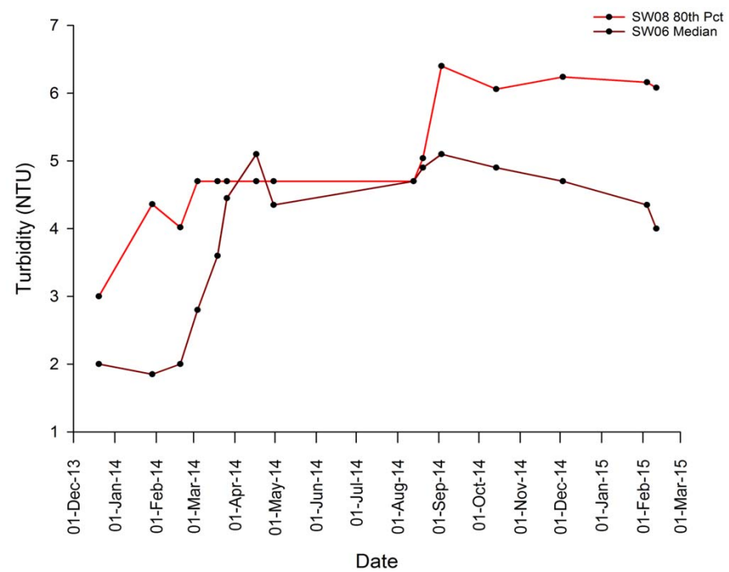




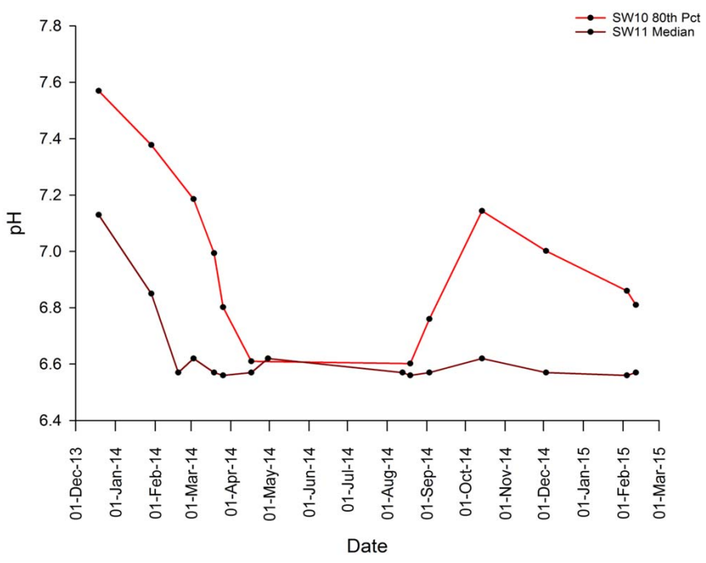
3. Bundewallah Creek and Connelly's Creek

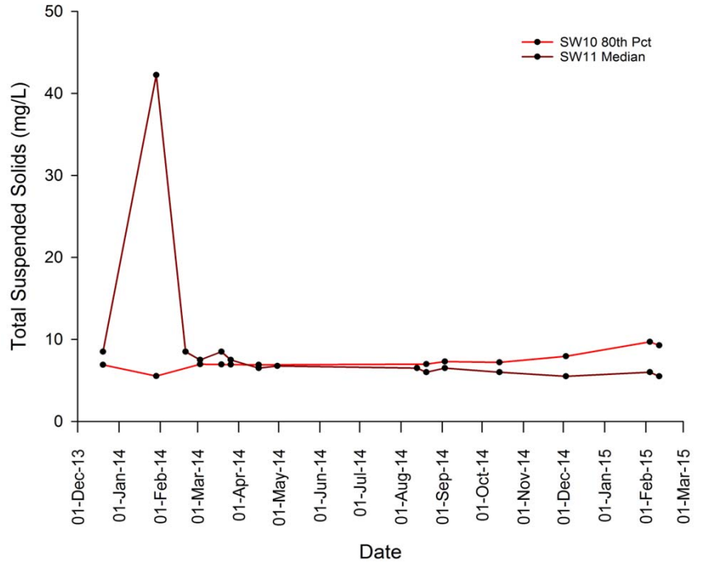


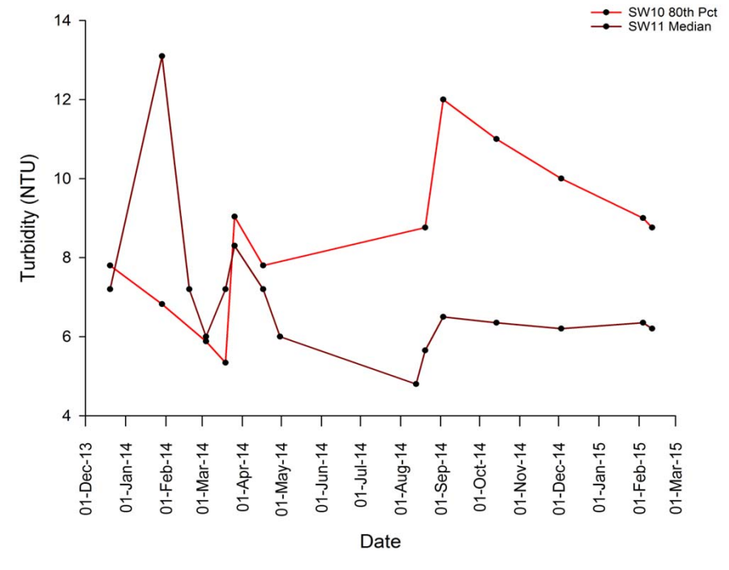




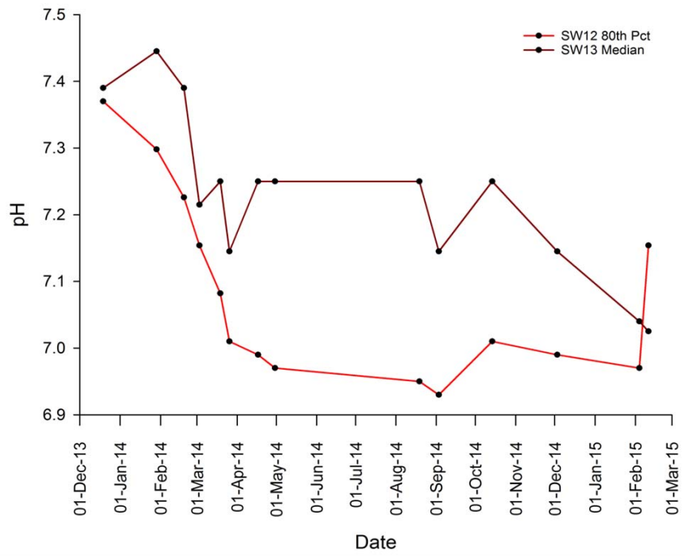
4. Town Creek

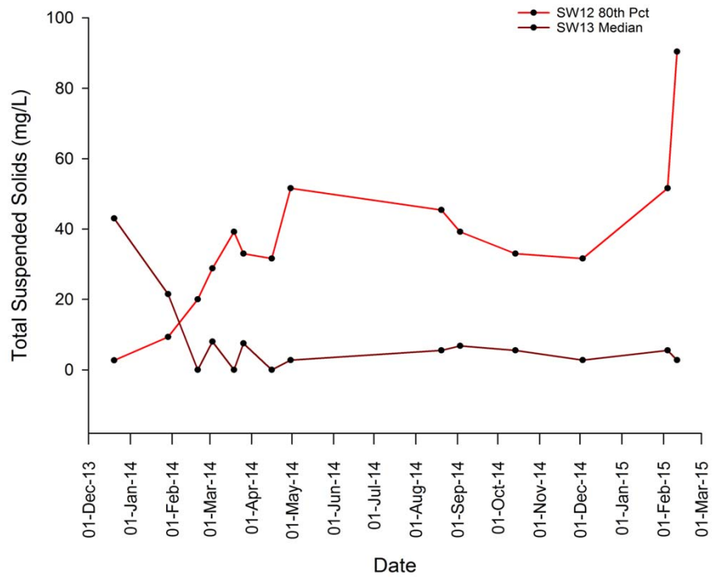


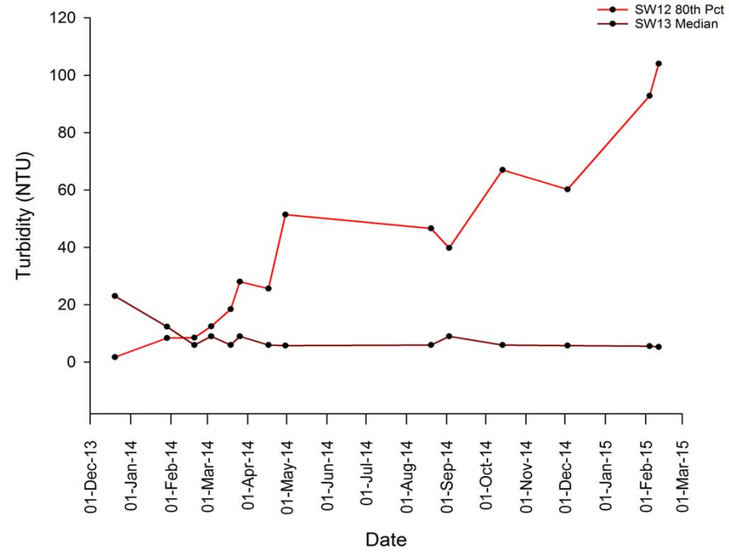




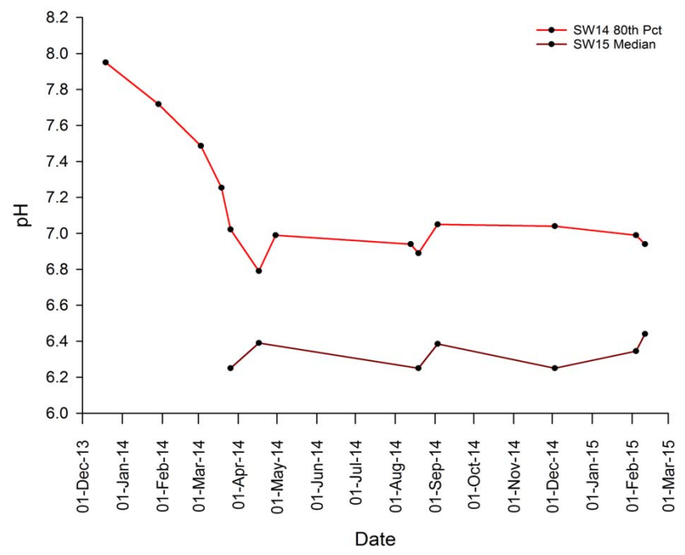
5. Hitchcocks Lane Creek Tributary

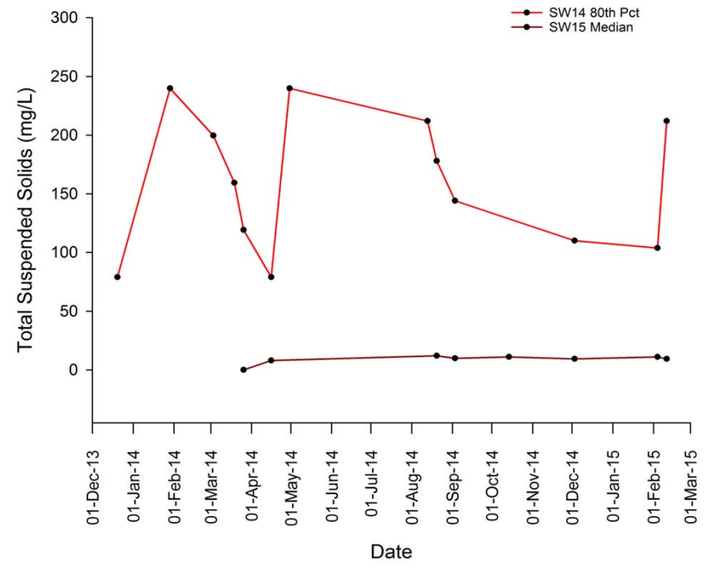


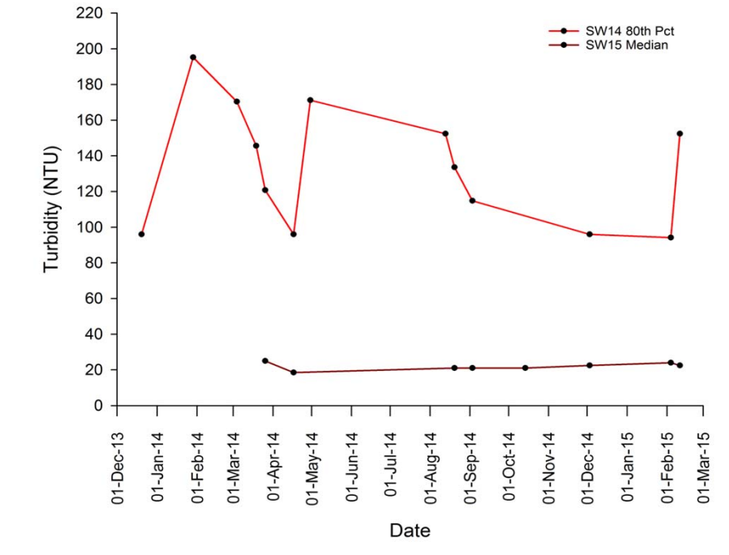




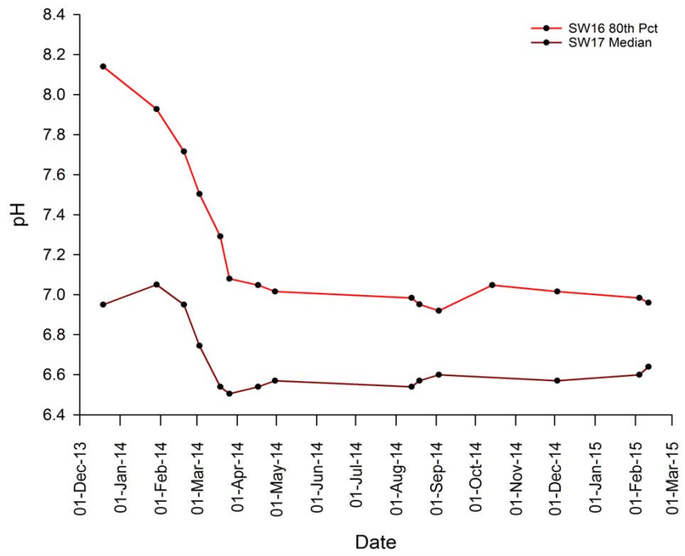
6. Hitchcocks Lane Creek

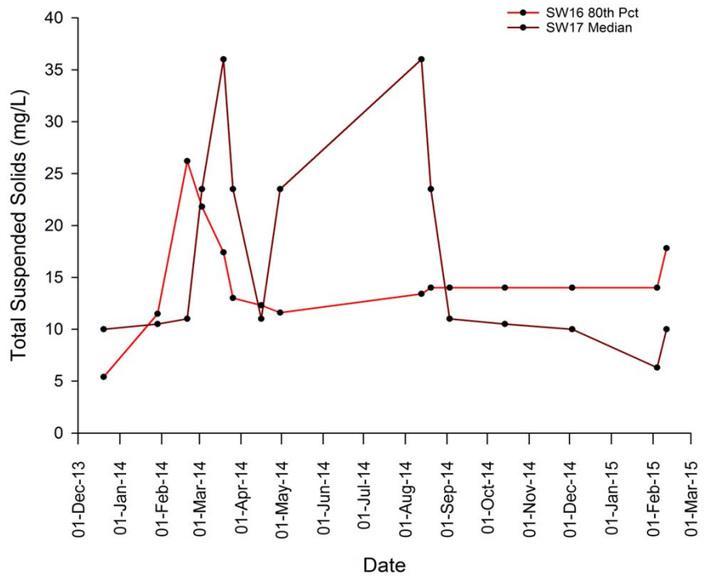


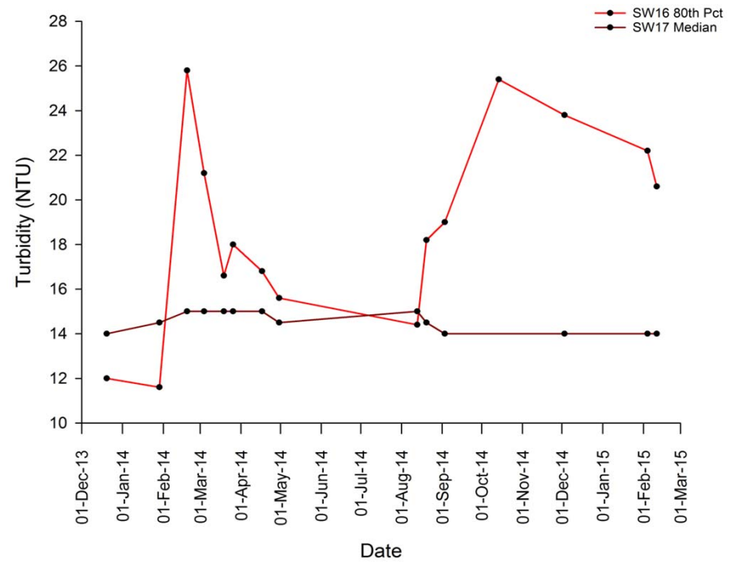




7. Unnamed Tributary







17 March 2015

James Diamond
Environmental Coordinator
Fulton Hogan Construction Pty Ltd
P.O. Box 353
Berry NSW 2535

Our ref: 21/24306 207244

Your ref:

Dear James,

Surface Water Monitoring
Event 3

1 Scope and limitations

In accordance with the Princes Highway upgrade for Foxground and Berry Bypass (FBB) - Water Monitoring Project Brief (*Contract No. 12.2574.3019)*, GHD undertook the following task of undertaking a monthly round of surface water monitoring at seventeen locations (SW01 to SW017) after a major rainfall event. This report discusses the third surface water sampling event (Event 3) since construction has started.

This report presents the control charts and discusses results in respect to exceedances of criteria or inconsistencies for surface water results for Event 3 in accordance to the limitations provided in Section 4.

2 Field Program

Surface water sampling was undertaken at all surface water sampling locations on the 26 February 2015; refer to Figure 1, Attachment A for sampling locations. This monthly surface water sampling event was conducted in accordance with the sampling program and protocols provided in:

- GHD 2014, Foxground to Berry Bypass Water Quality Management - Surface Water and Groundwater Sampling Protocol, prepared for Roads and Maritime Services.
- GHD 2014, Foxground to Berry Bypass Water Quality Management - Surface Water Quality Management Plan, prepared for Roads and Maritime Services.
- GHD 2014, Princes Highway Upgrade – Foxground to Berry Bypass Project, Final Interpretive Water Monitoring Report, prepared for Roads and Maritime Services.

Field parameters were measured during sampling including temperature, pH, electrical conductivity (EC), dissolved oxygen (DO), and reduction-oxidation potential (redox), and are provided in Table B1, Attachment B. Field sheets are provided in Attachment C.

Water samples were submitted to a NATA certified testing laboratory (Eurofins | Mgt) to be analysed for the schedule of major suite analysis of:

- Turbidity.
- Total suspended solids (TSS).
- Heavy Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, and Zinc).
- Phosphorus.
- Total Nitrogen.

- Ammonia.

3 Results and Discussion

3.1 Field observations

The rainfall within Broughton Creek catchment and the surface water flows within Broughton Creek are presented in Figure 2, Attachment A. This information was obtained from the NSW office of water website (http://realtimedata.water.nsw.gov.au/water.stm). The location of this gauge is on Broughton Mill Creek approximately 2 km upstream of SW04. During the construction phase, minor events are classified as at least 15 mm of rainfall in the past 24 hours, and major events are classified as at least 50 mm of rainfall in the past 24 hours.

The data in Figure 2 illustrates a high correlation between rainfall and river flow, with a spike in rainfall coinciding with the spike in river flow. The surface water sampling events are also marked on Figure 2, Attachment A.

3.2 Surface water quality sampling results

In situ water quality parameters observed during sampling are presented in Table B1, Attachment B

Surface water analytical results for the suite listed in Section 2, are tabulated against selected criteria (in accordance with the protocols detailed in Section 2) in Table B2, Attachment B. Laboratory certificates are provided in Attachment D.

Elevated turbidity concentrations exceeding the ANZECC criteria for Lowland rivers (6 – 50 NTU) occurred at locations; SW13 and SW14, averaging 53 NTU and 159 NTU, respectively. Turbidity concentrations at SW13 only marginally exceeded the ANZECC criteria for lowland rivers (6 – 50 NTU). Elevated concentrations of turbidity at SW14 have occurred since monitoring has commenced in December 2013, and are representative of the background concentration at this location. The control charts for turbidity at these locations (discussed in the following section) support the conclusion that the exceedances are representative of background conditions rather than construction impacts.

Elevated TSS concentrations exceeding the ANZECC criteria for Lowland rivers (50 mg/L) occurred at locations; SW12, SW13 and SW14, averaging 52 mg/L, 55 mg/L, and 317 mg/L, respectively. TSS concentrations at SW12 and SW13, only marginally exceeded the ANZECC criteria for lowland rivers (50 mg/L). Elevated concentrations of TSS at SW14 have occurred since monitoring has commenced in December 2013 and are considered to be representative of background concentrations at this location. The control charts for TSS at these locations (discussed in the following section) support the conclusion that the exceedances are representative of background conditions rather than construction impacts.

Nutrient concentrations of total oxidised nitrogen, total nitrogen, and phosphorus, exceeded their respective 0.04 mg/L, and 0.5 mg/L ANZECC criteria for Lowland rivers at locations. These nutrient concentrations are consistent with previous results and are considered to be representative of background concentrations.

Copper concentrations exceeded the ANZECC 2000 Freshwater 95% criteria at surface water locations; SW10, SW11, SW12, SW13, SW14, SW15, and SW16, however, these are considered to be representative of background concentrations. Zinc concentrations exceeded the ANZECC 2000 Freshwater 95% criteria at surface water locations; SW10, SW11, SW14, and SW15, however, these are considered to be representative of background concentrations.

A field quality control and laboratory control assessment of the results from this monthly monitoring round (Event 3) is provided in Attachment E.

3.2.1 Control charts

The surface water locations have been grouped into separate control charts by the specific surface water bodies they are located within and whether they are up and down gradient of the FBB alignment. The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction and operation). By comparing upstream water quality with down-stream water quality using the control chart methods it is expected that impacts will be able to be adequately characterised during construction and operation. The groupings used for the control charts are summarised in Table 1**.**

Table 1 Surface water locations within specific surface water bodies

Surface water location	Upstream of Alignment	Downstream of Alignment
Broughton Creek	SW01	SW02, SW03, SW05
Connelly's Creek and Broughton Mill Creek and Bundewallah Creek	SW04, SW06	SW07, SW09
Bundewallah Creek and Connelly's Creek	SW08	SW06
Town Creek	SW10	SW11
Hitchcocks Lane Creek Tributary	SW12	SW13
Hitchcocks Lane Creek	SW14	SW15
Unnamed Tributary	SW16	SW17

The primary control chart indicators for assessing potential impacts associated with the FBB upgrade works during construction are limited to; pH, turbidity, and total suspended solids. The primary control charts for Event 3 are presented in Attachment F.

The control charts suggest that the results are generally consistent with previous rounds. There are no downstream median values that are greater than the up gradient reference site 80th percentile values. Event 3 test results, which are inconsistent with results from previous monitoring rounds, are discussed below.

Table 2 Summary of surface waters with inconsistencies for Event 3

Surface water location	pH	TSS	Turbidity	Comments
Hitchcocks Lane Creek		✓	✓	The 80th percentile TSS and turbidity concentrations at SW14 spiked, whilst median TSS and turbidity concentrations at SW15 remained constant.

The spikes detailed in Table 2 are not associated with construction activities, but attributed to the change in background conditions at the site (refer to Attachment C).

Event 3 results suggest that construction works are currently having no significant impact on surface water quality at the site.

4 Limitations

This report has been prepared by GHD Pty Ltd (GHD) for Fulton Hogan and may only be used and relied on by Fulton Hogan for the purpose agreed between GHD and the Fulton Hogan as set out in Section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Fulton Hogan arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Fulton Hogan and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

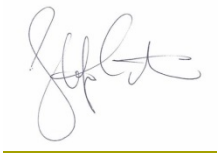
The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

Please contact the undersigned if you have any questions or require further information.

Kind Regards,



Ashlee La Fontaine
Environmental Scientist
02 9239 7122

Stefan Charteris
Senior Hydrogeologist
02 9239 7472

Attachment A - Figures

1:25,000 (at A3)

0 125 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Surface Water Sampling Locations
- Berry to Foxground upgrade alignment
- Roads
- Railways
- Waterways
- Lakes and dams

Fulton Hogan Pty Ltd
Water Quality Monitoring

Job Number	21-24306
Revision	A
Date	03 Mar 2015

Surface water sampling locations

Figure 1

\\ghdnet\ghd\AU\Sydney\Projects\21\24306\GIS\Maps\MXD\21_24306_Z001_SurfaceWatersamplingLocations.mxd

Data Source: NSW Department of Lands: DTDB and DCDB - 2012. Created by: mweber

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

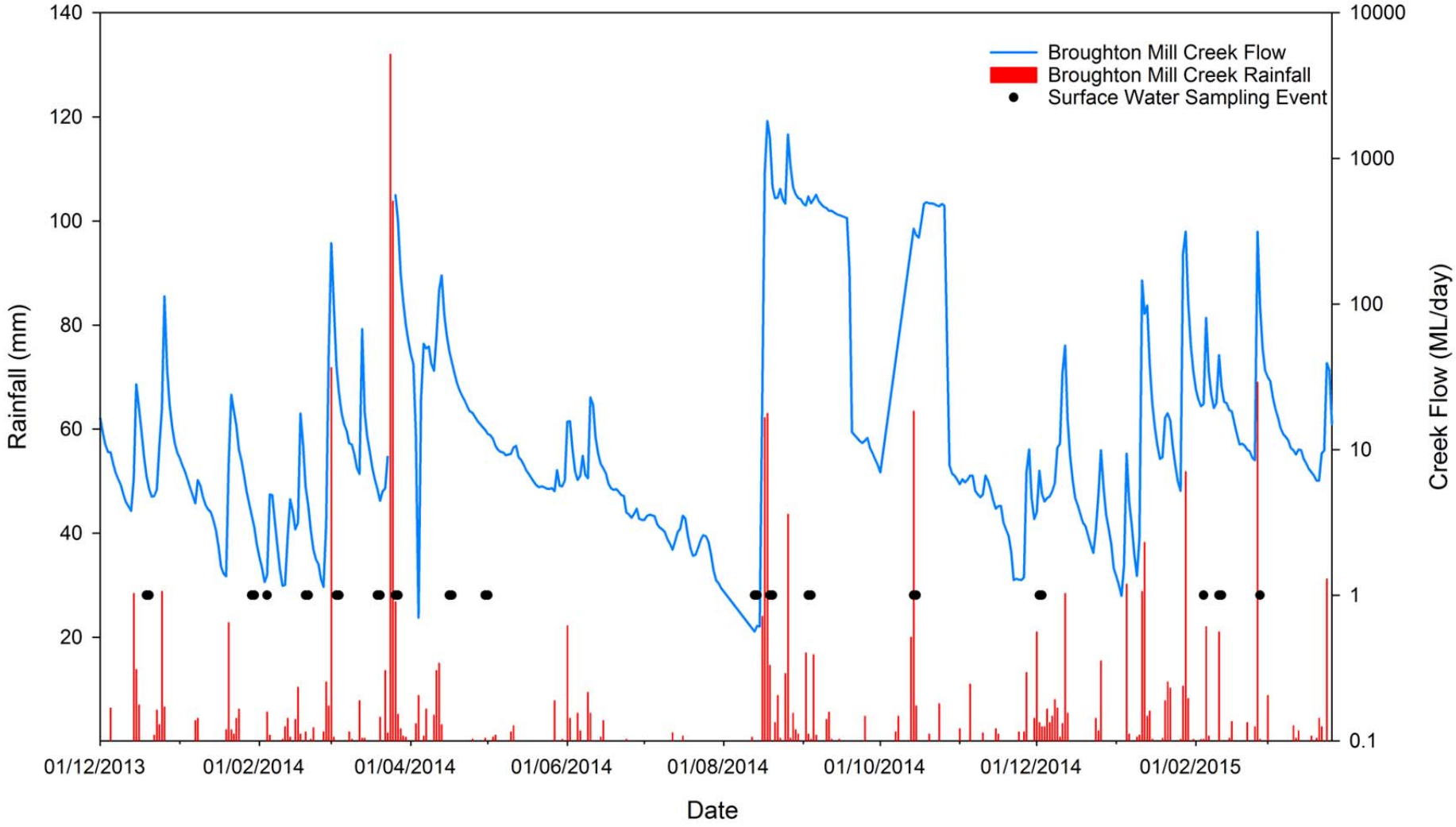


Figure 2 Rainfall vs Flow within Broughton Mill Creek

Attachment B - Tabulated Results

Attachment B
Table B1
Event 3 - Field Parameters

				Field				
				Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox	Temp (Field)
				mg/L	µS/cm	pH_Units	mV	oC
EQL								
ADWG 2011 Aesthetic						6.5-8.5		
Lowland rivers (ANZECC 2000)					300	6.5-8		
Field_ID	**LocCode**	**Sampled_Da**	**SampleCode**					
SW01_Rep1	SW01	26/02/2015	SW01_Rep1_26 Feb 15_-	7.95	96.2	7.03	110.7	18.3
SW01_Rep2	SW01	26/02/2015	SW01_Rep2_26 Feb 15_-	7.94	96.4	6.3	109	18.3
SW01_Rep3	SW01	26/02/2015	SW01_Rep3_26 Feb 15_-	7.92	96.4	6.1	107.5	18.4
SW02_Rep1	SW02	26/02/2015	SW02_Rep1_26 Feb 15_-	7.3	98.6	6.26	103.5	18.7
SW02_Rep2	SW02	26/02/2015	SW02_Rep2_26 Feb 15_-	7.31	98.7	6.09	101.9	18.7
SW02_Rep3	SW02	26/02/2015	SW02_Rep3_26 Feb 15_-	7.37	99	6.03	100.2	18.8
SW03_Rep1	SW03	26/02/2015	SW03_Rep1_26 Feb 15_-	7.8	100.8	6.13	131.2	19.1
SW03_Rep2	SW03	26/02/2015	SW03_Rep2_26 Feb 15_-	7.84	101.1	5.95	129.3	19.1
SW03_Rep3	SW03	26/02/2015	SW03_Rep3_26 Feb 15_-	7.83	101.3	5.9	133	19.1
SW04_Rep1	SW04	27/02/2015	SW04_Rep1_27 Feb 15_-	7.26	94.7	6.7	144.7	20.1
SW04_Rep2	SW04	27/02/2015	SW04_Rep2_27 Feb 15_-	7.32	94.7	6.09	144.9	20.1
SW04_Rep3	SW04	27/02/2015	SW04_Rep3_27 Feb 15_-	7.31	94.7	5.98	145.6	20.1
SW05_Rep1	SW05	26/02/2015	SW05_Rep1_26 Feb 15_-	7.64	102.6	5.92	136.8	19.7
SW05_Rep2	SW05	26/02/2015	SW05_Rep2_26 Feb 15_-	7.64	102.7	5.82	141.2	19.7
SW05_Rep3	SW05	26/02/2015	SW05_Rep3_26 Feb 15_-	7.69	102.9	5.81	143.3	19.7
SW06_Rep1	SW06	26/02/2015	SW06_Rep1_26 Feb 15_-	4.31	142	6.02	-77.9	20.6
SW06_Rep2	SW06	26/02/2015	SW06_Rep2_26 Feb 15_-	4.3	142.6	5.7	-29.4	20.4
SW06_Rep3	SW06	26/02/2015	SW06_Rep3_26 Feb 15_-	2.71	141.4	5.5	-4.4	20.2
SW07_Rep1	SW07	27/02/2015	SW07_Rep1_27 Feb 15_-	3.86	114.6	5.83	74.4	20.3
SW07_Rep2	SW07	27/02/2015	SW07_Rep2_27 Feb 15_-	3.23	138.4	5.63	86.5	20.3
SW07_Rep3	SW07	27/02/2015	SW07_Rep3_27 Feb 15_-	1.45	156.5	5.48	54	20.3
SW08_Rep1	SW08	27/02/2015	SW08_Rep1_27 Feb 15_-	7.16	138.5	6.07	44.9	21.5
SW08_Rep2	SW08	27/02/2015	SW08_Rep2_27 Feb 15_-	6.98	139.3	6.06	43.2	21.5
SW08_Rep3	SW08	27/02/2015	SW08_Rep3_27 Feb 15_-	7.11	139.6	6.1	38.7	21.6
SW09_Rep1	SW09	26/02/2015	SW09_Rep1_26 Feb 15_-	7.67	127.1	6.2	134.4	19.6
SW09_Rep2	SW09	26/02/2015	SW09_Rep2_26 Feb 15_-	7.54	127.3	5.86	133	19.6
SW09_Rep3	SW09	26/02/2015	SW09_Rep3_26 Feb 15_-	7.5	127.7	5.81	132.5	19.7
SW010_Rep1	SW10	27/02/2015	SW010_Rep1_27 Feb 15_-	2.34	185.5	5.68	162.2	21.6
SW010_Rep2	SW10	27/02/2015	SW010_Rep2_27 Feb 15_-	2.25	185.3	5.5	170.6	21.6
SW010_Rep3	SW10	27/02/2015	SW010_Rep3_27 Feb 15_-	2.29	185.3	5.5	170.6	21.6
SW011_Rep1	SW11	27/02/2015	SW011_Rep1_27 Feb 15_-	2.18	154.7	8.58	102.8	20.8
SW011_Rep2	SW11	27/02/2015	SW011_Rep2_27 Feb 15_-	1.09	158.2	5.57	140.2	20.8
SW011_Rep3	SW11	27/02/2015	SW011_Rep3_27 Feb 15_-	0.46	158.7	5.58	148.6	20.7
SW012_Rep1	SW12	25/02/2015	SW012_Rep1_25 Feb 15_-	4.03	231.9	6.35	145.7	20.4
SW012_Rep2	SW12	25/02/2015	SW012_Rep2_25 Feb 15_-	3.99	231.8	6.14	121.3	20.4
SW012_Rep3	SW12	25/02/2015	SW012_Rep3_25 Feb 15_-	3.97	234.1	6.08	119.6	20.4
SW013_Rep1	SW13	25/02/2015	SW013_Rep1_25 Feb 15_-	5.29	245.8	6	139.8	20.7
SW013_Rep2	SW13	25/02/2015	SW013_Rep2_25 Feb 15_-	5.28	246.2	6.07	117.4	20.7
SW013_Rep3	SW13	25/02/2015	SW013_Rep3_25 Feb 15_-	5.31	247.1	6.12	110.8	20.7
SW014_Rep1	SW14	27/02/2015	SW014_Rep1_27 Feb 15_-	0.02	358.5	5.59	158.2	23.6
SW014_Rep2	SW14	27/02/2015	SW014_Rep2_27 Feb 15_-	0.05	358	5.57	180.8	23.6
SW014_Rep3	SW14	27/02/2015	SW014_Rep3_27 Feb 15_-	0.09	357.6	5.56	185	23.5
SW015_Rep1	SW15	25/02/2015	SW015_Rep1_25 Feb 15_-	2.75	249.7	5.95	142.1	21.1
SW015_Rep2	SW15	25/02/2015	SW015_Rep2_25 Feb 15_-	2.63	250.1	5.68	150.5	21.2
SW015_Rep3	SW15	25/02/2015	SW015_Rep3_25 Feb 15_-	2.53	250.9	5.58	153.3	21.2
SW016_Rep1	SW16	25/02/2015	SW016_Rep1_25 Feb 15_-	7.52	150.4	6.4	161.5	19.5
SW016_Rep2	SW16	25/02/2015	SW016_Rep2_25 Feb 15_-	7.47	149.3	6.15	122.8	19.5
SW016_Rep3	SW16	25/02/2015	SW016_Rep3_25 Feb 15_-	7.54	147.5	6.13	111.9	19.5
SW017_Rep1	SW17	27/02/2015	SW017_Rep1_27 Feb 15_-	4.02	191.7	6.18	68.4	23
SW017_Rep2	SW17	27/02/2015	SW017_Rep2_27 Feb 15_-	4.05	191.3	5.94	66.8	23
SW017_Rep3	SW17	27/02/2015	SW017_Rep3_27 Feb 15_-	4.01	190	5.88	65.9	22.9

Env Stds Comments
#1:While extreme ph values (<4 and >11) may adversely affect health.

Attachment B
Table B2
Event 3 Analytical Results

				Inorganics			Nutrients			Metals									
				Kjeldahl Nitrogen Total	Total Suspended Solids	Turbidity	Ammonia as N	Nitrogen (Total Oxidised)	Nitrogen (Total)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Phosphorus	Zinc (Filtered)
				mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				0.2	1	1	0.01	0.05	0.2	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.5	0.001
ANZECC 2000 FW 95%							0.74				0.0002	0.001	0.0014	0.0034	0.0006	0.011		0.008
Lowland rivers (ANZECC 2000)					50			0.04	0.5								0.05	
Field_ID	**LocCode**	**Sampled_Da**	**SampleCode**															
DUPL REP 3	SW08	27/02/2015	S15-Ma01500	0.4	<1	3.1	0.13	0.18	0.56	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.001
DUPL1 REP 1	SW08	27/02/2015	S15-Ma01498	0.5	3	2.9	0.15	0.18	0.72	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.002
DUPL1 REP 2	SW08	27/02/2015	S15-Ma01499	0.2	2.6	3.6	0.15	0.17	0.37	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
DUPL1 REP1	SW03	26/02/2015	S15-Fe20780	<0.2	4.6	11	0.03	0.15	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
DUPL1 REP2	SW03	26/02/2015	S15-Fe20974	<0.2	2.7	11	0.03	0.16	<0.2	0.002	<0.0001	0.008	0.001	0.006	<0.0001	<0.001	<0.5	<0.005
DUPL1 REP3	SW03	26/02/2015	S15-Fe20781	<0.2	3	12	0.02	0.14	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW01 REP1	SW01	26/02/2015	S15-Fe20750	<0.2	1.7	8.4	0.02	0.12	<0.2	<0.001	<0.0001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW01 REP2	SW01	26/02/2015	S15-Fe20751	<0.2	2.9	8	0.02	0.12	<0.2	<0.001	<0.0001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW01 REP3	SW01	26/02/2015	S15-Fe20752	<0.2	1.5	8.2	0.01	0.11	<0.2	<0.001	<0.0001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW02 REP1	SW02	26/02/2015	S15-Fe20753	<0.2	2.9	8.8	0.04	0.14	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	0.007
SW02 REP2	SW02	26/02/2015	S15-Fe20754	<0.2	2.9	9	0.02	0.13	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW02 REP3	SW02	26/02/2015	S15-Fe20755	<0.2	1.6	8.9	0.02	0.13	<0.2	<0.001	<0.0001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW03 REP1	SW03	26/02/2015	S15-Fe20756	<0.2	3.2	11	0.03	0.15	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW03 REP2	SW03	26/02/2015	S15-Fe20757	<0.2	3.4	11	0.03	0.15	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW03 REP3	SW03	26/02/2015	S15-Fe20758	<0.2	3.3	12	0.02	0.15	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW04 REP 1	SW04	27/02/2015	S15-Ma01477	0.5	36	20	0.03	0.23	0.73	0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
SW04 REP 2	SW04	27/02/2015	S15-Ma01478	<0.2	17	13	0.01	0.23	0.23	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
SW04 REP 3	SW04	27/02/2015	S15-Ma01479	0.3	12	12	0.02	0.23	0.57	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
SW05 REP1	SW05	26/02/2015	S15-Fe20759	<0.2	4.9	10	0.02	0.15	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW05 REP2	SW05	26/02/2015	S15-Fe20760	<0.2	4.4	11	0.02	0.16	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW05 REP3	SW05	26/02/2015	S15-Fe20761	<0.2	3.5	11	0.03	0.15	<0.2	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	-0.69	<0.005
SW06 REP1	SW06	26/02/2015	S15-Fe20762	<0.2	6.4	8	0.03	0.31	0.31	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW06 REP2	SW06	26/02/2015	S15-Fe20763	<0.2	4.7	8.5	0.03	0.31	0.31	<0.001	0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW06 REP3	SW06	26/02/2015	S15-Fe20764	<0.2	2.3	7.2	0.04	0.3	0.3	<0.001	<0.0001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW07 REP 1	SW07	27/02/2015	S15-Ma01480	0.5	6.1	4.4	0.03	0.26	0.78	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.004
SW07 REP 2	SW07	27/02/2015	S15-Ma01481	0.4	4.3	4.9	0.02	0.26	0.67	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
SW07 REP 3	SW07	27/02/2015	S15-Ma01482	0.4	4.3	5.8	0.03	0.26	0.67	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
SW08 REP 1	SW08	27/02/2015	S15-Ma01483	0.4	2.8	4.1	0.13	0.18	0.57	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.001
SW08 REP 2	SW08	27/02/2015	S15-Ma01484	0.6	3.7	2.9	0.12	0.18	0.78	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.001
SW08 REP 3	SW08	27/02/2015	S15-Ma01485	0.5	2.6	2.9	0.14	0.18	0.7	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
SW09 REP1	SW09	26/02/2015	S15-Fe20765	<0.2	6.1	7.9	0.04	0.36	0.36	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW09 REP2	SW09	26/02/2015	S15-Fe20766	<0.2	11	8.1	0.04	0.38	0.38	<0.001	<0.0001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW09 REP3	SW09	26/02/2015	S15-Fe20767	<0.2	6.3	8.5	0.04	0.36	0.36	<0.001	0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW10 REP 1	SW10	27/02/2015	S15-Ma01486	1.2	8.6	2.5	0.08	<0.05	1.2	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	0.001	<0.5	0.009
SW10 REP 2	SW10	27/02/2015	S15-Ma01487	0.8	8.5	2.3	0.02	<0.05	0.79	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	0.008
SW10 REP 3	SW10	27/02/2015	S15-Ma01488	0.7	5.5	2.5	0.02	<0.05	0.68	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	0.007
SW11 REP 1	SW11	27/02/2015	S15-Ma01489	0.6	10	3	0.05	<0.05	0.61	<0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	<0.001	<0.5	0.01
SW11 REP 2	SW11	27/02/2015	S15-Ma01490	0.9	3.4	3.5	0.03	<0.05	0.9	<0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	<0.001	<0.5	0.01
SW11 REP 3	SW11	27/02/2015	S15-Ma01491	0.9	4.5	3.1	0.03	<0.05	0.86	<0.001	<0.0002	<0.001	0.005	<0.001	<0.0001	<0.001	<0.5	0.016
SW12 REP1	SW12	25/02/2015	S15-Fe20768	0.6	56	48	0.09	0.44	1.04	0.002	<0.0001	<0.001	0.002	0.001	<0.0001	<0.001	<0.5	0.006
SW12 REP2	SW12	25/02/2015	S15-Fe20769	<0.2	61	58	0.06	0.54	0.54	0.001	<0.0001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.5	<0.005
SW12 REP3	SW12	25/02/2015	S15-Fe20770	<0.2	40	35	0.16	0.23	0.23	0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	0.005
SW13 REP1	SW13	25/02/2015	S15-Fe20771	1.3	47	51	0.04	0.41	1.71	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW13 REP2	SW13	25/02/2015	S15-Fe20772	<0.2	57	59	0.06	0.41	0.41	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW13 REP3	SW13	25/02/2015	S15-Fe20773	<0.2	60	50	0.05	0.4	0.4	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW14 REP 1	SW14	27/02/2015	S15-Ma01492	1.8	540	200	0.59	<0.05	1.8	<0.001	<0.0002	<0.001	0.003	<0.001	<0.0001	0.003	<0.5	0.016
SW14 REP 2	SW14	27/02/2015	S15-Ma01493	1.6	290	200	0.5	<0.05	1.6	<0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	0.003	<0.5	0.064
SW14 REP 3	SW14	27/02/2015	S15-Ma01494	2.2	120	77	0.34	<0.05	2.2	<0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	0.003	<0.5	0.037
SW15 REP1	SW15	25/02/2015	S15-Fe20774	0.3	8.2	12	0.17	0.4	0.7	<0.001	<0.0001	<0.001	0.007	<0.001	<0.0001	0.001	<0.5	0.014
SW15 REP2	SW15	25/02/2015	S15-Fe20775	0.8	9.2	13	0.18	0.38	1.22	<0.001	<0.0001	<0.001	0.007	<0.001	<0.0001	0.001	<0.5	0.012
SW15 REP3	SW15	25/02/2015	S15-Fe20776	1.5	5.2	12	0.16	0.37	1.87	<0.001	<0.0001	<0.001	0.007	<0.001	<0.0001	0.001	<0.5	0.014
SW16 REP1	SW16	25/02/2015	S15-Fe20777	<0.2	13	5.7	0.07	0.62	0.62	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW16 REP2	SW16	25/02/2015	S15-Fe20778	<0.2	10	6.2	0.07	0.65	0.65	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW16 REP3	SW16	25/02/2015	S15-Fe20779	<0.2	3.2	7.2	0.06	0.66	0.66	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	<0.001	<0.5	<0.005
SW17 REP 1	SW17	27/02/2015	S15-Ma01495	0.3	5.4	2.8	<0.01	<0.05	0.33	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
SW17 REP 2	SW17	27/02/2015	S15-Ma01496	0.4	5.5	2.9	<0.01	<0.05	0.36	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003
SW17 REP 3	SW17	27/02/2015	S15-Ma01497	0.3	<1	2.8	<0.01	<0.05	0.34	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.5	0.003

Attachment B
Table B3
Event 3 RPD Results

Field Duplicates (WATER)
Filter: Lab_Report_Number in('449336','448977')

Lab Report Number	448977	448977		448977	448977		448977	448977		449336	449336		449336	449336		449336	449336	
Field ID	SW03 REP1	DUPL1 REP1	**RPD**	SW03 REP3	DUPL1 REP3	**RPD**	SW03 REP2	DUPL1 REP2	**RPD**	SW08 REP 1	DUPL1 REP 1	**RPD**	SW08 REP 2	DUPL1 REP 2	**RPD**	SW08 REP 3	DUPL REP 3	**RPD**
Sampled Date/Time	26/02/2015	26/02/2015		26/02/2015	26/02/2015		26/02/2015	26/02/2015		27/02/2015	27/02/2015		27/02/2015	27/02/2015		27/02/2015	27/02/2015	
Chem_Group	**ChemName**	**Units**	**EQL**																	
Inorganics	Kjeldahl Nitrogen Total	mg/l	0.2	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	0.4	0.5	22	**0.6**	**0.2**	**100**	0.5	0.4	22
	Total Suspended Solids	mg/l	1	3.2	4.6	36	3.3	3.0	10	3.4	2.7	23	2.8	3.0	7	3.7	2.6	35	**2.6**	**<1.0**	**89**
	Turbidity	NTU	1	11.0	11.0	0	12.0	12.0	0	11.0	11.0	0	4.1	2.9	34	2.9	3.6	22	2.9	3.1	7
Nutrients	Ammonia as N	mg/l	0.01	0.03	0.03	0	0.02	0.02	0	0.03	0.03	0	0.13	0.15	14	0.12	0.15	22	0.14	0.13	7
	Nitrogen (Total Oxidised)	mg/l	0.05	0.15	0.15	0	0.15	0.14	7	0.15	0.16	6	0.18	0.18	0	0.18	0.17	6	0.18	0.18	0
	Nitrogen (Total)	mg/l	0.2	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	0.57	0.72	23	**0.78**	**0.37**	**71**	0.7	0.56	22
Metals	Arsenic (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	**<0.001**	**0.002**	**67**	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
	Cadmium (Filtered)	mg/l	0.0002										<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Cadmium (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0									
	Chromium (III+VI) (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	**<0.001**	**0.008**	**156**	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
	Copper (Filtered)	mg/l	0.001	0.002	0.002	0	0.002	0.002	0	**0.002**	**0.001**	**67**	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	**<0.001**	**0.006**	**143**	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
	Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0
	Nickel (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
	Phosphorus	mg/l	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Zinc (Filtered)	mg/l	0.005	<0.005	<0.005	0	<0.005	<0.005	0	<0.005	<0.005	0									
	Zinc (Filtered)	mg/l	0.001										**0.001**	**0.002**	**67**	**0.001**	**0.003**	**100**	**0.003**	**0.001**	**100**

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 50 (1-5 x EQL); 50 (5-30 x EQL); 50 (> 30 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Attachment B
Table B4
Event 3
Analytical Results Summary

Location Code	Date Sampled	pH (Field)	Kjeldahl Nitrogen Total*	Total Suspended Solids	Turbidity	Ammonia as N	Nitrogen (Total Oxidised)	Nitrogen (Total)*	Arsenic (Filtered)*	Cadmium (Filtered)*	Chromium (III+VI) (Filtered)*	Copper (Filtered)	Lead (Filtered)*	Mercury (Filtered)*	Nickel (Filtered)*	Phosphorus*	Zinc (Filtered)*
SW01	26/02/2015	7.03	0.20	1.70	8.40	0.02	0.12	0.20	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.5	0.005
SW02	26/02/2015	6.13	0.20	2.47	8.90	0.03	0.13	0.20	0.001	0.0001	0.001	0.002	0.001	0.0001	0.001	0.5	0.006
SW03	26/02/2015	5.99	0.20	3.30	11.33	0.03	0.15	0.20	0.001	0.0001	0.001	0.002	0.001	0.0001	0.001	0.5	0.005
SW04	27/02/2015	6.26	0.33	21.67	15.00	0.02	0.23	0.51	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.5	0.003
SW05	26/02/2015	5.85	0.20	4.27	10.67	0.02	0.15	0.20	0.001	0.0001	0.001	0.002	0.001	0.0001	0.001	0.1	0.005
SW06	26/02/2015	5.74	0.20	4.47	7.90	0.03	0.31	0.31	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.5	0.005
SW07	27/02/2015	5.65	0.43	4.90	5.03	0.03	0.26	0.71	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.5	0.003
SW08	27/02/2015	6.08	0.50	3.03	3.30	0.13	0.18	0.68	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.5	0.002
SW09	26/02/2015	5.96	0.20	7.80	8.17	0.04	0.37	0.37	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.5	0.005
SW10	26/02/2015	5.56	0.90	7.53	2.43	0.04	0.05	0.89	0.001	0.0002	0.001	0.002	0.001	0.0001	0.001	0.5	0.008
SW11	27/02/2015	6.58	0.80	5.97	3.20	0.04	0.05	0.79	0.001	0.0002	0.001	0.004	0.001	0.0001	0.001	0.5	0.012
SW12	25/02/2015	6.19	0.33	52.33	47.00	0.10	0.40	0.60	0.001	0.0001	0.001	0.002	0.001	0.0001	0.001	0.5	0.005
SW13	25/02/2015	6.06	0.57	54.67	53.33	0.05	0.41	0.84	0.001	0.0001	0.001	0.002	0.001	0.0001	0.001	0.5	0.005
SW14	27/02/2015	5.57	1.87	316.67	159.00	0.48	0.05	1.87	0.001	0.0002	0.001	0.004	0.001	0.0001	0.003	0.5	0.039
SW16	25/02/2015	6.23	0.20	8.73	6.37	0.07	0.64	0.64	0.001	0.0001	0.001	0.002	0.001	0.0001	0.001	0.5	0.005
SW17	27/02/2015	6.00	0.33	3.97	2.83	0.01	0.05	0.34	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.5	0.003
Note: * Denotes < to be applied to results																	

Attachment C– Field Sheets

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	26/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	8.50am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SM (Fulton Hogan)
SITE:	SW01		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flowing

FIELD MEASUREMENTS			
	8.50	9.05	9.20
TEMPERATURE (°C)	18.3	18.3	18.4
CONDUCTIVITY (uS/cm)	96.2	96.4	96.4
pH	7.03	6.30	6.10
DO (ppm)	54.5% 7.95mg/L	84.5% 7.94mg/L	84.3% 7.92mg/L
REDOX (mV)	110.7	109.0	107.5

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW01	9	chilled	No	Clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	26/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	9.40am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SM
SITE:	SW02		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flowing

FIELD MEASUREMENTS	9.40	9.55	10.10
TEMPERATURE (°C)	18.7	18.7	18.8
CONDUCTIVITY (uS/cm)	98.6	98.7	99.0
pH	6.26	6.09	6.03
DO (ppm)	78.2% 7.30mg/L	78.3% 7.31mg/L	79.2% 7.37mg/L
REDOX (mV)	103.5	101.9	100.2

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW02	9	Chilled	N/A	Clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	26/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	10.40am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SM
SITE:	SW03		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flow

FIELD MEASUREMENTS	10.40	10.55	11.10
TEMPERATURE (°C)	19.1	19.1	19.1
CONDUCTIVITY (uS/cm)	100.6	101.1	101.3
pH	6.13	5.95	5.90
DO (ppm)	84.3% 7.80mg/L	84.8% 7.84mg/L	84.8% 7.83mg/L
REDOX (mV)	131.2	129.3	133.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW03	18	chilled	~~NO~~ YES	DUPLI, clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	27/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	9.45am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC CC (Fulton Hogan)
SITE:	SW04		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flowing

FIELD MEASUREMENTS	9.45	10.00	10.15
TEMPERATURE (°C)	20.1	20.1	20.1
CONDUCTIVITY (uS/cm)	94.7	94.7	94.7
pH	6.70	6.09	5.98
DO (ppm)	80.0% 7.26mg/L	80.7% 7.32mg/L	80.6% 7.31mg/L
REDOX (mV)	144.7	144.9	145.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW04	9	Chilled	No	Clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	26/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	12.50pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SM
SITE:	SW05		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flow

FIELD MEASUREMENTS	12.50	1.05	1.20
TEMPERATURE (°C)	19.7	19.7	19.7
CONDUCTIVITY (uS/cm)	102.6	102.7	102.9
pH	5.92	5.82	5.81
DO (ppm)	83.5% 7.64mg/L	83.5% 7.64mg/L	84.1% 7.69mg/L
REDOX (mV)	136.8	141.2	143.3

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW05	9	Chilled	No	a little brown.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	26/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	2.40pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SM
SITE:	SW06		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Cloudy
VEGETATION	
SLOPE	
EROSION	
OTHER	Reed Moderately flowing

FIELD MEASUREMENTS	2.40	2.55	3.10
TEMPERATURE (°C)	20.6	20.4	20.2
CONDUCTIVITY (uS/cm)	142.0	142.6	141.4
pH	6.02	5.70	5.50
DO (ppm)	48.0% 4.31mg/L	47.7% 4.30mg/L	29.9% 2.7mg/L
REDOX (mV)	-77.9	-29.4	4.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW06	9	Chilled	NO	Clear.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	27/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	10.20
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC CC
SITE:	SW07		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS	10.20	10.35	10.50
TEMPERATURE (°C)	20.3	20.3	20.3
CONDUCTIVITY (uS/cm)	114.6	138.4	156.5
pH	5.83	5.63	5.48
DO (ppm)	42.8% 3.86 mg/L	35.7% 3.23 mg/L	16.1% 1.45 mg/L
REDOX (mV)	74.4	86.5	54.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW07	9	Chilled	No	clear.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	27/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	11.45am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC CC
SITE:	SW08		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flowing

FIELD MEASUREMENTS	11.45	12.00	12.15
TEMPERATURE (°C)	21.5	21.5	21.6
CONDUCTIVITY (uS/cm)	136.5	139.3	139.6
pH	6.07	6.06	6.10
DO (ppm)	80.9% 7.16mg/L	79.1% 6.98mg/L	80.7% 7.11mg/L
REDOX (mV)	44.9	43.2	38.7

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW08	18	Chilled	YES	DUPLZ clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	26/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	11.45am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SM
SITE:	SW09		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	High Flow

FIELD MEASUREMENTS	11.45	12.00	12.15
TEMPERATURE (°C)	19.6	19.6	19.7
CONDUCTIVITY (uS/cm)	127.1	127.3	127.7
pH	6.20	5.86	5.81
DO (ppm)	83.7% 7.67mg/L	82.4% 7.54mg/L	82.1% 7.50mg/L
REDOX (mV)	134.4	133.0	132.5

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW09	9	chilled	N/A	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	27/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	2-40pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC CC
SITE:	SW10		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - no flow

FIELD MEASUREMENTS	2-40	2-55	3-10
TEMPERATURE (°C)	21.6	21.6	21.6
CONDUCTIVITY (uS/cm)	185.5	185.3	185.3
pH	5.68	5.50	5.50
DO (ppm)	25.5% 2.34mg/L	25.3% 2.25mg/L	26% 2.29mg/L
REDOX (mV)	~~170.6~~ 162.2	~~170.6~~ 170.6	170.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW10	9	Chilled	No	slightly brown.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	27/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	10.55am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC CC
SITE:	SW11		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - not flowing

FIELD MEASUREMENTS	10.55	11.10	11.25
TEMPERATURE (°C)	20.6	20.8	20.7
CONDUCTIVITY (uS/cm)	154.7	158.2	158.7
pH	5.65	5.57	5.58
DO (ppm)	24.4% 2.18mg/L	12.2% 1.09mg/L	5.1% 0.46mg/L
REDOX (mV)	102.8	140.2	148.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW11	9	chilled	N/A	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	25/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	12.45pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC CC
SITE:	SW12		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Rain
VEGETATION	
SLOPE	
EROSION	
OTHER	Moderately flowing

FIELD MEASUREMENTS	12.45	1.00	1.15
TEMPERATURE (°C)	20.4	20.4	20.4
CONDUCTIVITY (uS/cm)	231.9	231.8	234.1
pH	6.35	6.14	6.08
DO (ppm)	44.8% 4.03mg/L	44.3% 3.99mg/L	44.0% 3.97mg/L
REDOX (mV)	145.7	121.3	119.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW12	9	Chilled	No	Slightly brown.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	25/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	3.00 pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC SM
SITE:	SW13		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	fast flowing

FIELD MEASUREMENTS	3.00	3.15	3.30
TEMPERATURE (°C)	20.7	20.7	20.7
CONDUCTIVITY (uS/cm)	245.8	246.2	247.1
pH	6.00	6.07	6.12
DO (ppm)	59.0% 5.29mg/L	58.9% 5.28mg/L	59.3% 5.31mg/L
REDOX (mV)	139.8	117.4	110.8

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW13	9	chilled	N/A	clear, a little brown/turbie

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	27/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	3.25pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC CC
SITE:	SW14		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION	Heavily vegetated		

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	Water - No flow

FIELD MEASUREMENTS	3.25	3.40	3.55
TEMPERATURE (°C)	23.6	23.6	23.5
CONDUCTIVITY (uS/cm)	358.5	358.0	357.6
pH	5.59	5.57	5.56
DO (ppm)	-0.2% ---	0.6% 0.05mg/L	1.0% 0.09mg/L
REDOX (mV)	158.2	160.6	165.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW14	9	Chilled	N/A	known.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	25/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	2.15
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW15		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Overcast
VEGETATION	
SLOPE	
EROSION	
OTHER	Low flow

FIELD MEASUREMENTS	2.15	2.30	2.45
TEMPERATURE (°C)	21.1	21.2	21.2
CONDUCTIVITY (uS/cm)	249.7	250.1	250.9
pH	5.95	5.68	5.58
DO (ppm)	31.0 ~~24.16%~~ ~~2.75~~ mg/L	29.6 % 2.63mg/L	28.5% 2.53mg/L
REDOX (mV)	142.1	150.5	153.3

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW15	9	chilled	N/A	~~slight~~ a little turbid

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	25/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	11.45am
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC
SITE:	SW16		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Rain
VEGETATION	
SLOPE	
EROSION	
OTHER	Fast flowing

FIELD MEASUREMENTS	TIME 11.45	12.00	12.15
TEMPERATURE (°C)	19.5	19.5	19.5
CONDUCTIVITY (uS/cm)	150.4	149.3	147.5
pH	6.40	6.15	6.13
DO (ppm)	81.9% 7.52mg/L	81.4% 7.47mg/L	82.2% 7.54mg/L
REDOX (mV)	161.5	122.8	111.9

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW16	9	chilled	No	clear.

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

SURFACE WATER SAMPLING RECORD

PROJECT NO.	21/24306/01	**DATE:**	27/2/15
PROJECT NAME:	Berry to Foxground	**TIME:**	1.00pm
CLIENT:	RMS	**SAMPLING OFFICERS:**	JC CC
SITE:	SW17		
COORDINATES/GPS *(If Applicable)*			
SAMPLING METHOD *(ie grab, bucket)*	Grab		
DETAILED SAMPLE LOCATION DESCRIPTION			

ENVIRONMENTAL OBSERVATIONS

WEATHER	Sunny
VEGETATION	
SLOPE	
EROSION	
OTHER	low flow

FIELD MEASUREMENTS	1.00pm	1.15pm	1.30pm
TEMPERATURE (°C)	23.0	23.0	22.9
CONDUCTIVITY (uS/cm)	191.7	191.3	190.0
pH	6.146	5.94	5.88
DO (ppm)	46.9% 4.02mg/L	47.2% 4.05mg/L	46.7% 4.01mg/L
REDOX (mV)	68.4	66.8	65.9

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available)	
CROSS SECTION WIDTH (m)	
DEPTH (m)	
OTHER	

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW17	9	chilled	no	clear

FIELD SUPERVISOR **CHECKED** (SIGN & DATE)

Attachment D - Laboratory Certificates

eurofins | mgt

Certificate of Analysis

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Stefan Charteris**

Report **449336-W**
Project name FOXGROUND TO BERRY BYPASS 21/24306/01
Received Date Mar 03, 2015

Client Sample ID **Sample Matrix** **Eurofins | mgt Sample No.** **Date Sampled** Test/Reference	LOR	Unit	**SW04 REP 1** **Water** **S15-Ma01477** **Feb 27, 2015**	**SW04 REP 2** **Water** **S15-Ma01478** **Feb 27, 2015**	**SW04 REP 3** **Water** **S15-Ma01479** **Feb 27, 2015**	**SW07 REP 1** **Water** **S15-Ma01480** **Feb 27, 2015**
Ammonia (as N)	0.01	mg/L	0.03	0.01	0.02	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	0.23	0.23	0.23	0.26
Suspended Solids	1	mg/L	36	17	12	6.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	< 0.2	0.3	0.5
Total Nitrogen (as N)	0.2	mg/L	0.73	0.23	0.57	0.78
Turbidity	1	NTU	20	13	12	4.4
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.003	0.004

Client Sample ID **Sample Matrix** **Eurofins | mgt Sample No.** **Date Sampled** Test/Reference	LOR	Unit	**SW07 REP 2** **Water** **S15-Ma01481** **Feb 27, 2015**	**SW07 REP 3** **Water** **S15-Ma01482** **Feb 27, 2015**	**SW08 REP 1** **Water** **S15-Ma01483** **Feb 27, 2015**	**SW08 REP 2** **Water** **S15-Ma01484** **Feb 27, 2015**
Ammonia (as N)	0.01	mg/L	0.02	0.03	0.13	0.12
Nitrate & Nitrite (as N)	0.05	mg/L	0.26	0.26	0.18	0.18
Suspended Solids	1	mg/L	4.3	4.3	2.8	3.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.4	0.6
Total Nitrogen (as N)	0.2	mg/L	0.67	0.67	0.57	0.78
Turbidity	1	NTU	4.9	5.8	4.1	2.9
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			SW07 REP 2	SW07 REP 3	SW08 REP 1	SW08 REP 2
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Ma01481	S15-Ma01482	S15-Ma01483	S15-Ma01484
Date Sampled			Feb 27, 2015	Feb 27, 2015	Feb 27, 2015	Feb 27, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.001	0.001

Client Sample ID			SW08 REP 3	SW10 REP 1	SW10 REP 2	SW10 REP 3
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Ma01485	S15-Ma01486	S15-Ma01487	S15-Ma01488
Date Sampled			Feb 27, 2015	Feb 27, 2015	Feb 27, 2015	Feb 27, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.14	0.08	0.02	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	0.18	< 0.05	< 0.05	< 0.05
Suspended Solids	1	mg/L	2.6	8.6	8.5	5.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.2	0.8	0.7
Total Nitrogen (as N)	0.2	mg/L	0.7	1.2	0.79	0.68
Turbidity	1	NTU	2.9	2.5	2.3	2.5
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	0.002	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	0.003	0.009	0.008	0.007

Client Sample ID			SW11 REP 1	SW11 REP 2	SW11 REP 3	SW14 REP 1
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Ma01489	S15-Ma01490	S15-Ma01491	S15-Ma01492
Date Sampled			Feb 27, 2015	Feb 27, 2015	Feb 27, 2015	Feb 27, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.05	0.03	0.03	0.59
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Suspended Solids	1	mg/L	10	3.4	4.5	540
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.9	0.9	1.8
Total Nitrogen (as N)	0.2	mg/L	0.61	0.9	0.86	1.8
Turbidity	1	NTU	3.0	3.5	3.1	200
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.004	0.004	0.005	0.003

Client Sample ID			SW11 REP 1	SW11 REP 2	SW11 REP 3	SW14 REP 1
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Ma01489	S15-Ma01490	S15-Ma01491	S15-Ma01492
Date Sampled			Feb 27, 2015	Feb 27, 2015	Feb 27, 2015	Feb 27, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Zinc (filtered)	0.001	mg/L	0.010	0.010	0.016	0.016

Client Sample ID			SW14 REP 2	SW14 REP 3	SW17 REP 1	SW17 REP 2
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Ma01493	S15-Ma01494	S15-Ma01495	S15-Ma01496
Date Sampled			Feb 27, 2015	Feb 27, 2015	Feb 27, 2015	Feb 27, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.50	0.34	< 0.01	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Suspended Solids	1	mg/L	290	120	5.4	5.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.6	2.2	0.3	0.4
Total Nitrogen (as N)	0.2	mg/L	1.6	2.2	0.33	0.36
Turbidity	1	NTU	200	77	2.8	2.9
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.004	0.004	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	0.064	0.037	0.003	0.003

Client Sample ID			SW17 REP 3	DUPL1 REP 1	DUPL1 REP 2	DUPL REP 3
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Ma01497	S15-Ma01498	S15-Ma01499	S15-Ma01500
Date Sampled			Feb 27, 2015	Feb 27, 2015	Feb 27, 2015	Feb 27, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	< 0.01	0.15	0.15	0.13
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.18	0.17	0.18
Suspended Solids	1	mg/L	< 1	3.0	2.6	< 1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.5	0.2	0.4
Total Nitrogen (as N)	0.2	mg/L	0.34	0.72	0.37	0.56
Turbidity	1	NTU	2.8	2.9	3.6	3.1
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			SW17 REP 3	DUPL1 REP 1	DUPL1 REP 2	DUPL REP 3
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Ma01497**	**S15-Ma01498**	**S15-Ma01499**	**S15-Ma01500**
Date Sampled			**Feb 27, 2015**	**Feb 27, 2015**	**Feb 27, 2015**	**Feb 27, 2015**
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	0.003	0.002	0.003	0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Ammonia (as N)	Melbourne	Mar 05, 2015	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Suspended Solids	Melbourne	Mar 03, 2015	7 Day
- Method: APHA 2540D Total Suspended Solids			
Turbidity	Melbourne	Mar 05, 2015	2 Day
- Method: APHA 2130 Turbidity			
Phosphorus	Melbourne	Mar 03, 2015	180 Day
- Method: USEPA 6010			
Metals M8 filtered	Melbourne	Mar 03, 2015	28 Day
- Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury			
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Mar 05, 2015	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Mar 03, 2015	7 Day
- Method: APHA 4500 TKN			

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NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: FOXGROUND TO BERRY BYPASS 21/24306/01

Order No.:
Report #: 449336
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Mar 3, 2015 10:34 AM
Due: Mar 10, 2015
Priority: 5 Day
Contact Name: Stefan Charteris

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Ammonia (as N)	Phosphorus	Suspended Solids	Turbidity	Metals M8 filtered	Total Nitrogen Set (as N)
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
SW04 REP 1	Feb 27, 2015		Water	S15-Ma01477	X	X	X	X	X	X
SW04 REP 2	Feb 27, 2015		Water	S15-Ma01478	X	X	X	X	X	X
SW04 REP 3	Feb 27, 2015		Water	S15-Ma01479	X	X	X	X	X	X
SW07 REP 1	Feb 27, 2015		Water	S15-Ma01480	X	X	X	X	X	X
SW07 REP 2	Feb 27, 2015		Water	S15-Ma01481	X	X	X	X	X	X
SW07 REP 3	Feb 27, 2015		Water	S15-Ma01482	X	X	X	X	X	X
SW08 REP 1	Feb 27, 2015		Water	S15-Ma01483	X	X	X	X	X	X
SW08 REP 2	Feb 27, 2015		Water	S15-Ma01484	X	X	X	X	X	X
SW08 REP 3	Feb 27, 2015		Water	S15-Ma01485	X	X	X	X	X	X
SW10 REP 1	Feb 27, 2015		Water	S15-Ma01486	X	X	X	X	X	X

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Sample Detail					Ammonia (as N)	Phosphorus	Suspended Solids	Turbidity	Metals M8 filtered	Total Nitrogen Set (as N)
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
SW10 REP 2	Feb 27, 2015		Water	S15-Ma01487	X	X	X	X	X	X
SW10 REP 3	Feb 27, 2015		Water	S15-Ma01488	X	X	X	X	X	X
SW11 REP 1	Feb 27, 2015		Water	S15-Ma01489	X	X	X	X	X	X
SW11 REP 2	Feb 27, 2015		Water	S15-Ma01490	X	X	X	X	X	X
SW11 REP 3	Feb 27, 2015		Water	S15-Ma01491	X	X	X	X	X	X
SW14 REP 1	Feb 27, 2015		Water	S15-Ma01492	X	X	X	X	X	X
SW14 REP 2	Feb 27, 2015		Water	S15-Ma01493	X	X	X	X	X	X
SW14 REP 3	Feb 27, 2015		Water	S15-Ma01494	X	X	X	X	X	X
SW17 REP 1	Feb 27, 2015		Water	S15-Ma01495	X	X	X	X	X	X
SW17 REP 2	Feb 27, 2015		Water	S15-Ma01496	X	X	X	X	X	X
SW17 REP 3	Feb 27, 2015		Water	S15-Ma01497	X	X	X	X	X	X

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Project Name:	FOXGROUND TO BERRY BYPASS 21/24306/01				

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Ammonia (as N)	Phosphorus	Suspended Solids	Turbidity	Metals M8 filtered	Total Nitrogen Set (as N)
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
DUPL1 REP 1	Feb 27, 2015		Water	S15-Ma01498	X	X	X	X	X	X
DUPL1 REP 2	Feb 27, 2015		Water	S15-Ma01499	X	X	X	X	X	X
DUPL REP 3	Feb 27, 2015		Water	S15-Ma01500	X	X	X	X	X	X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Suspended Solids	mg/L	< 1			1	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Phosphorus	mg/L	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Ammonia (as N)	%	91			70-130	Pass	
Nitrate & Nitrite (as N)	%	118			70-130	Pass	
Suspended Solids	%	103			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	100			70-130	Pass	
Phosphorus	%	84			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	101			80-120	Pass	
Cadmium (filtered)	%	95			80-120	Pass	
Chromium (filtered)	%	97			80-120	Pass	
Copper (filtered)	%	98			80-120	Pass	
Lead (filtered)	%	95			80-120	Pass	
Mercury (filtered)	%	90			70-130	Pass	
Nickel (filtered)	%	101			80-120	Pass	
Zinc (filtered)	%	97			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M15-Ma03116	NCP	%	75			70-130	Pass	
Nitrate & Nitrite (as N)	M15-Ma03116	NCP	%	108			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-Ma01477	CP	%	98			70-130	Pass	
Cadmium (filtered)	S15-Ma01477	CP	%	93			70-130	Pass	
Chromium (filtered)	S15-Ma01477	CP	%	95			70-130	Pass	
Copper (filtered)	S15-Ma01477	CP	%	98			70-130	Pass	
Lead (filtered)	S15-Ma01477	CP	%	94			70-130	Pass	
Mercury (filtered)	S15-Ma01477	CP	%	76			70-130	Pass	
Nickel (filtered)	S15-Ma01477	CP	%	100			70-130	Pass	
Zinc (filtered)	S15-Ma01477	CP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-Ma01487	CP	%	103			70-130	Pass	
Cadmium (filtered)	S15-Ma01487	CP	%	97			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	S15-Ma01487	CP	%	101			70-130	Pass	
Copper (filtered)	S15-Ma01487	CP	%	103			70-130	Pass	
Lead (filtered)	S15-Ma01487	CP	%	97			70-130	Pass	
Mercury (filtered)	S15-Ma01487	CP	%	84			70-130	Pass	
Nickel (filtered)	S15-Ma01487	CP	%	105			70-130	Pass	
Zinc (filtered)	S15-Ma01487	CP	%	107			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-Ma01497	CP	%	100			70-130	Pass	
Cadmium (filtered)	S15-Ma01497	CP	%	95			70-130	Pass	
Chromium (filtered)	S15-Ma01497	CP	%	96			70-130	Pass	
Copper (filtered)	S15-Ma01497	CP	%	99			70-130	Pass	
Lead (filtered)	S15-Ma01497	CP	%	96			70-130	Pass	
Mercury (filtered)	S15-Ma01497	CP	%	85			70-130	Pass	
Nickel (filtered)	S15-Ma01497	CP	%	103			70-130	Pass	
Zinc (filtered)	S15-Ma01497	CP	%	98			70-130	Pass	
Spike - % Recovery									
				Result 1					
Total Kjeldahl Nitrogen (as N)	S15-Ma01500	CP	%	98			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M15-Ma03116	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M15-Ma03116	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus	S15-Ma01477	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Ma01477	CP	mg/L	0.001	< 0.001	45	30%	Fail	Q15
Cadmium (filtered)	S15-Ma01477	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S15-Ma01477	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Ma01477	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	S15-Ma01477	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Ma01477	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Ma01477	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Ma01477	CP	mg/L	0.003	0.003	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	S15-Ma01480	CP	mg/L	6.1	5.5	10	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Ma01487	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S15-Ma01487	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S15-Ma01487	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Ma01487	CP	mg/L	0.002	0.002	<1	30%	Pass	
Lead (filtered)	S15-Ma01487	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Ma01487	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Ma01487	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Ma01487	CP	mg/L	0.008	0.007	16	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	S15-Ma01491	CP	mg/L	4.5	6.0	29	30%	Pass	
Turbidity	S15-Ma01491	CP	NTU	3.1	3.2	1.0	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Ma01497	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S15-Ma01497	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S15-Ma01497	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Ma01497	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	S15-Ma01497	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Ma01497	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Ma01497	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Ma01497	CP	mg/L	0.003	0.003	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	S15-Ma01500	CP	mg/L	0.4	0.4	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins | mgt's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Charl Du Preez	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)

Glenn Jackson
National Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

eurofins | mgt

Certificate of Analysis

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Stefan Charteris**

Report **448977-W**
Project name FOXGROUND TO BERRY BYPASS
Project ID 21/24306/01
Received Date Feb 27, 2015

Client Sample ID			**SW01 REP1**	**SW01 REP2**	**SW01 REP3**	**SW02 REP1**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Fe20750**	**S15-Fe20751**	**S15-Fe20752**	**S15-Fe20753**
Date Sampled			**Feb 26, 2015**	**Feb 26, 2015**	**Feb 26, 2015**	**Feb 26, 2015**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.02	0.02	0.01	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	0.12	0.12	0.11	0.14
Suspended Solids	1	mg/L	1.7	2.9	1.5	2.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Turbidity	1	NTU	8.4	8.0	8.2	8.8
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.001	0.001	0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007

Client Sample ID			**SW02 REP2**	**SW02 REP3**	**SW03 REP1**	**SW03 REP2**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Fe20754**	**S15-Fe20755**	**S15-Fe20756**	**S15-Fe20757**
Date Sampled			**Feb 26, 2015**	**Feb 26, 2015**	**Feb 26, 2015**	**Feb 26, 2015**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.02	0.02	0.03	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	0.13	0.13	0.15	0.15
Suspended Solids	1	mg/L	2.9	1.6	3.2	3.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Turbidity	1	NTU	9.0	8.9	11	11
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SW02 REP2	SW02 REP3	SW03 REP1	SW03 REP2
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20754	S15-Fe20755	S15-Fe20756	S15-Fe20757
Date Sampled			Feb 26, 2015	Feb 26, 2015	Feb 26, 2015	Feb 26, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	0.001	0.002	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SW03 REP3	SW05 REP1	SW05 REP2	SW05 REP3
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20758	S15-Fe20759	S15-Fe20760	S15-Fe20761
Date Sampled			Feb 26, 2015	Feb 26, 2015	Feb 26, 2015	Feb 26, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.02	0.02	0.02	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	0.15	0.15	0.16	0.15
Suspended Solids	1	mg/L	3.3	4.9	4.4	3.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Turbidity	1	NTU	12	10	11	11
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	-0.69
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SW06 REP1	SW06 REP2	SW06 REP3	SW09 REP1
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20762	S15-Fe20763	S15-Fe20764	S15-Fe20765
Date Sampled			Feb 26, 2015	Feb 26, 2015	Feb 26, 2015	Feb 26, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.03	0.03	0.04	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	0.31	0.31	0.30	0.36
Suspended Solids	1	mg/L	6.4	4.7	2.3	6.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.31	0.31	0.30	0.36
Turbidity	1	NTU	8.0	8.5	7.2	7.9
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SW06 REP1	SW06 REP2	SW06 REP3	SW09 REP1
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20762	S15-Fe20763	S15-Fe20764	S15-Fe20765
Date Sampled			Feb 26, 2015	Feb 26, 2015	Feb 26, 2015	Feb 26, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SW09 REP2	SW09 REP3	SW12 REP1	SW12 REP2
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20766	S15-Fe20767	S15-Fe20768	S15-Fe20769
Date Sampled			Feb 26, 2015	Feb 26, 2015	Feb 25, 2015	Feb 25, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.04	0.04	0.09	0.06
Nitrate & Nitrite (as N)	0.05	mg/L	0.38	0.36	0.44	0.54
Suspended Solids	1	mg/L	11	6.3	56	61
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.6	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.38	0.36	1.04	0.54
Turbidity	1	NTU	8.1	8.5	48	58
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.001	0.001	0.002	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005

Client Sample ID			SW12 REP3	SW13 REP1	SW13 REP2	SW13 REP3
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20770	S15-Fe20771	S15-Fe20772	S15-Fe20773
Date Sampled			Feb 25, 2015	Feb 25, 2015	Feb 25, 2015	Feb 25, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.16	0.04	0.06	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	0.23	0.41	0.41	0.40
Suspended Solids	1	mg/L	40	47	57	60
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.3	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.23	1.71	0.41	0.40
Turbidity	1	NTU	35	51	59	50
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SW12 REP3	SW13 REP1	SW13 REP2	SW13 REP3
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20770	S15-Fe20771	S15-Fe20772	S15-Fe20773
Date Sampled			Feb 25, 2015	Feb 25, 2015	Feb 25, 2015	Feb 25, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SW15 REP1	SW15 REP2	SW15 REP3	SW16 REP1
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20774	S15-Fe20775	S15-Fe20776	S15-Fe20777
Date Sampled			Feb 25, 2015	Feb 25, 2015	Feb 25, 2015	Feb 25, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.17	0.18	0.16	0.07
Nitrate & Nitrite (as N)	0.05	mg/L	0.40	0.38	0.37	0.62
Suspended Solids	1	mg/L	8.2	9.2	5.2	13
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.8	1.5	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.7	1.22	1.87	0.62
Turbidity	1	NTU	12	13	12	5.7
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.007	0.007	0.007	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.001	0.001	0.001	< 0.001
Zinc (filtered)	0.005	mg/L	0.014	0.012	0.014	< 0.005

Client Sample ID			SW16 REP2	SW16 REP3	DUPL1 REP1	DUPL1 REP3
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S15-Fe20778	S15-Fe20779	S15-Fe20780	S15-Fe20781
Date Sampled			Feb 25, 2015	Feb 25, 2015	Feb 26, 2015	Feb 26, 2015
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.07	0.06	0.03	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	0.65	0.66	0.15	0.14
Suspended Solids	1	mg/L	10	3.2	4.6	3.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.65	0.66	< 0.2	< 0.2
Turbidity	1	NTU	6.2	7.2	11	12
Phosphorus	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			SW16 REP2	SW16 REP3	DUPL1 REP1	DUPL1 REP3
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S15-Fe20778**	**S15-Fe20779**	**S15-Fe20780**	**S15-Fe20781**
Date Sampled			**Feb 25, 2015**	**Feb 25, 2015**	**Feb 26, 2015**	**Feb 26, 2015**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			DUPL1 REP2
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**S15-Fe20974**
Date Sampled			**Feb 26, 2015**
Test/Reference	LOR	Unit	
Ammonia (as N)	0.01	mg/L	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	0.16
Suspended Solids	1	mg/L	2.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2
Turbidity	1	NTU	11
Phosphorus	0.5	mg/L	< 0.5
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	0.002
Cadmium (filtered)	0.0001	mg/L	< 0.0001
Chromium (filtered)	0.001	mg/L	0.008
Copper (filtered)	0.001	mg/L	0.001
Lead (filtered)	0.001	mg/L	0.006
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Ammonia (as N)	Melbourne	Mar 03, 2015	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Suspended Solids	Melbourne	Feb 27, 2015	7 Day
- Method: APHA 2540D Total Suspended Solids			
Turbidity	Melbourne	Mar 03, 2015	2 Day
- Method: APHA 2130 Turbidity			
Phosphorus	Melbourne	Feb 27, 2015	180 Day
- Method: USEPA 6010			
Metals M8 filtered	Sydney	Feb 27, 2015	28 Day
- Method: E020/E030 Filtered Metals in Water & E026 Mercury			
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Mar 03, 2015	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Feb 27, 2015	7 Day
- Method: APHA 4500 TKN			

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Brisbane
1/21 Smallwood Place
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: FOXGROUND TO BERRY BYPASS
Project ID: 21/24306/01

Order No.:
Report #: 448977
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Feb 27, 2015 9:15 AM
Due: Mar 6, 2015
Priority: 5 Day
Contact Name: Stefan Charteris

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Ammonia (as N)	Phosphorus	Suspended Solids	Turbidity	Metals M8 filtered	Total Nitrogen Set (as N)
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X		X
Sydney Laboratory - NATA Site # 18217									X	
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
SW01 REP1	Feb 26, 2015		Water	S15-Fe20750	X	X	X	X	X	X
SW01 REP2	Feb 26, 2015		Water	S15-Fe20751	X	X	X	X	X	X
SW01 REP3	Feb 26, 2015		Water	S15-Fe20752	X	X	X	X	X	X
SW02 REP1	Feb 26, 2015		Water	S15-Fe20753	X	X	X	X	X	X
SW02 REP2	Feb 26, 2015		Water	S15-Fe20754	X	X	X	X	X	X
SW02 REP3	Feb 26, 2015		Water	S15-Fe20755	X	X	X	X	X	X
SW03 REP1	Feb 26, 2015		Water	S15-Fe20756	X	X	X	X	X	X
SW03 REP2	Feb 26, 2015		Water	S15-Fe20757	X	X	X	X	X	X
SW03 REP3	Feb 26, 2015		Water	S15-Fe20758	X	X	X	X	X	X

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Sample Detail					Ammonia (as N)	Phosphorus	Suspended Solids	Turbidity	Metals M8 filtered	Total Nitrogen Set (as N)
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X		X
Sydney Laboratory - NATA Site # 18217									X	
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
SW05 REP1	Feb 26, 2015		Water	S15-Fe20759	X	X	X	X	X	X
SW05 REP2	Feb 26, 2015		Water	S15-Fe20760	X	X	X	X	X	X
SW05 REP3	Feb 26, 2015		Water	S15-Fe20761	X	X	X	X	X	X
SW06 REP1	Feb 26, 2015		Water	S15-Fe20762	X	X	X	X	X	X
SW06 REP2	Feb 26, 2015		Water	S15-Fe20763	X	X	X	X	X	X
SW06 REP3	Feb 26, 2015		Water	S15-Fe20764	X	X	X	X	X	X
SW09 REP1	Feb 26, 2015		Water	S15-Fe20765	X	X	X	X	X	X
SW09 REP2	Feb 26, 2015		Water	S15-Fe20766	X	X	X	X	X	X
SW09 REP3	Feb 26, 2015		Water	S15-Fe20767	X	X	X	X	X	X
SW12 REP1	Feb 25, 2015		Water	S15-Fe20768	X	X	X	X	X	X

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Sample Detail					Ammonia (as N)	Phosphorus	Suspended Solids	Turbidity	Metals M8 filtered	Total Nitrogen Set (as N)
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X		X
Sydney Laboratory - NATA Site # 18217									X	
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
SW12 REP2	Feb 25, 2015		Water	S15-Fe20769	X	X	X	X	X	X
SW12 REP3	Feb 25, 2015		Water	S15-Fe20770	X	X	X	X	X	X
SW13 REP1	Feb 25, 2015		Water	S15-Fe20771	X	X	X	X	X	X
SW13 REP2	Feb 25, 2015		Water	S15-Fe20772	X	X	X	X	X	X
SW13 REP3	Feb 25, 2015		Water	S15-Fe20773	X	X	X	X	X	X
SW15 REP1	Feb 25, 2015		Water	S15-Fe20774	X	X	X	X	X	X
SW15 REP2	Feb 25, 2015		Water	S15-Fe20775	X	X	X	X	X	X
SW15 REP3	Feb 25, 2015		Water	S15-Fe20776	X	X	X	X	X	X
SW16 REP1	Feb 25, 2015		Water	S15-Fe20777	X	X	X	X	X	X
SW16 REP2	Feb 25, 2015		Water	S15-Fe20778	X	X	X	X	X	X

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Company Name:	GHD Pty Ltd NSW	**Order No.:**		**Received:**	Feb 27, 2015 9:15 AM
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		Phone:	02 9239 7100	**Priority:**	5 Day
		Fax:	02 9239 7199	**Contact Name:**	Stefan Charteris
Project Name:	FOXGROUND TO BERRY BYPASS				
Project ID:	21/24306/01				

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Ammonia (as N)	Phosphorus	Suspended Solids	Turbidity	Metals M8 filtered	Total Nitrogen Set (as N)
Laboratory where analysis is conducted										
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X		X
Sydney Laboratory - NATA Site # 18217									X	
Brisbane Laboratory - NATA Site # 20794										
External Laboratory										
SW16 REP3	Feb 25, 2015		Water	S15-Fe20779	X	X	X	X	X	X
DUPL1 REP1	Feb 26, 2015		Water	S15-Fe20780	X	X	X	X	X	X
DUPL1 REP3	Feb 26, 2015		Water	S15-Fe20781	X	X	X	X	X	X
DUPL1 REP2	Feb 26, 2015		Water	S15-Fe20974	X	X	X	X	X	X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Suspended Solids	mg/L	< 1			1	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Phosphorus	mg/L	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Ammonia (as N)	%	91			70-130	Pass	
Nitrate & Nitrite (as N)	%	92			70-130	Pass	
Suspended Solids	%	93			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	87			70-130	Pass	
Phosphorus	%	86			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	88			70-130	Pass	
Cadmium (filtered)	%	90			70-130	Pass	
Chromium (filtered)	%	87			70-130	Pass	
Copper (filtered)	%	87			70-130	Pass	
Lead (filtered)	%	87			70-130	Pass	
Mercury (filtered)	%	83			70-130	Pass	
Nickel (filtered)	%	87			70-130	Pass	
Zinc (filtered)	%	82			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	S15-Fe20750	CP	%	91			70-130	Pass	
Nitrate & Nitrite (as N)	S15-Fe20750	CP	%	93			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	S15-Fe20750	CP	%	119			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-Fe20751	CP	%	109			70-130	Pass	
Cadmium (filtered)	S15-Fe20751	CP	%	97			70-130	Pass	
Chromium (filtered)	S15-Fe20751	CP	%	102			70-130	Pass	
Copper (filtered)	S15-Fe20751	CP	%	100			70-130	Pass	
Lead (filtered)	S15-Fe20751	CP	%	95			70-130	Pass	
Mercury (filtered)	S15-Fe20751	CP	%	87			70-130	Pass	
Nickel (filtered)	S15-Fe20751	CP	%	101			70-130	Pass	
Zinc (filtered)	S15-Fe20751	CP	%	104			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-Fe20761	CP	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium (filtered)	S15-Fe20761	CP	%	93			70-130	Pass	
Chromium (filtered)	S15-Fe20761	CP	%	86			70-130	Pass	
Copper (filtered)	S15-Fe20761	CP	%	84			70-130	Pass	
Lead (filtered)	S15-Fe20761	CP	%	75			70-130	Pass	
Mercury (filtered)	S15-Fe20761	CP	%	78			70-130	Pass	
Nickel (filtered)	S15-Fe20761	CP	%	102			70-130	Pass	
Zinc (filtered)	S15-Fe20761	CP	%	91			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-Fe20767	CP	%	91			70-130	Pass	
Cadmium (filtered)	S15-Fe20767	CP	%	90			70-130	Pass	
Chromium (filtered)	S15-Fe20767	CP	%	85			70-130	Pass	
Copper (filtered)	S15-Fe20767	CP	%	84			70-130	Pass	
Lead (filtered)	S15-Fe20767	CP	%	78			70-130	Pass	
Mercury (filtered)	S15-Fe20767	CP	%	78			70-130	Pass	
Nickel (filtered)	S15-Fe20767	CP	%	86			70-130	Pass	
Zinc (filtered)	S15-Fe20767	CP	%	88			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-Fe20774	CP	%	96			70-130	Pass	
Cadmium (filtered)	S15-Fe20774	CP	%	96			70-130	Pass	
Chromium (filtered)	S15-Fe20774	CP	%	91			70-130	Pass	
Copper (filtered)	S15-Fe20774	CP	%	89			70-130	Pass	
Nickel (filtered)	S15-Fe20774	CP	%	89			70-130	Pass	
Zinc (filtered)	S15-Fe20774	CP	%	93			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	S15-Fe20974	CP	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	S15-Fe20974	CP	%	92			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S15-Fe20750	CP	mg/L	0.02	0.02	13	30%	Pass	
Nitrate & Nitrite (as N)	S15-Fe20750	CP	mg/L	0.12	0.12	3.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S15-Fe20750	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Turbidity	S15-Fe20750	CP	NTU	8.4	8.4	<1	30%	Pass	
Phosphorus	S15-Fe20750	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Fe20750	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S15-Fe20750	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	S15-Fe20750	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Fe20750	CP	mg/L	0.001	0.002	14	30%	Pass	
Lead (filtered)	S15-Fe20750	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Fe20750	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Fe20750	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Fe20750	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	S15-Fe20752	CP	mg/L	1.5	2.6	54	30%	Fail	Q15

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Fe20760	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S15-Fe20760	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	S15-Fe20760	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Fe20760	CP	mg/L	0.002	0.002	9.0	30%	Pass	
Lead (filtered)	S15-Fe20760	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Fe20760	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Fe20760	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Fe20760	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	S15-Fe20763	CP	mg/L	4.7	5.9	23	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Fe20766	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S15-Fe20766	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	S15-Fe20766	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Fe20766	CP	mg/L	0.001	0.001	2.0	30%	Pass	
Lead (filtered)	S15-Fe20766	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Fe20766	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Fe20766	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Fe20766	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	S15-Fe20769	CP	NTU	58	58	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus	S15-Fe20770	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	S15-Fe20773	CP	mg/L	60	54	10	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Fe20773	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S15-Fe20773	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	S15-Fe20773	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Fe20773	CP	mg/L	0.002	0.002	4.0	30%	Pass	
Lead (filtered)	S15-Fe20773	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Fe20773	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Fe20773	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Fe20773	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S15-Fe20974	CP	mg/L	0.03	0.03	10	30%	Pass	
Nitrate & Nitrite (as N)	S15-Fe20974	CP	mg/L	0.16	0.15	4.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins | mgt's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Charl Du Preez	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
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Ivan Taylor	Senior Analyst-Metal (NSW)

Glenn Jackson
National Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Attachment E - Laboratory Quality Assurance and Quality Control Results

Field Program surface water

Intra-laboratory duplicate samples were collected and analysed as part of the surface water sampling program and the relative percentage differences (RPD) were calculated. Intra-laboratory measures the reproducibility of measurements under a given set of conditions. The precision of the data is assessed by calculating the Relative Percent Difference (RPD) between duplicate sample pairs.

$$RPD(\%) = \frac{|C_o - C_d|}{C_o + C_d} \times 200$$

Where Co = Analyte concentration of the original sample
Cd = Analyte concentration of the duplicate sample

GHD adopts a nominal acceptance criterion of 30% RPD for field duplicates and splits for inorganics and a nominal acceptance criterion of 50% RPD for field duplicates and splits for organics, however it is noted that this may not always be achieved, or at low analyte concentrations. Surface water QA/QC results are presented as Table B3, Attachment B.

Discrepancies in GHD's adopted criterion for RPDs calculated for the intra laboratory duplicate pairs for the analytes testes (turbidity, total suspended solids, heavy metals, phosphorus, and total nitrogen) are:

- Duplicate sample SW03, arsenic failed the internal lab duplicate analysis (RPD 67%).
- Duplicate sample SW03, chromium failed the internal lab duplicate analysis (RPD 156%).
- Duplicate sample SW03, copper failed the internal lab duplicate analysis (RPD 67%).
- Duplicate sample SW03, lead failed the internal lab duplicate analysis (RPD 143%).
- Duplicate sample SW08, kjeldahl nitrogen total failed the internal lab duplicate analysis (RPD 100%).
- Duplicate sample SW08, total suspended solids failed the internal lab duplicate analysis (RPD 89%).

Laboratory Program

The NATA certified laboratories utilised for this assessment (Eurofins | Mgt) undertook their own quality assurance and quality control procedures for sample analysis. GHD has reviewed the internal laboratory control data provided within the laboratory reports, which are attached in the individual monitoring reports as Attachment D**.**

All samples were noted to be correctly preserved. All samples from this monitoring round (Event 3)

were received on 03 March 2015, four days after sampling on the 27 February 2015. The following sample was not received by the laboratory within the sample holding time as recommended by testing laboratories, based on holding times set out in Schedule B(3) of the NEPM (1999):

- Turbidity (24 hr holding time).

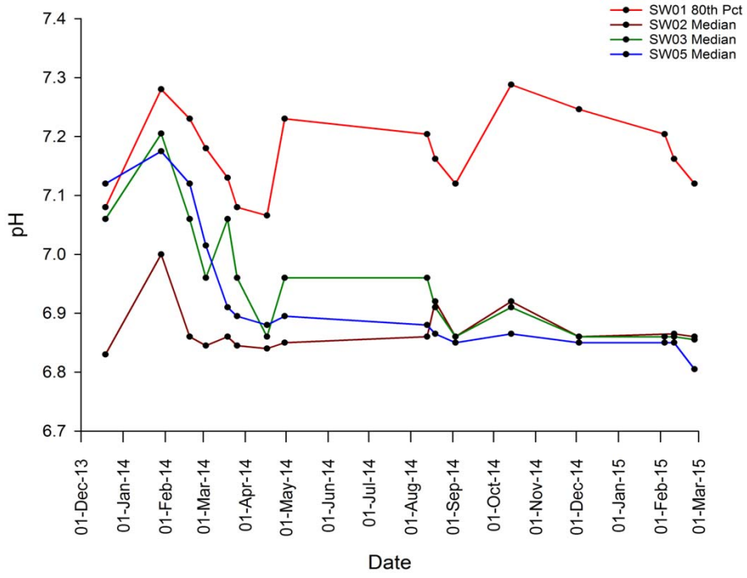
Method blank results were less than the PQL, and surrogate spike and laboratory control sample recoveries were within laboratory acceptance criteria for all of the samples collected for the event.

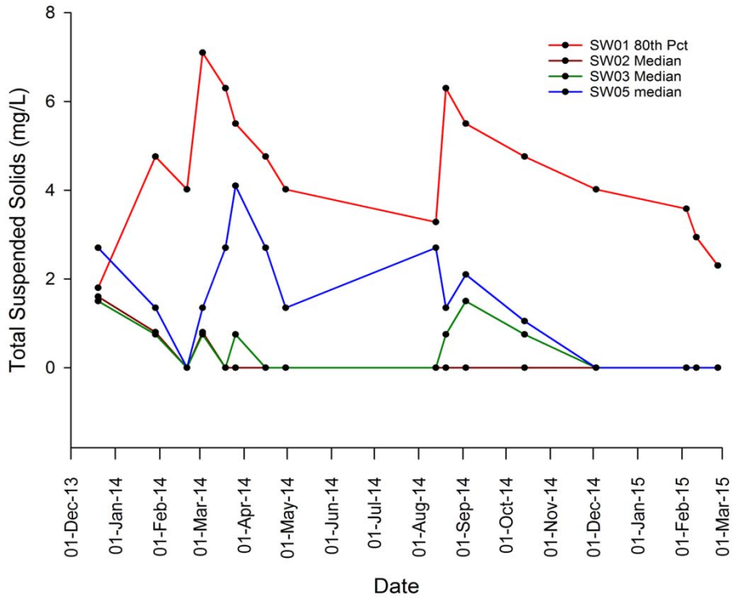
Summary of Quality Assurance / Quality Control Results

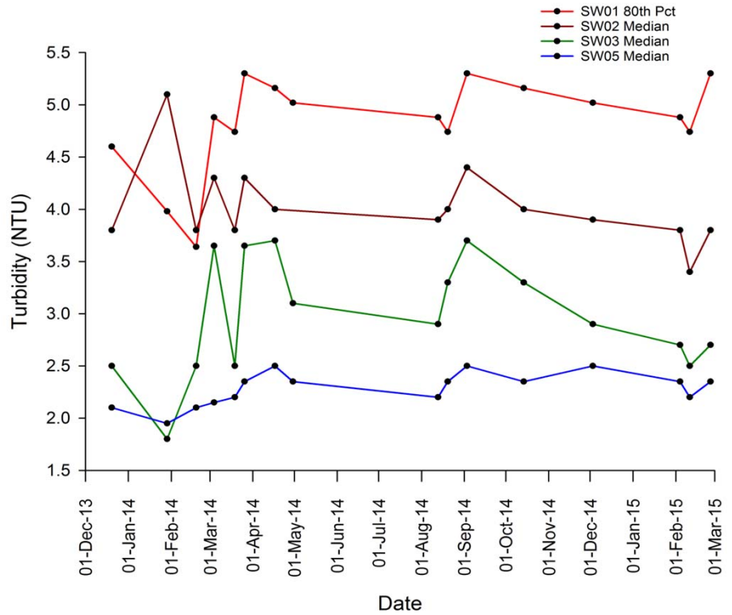
The QA/QC results show that most of the samples collected have met the appropriate standards and therefore, the data was considered to be valid and of sufficient quality to meet the data quality objectives for the assessment.

Attachment F - Control Charts

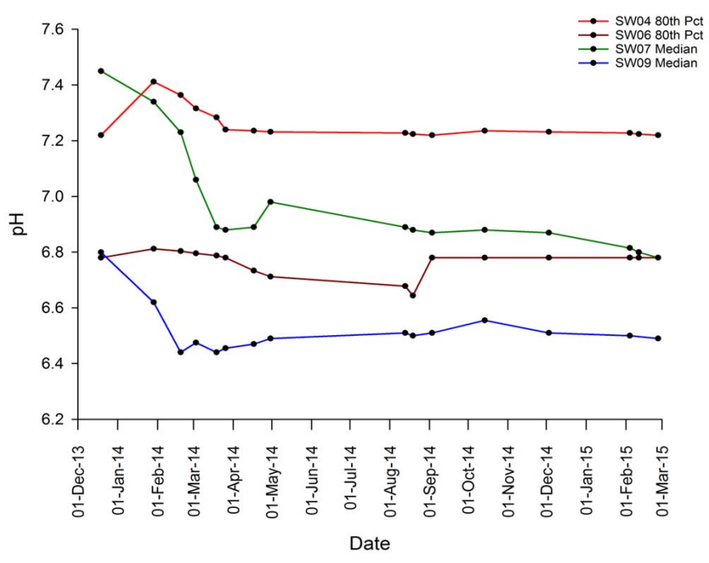
1. Broughton Creek

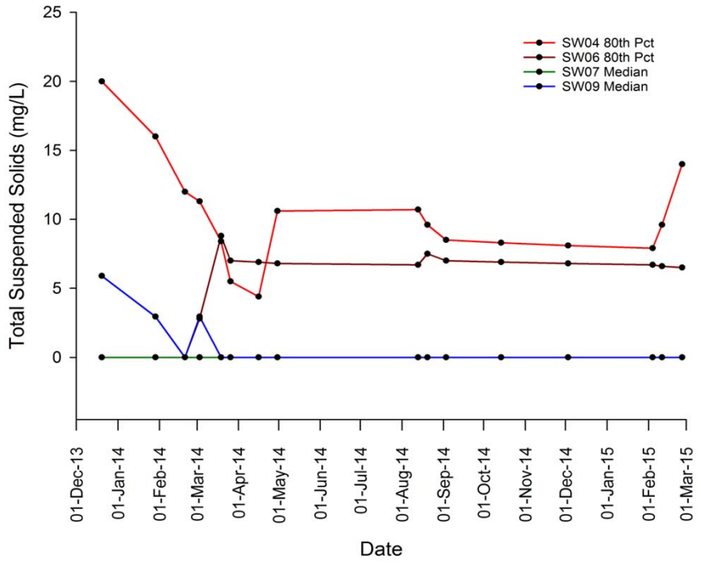


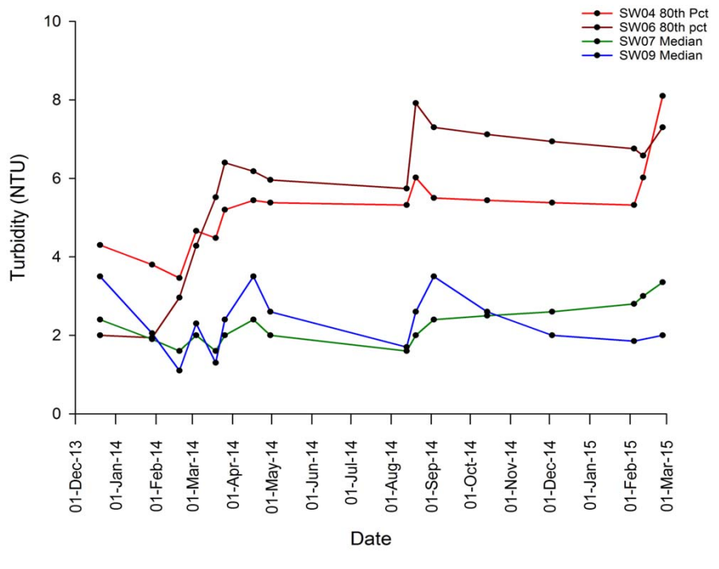




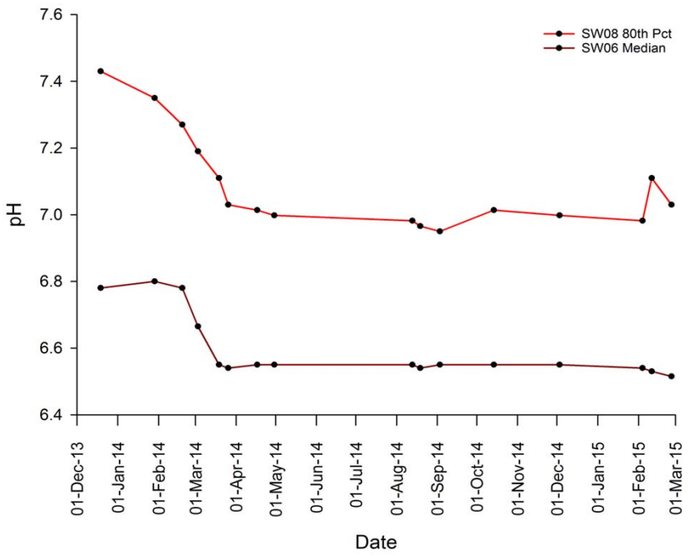
2. Connelly’s Creek and Broughton Mill Creek and Bundewallah Creek

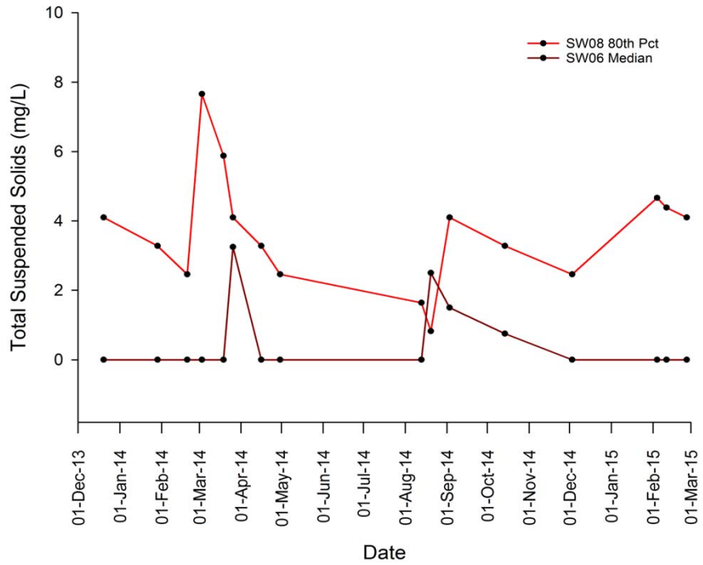


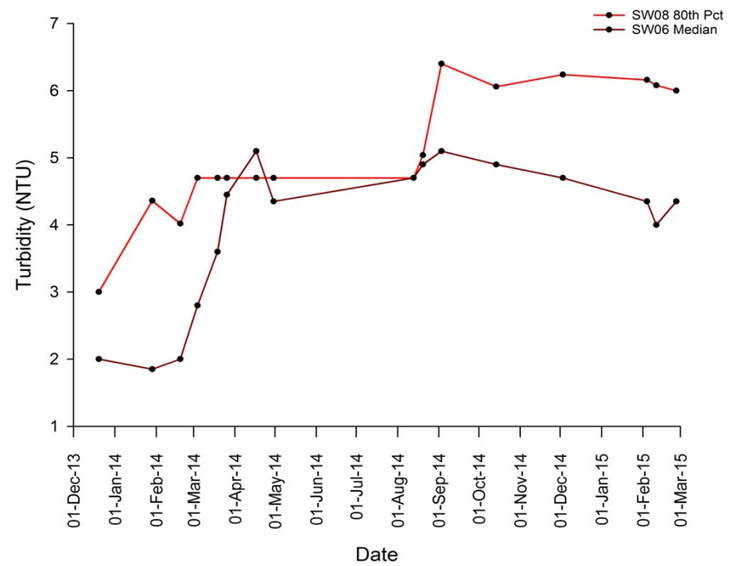




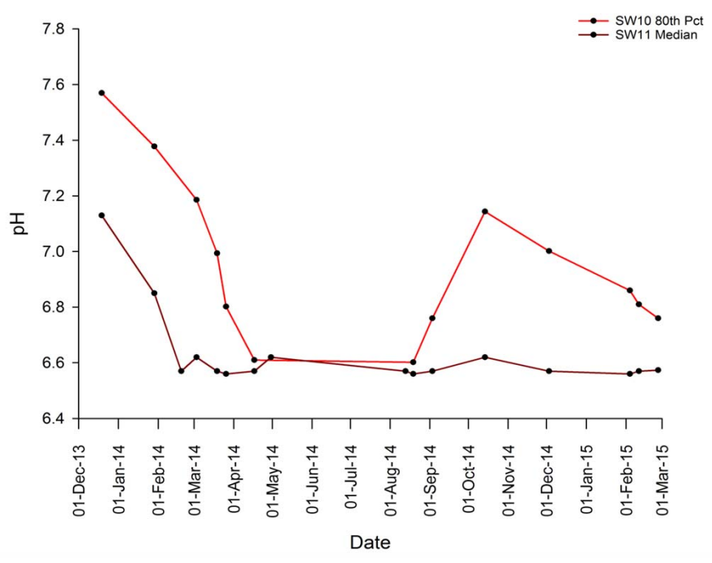
3. Bundewallah Creek and Connelly's Creek

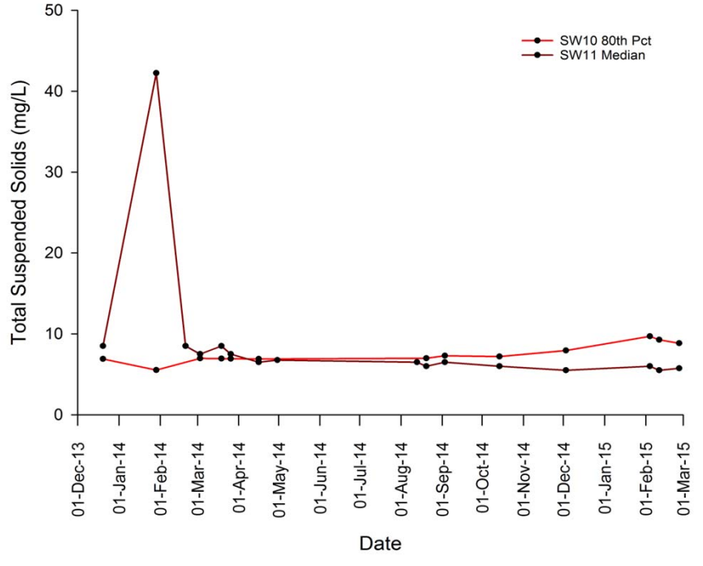


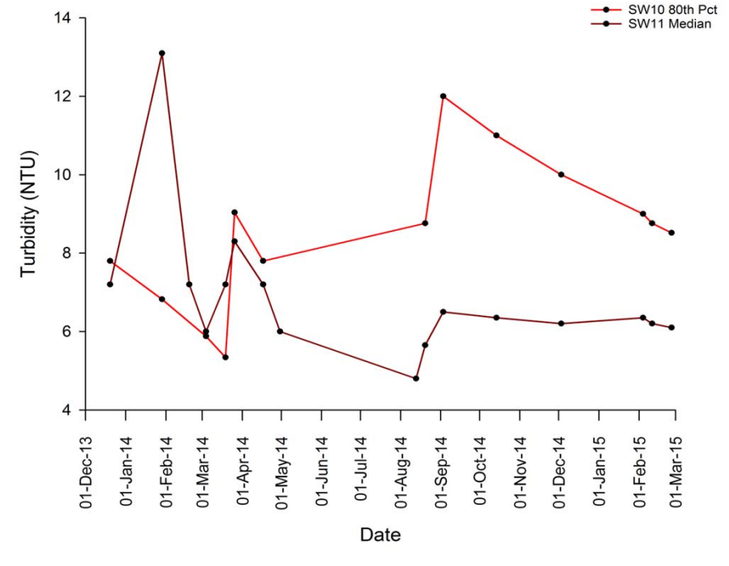




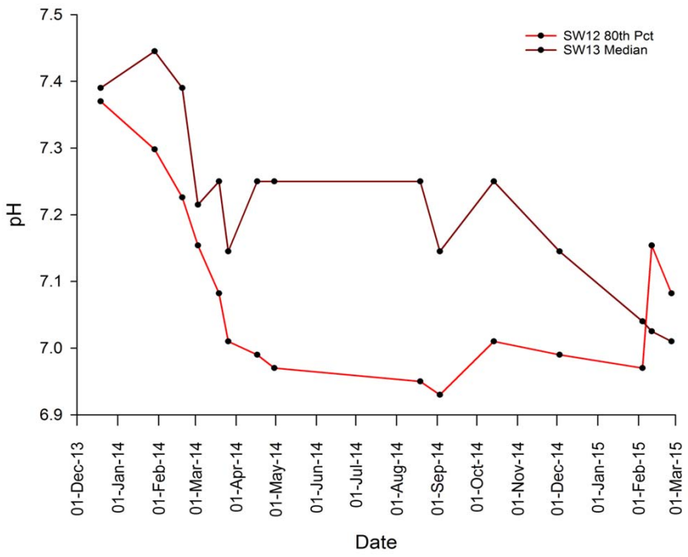
4. Town Creek

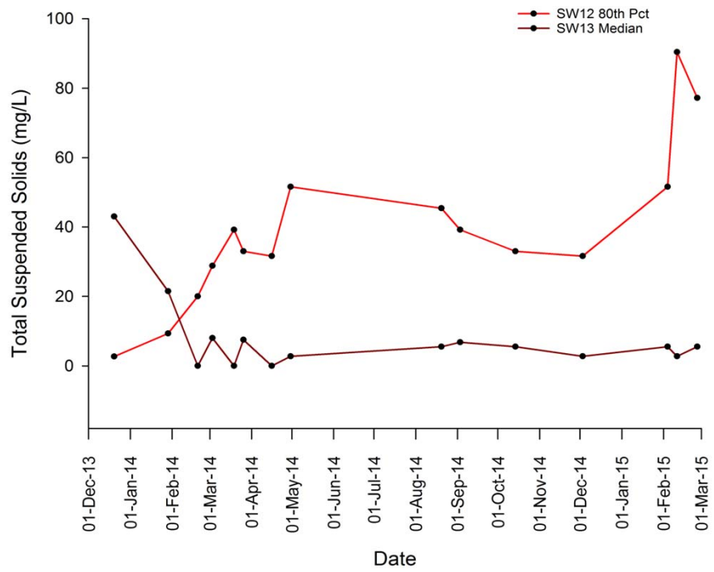


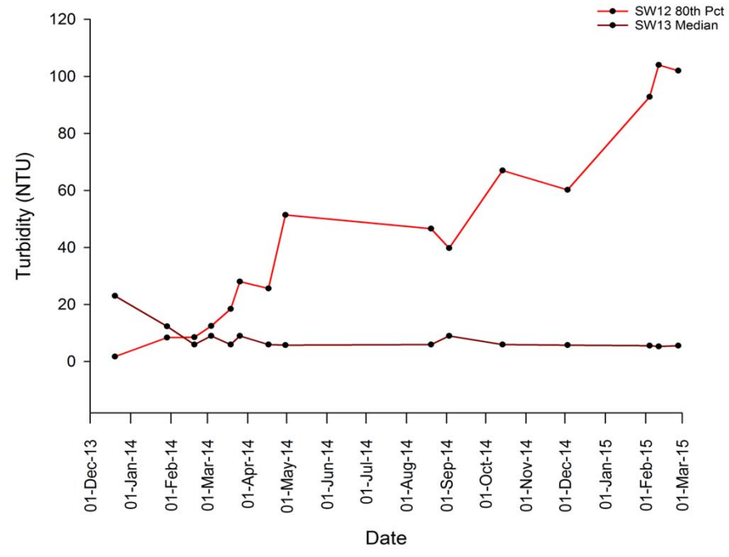




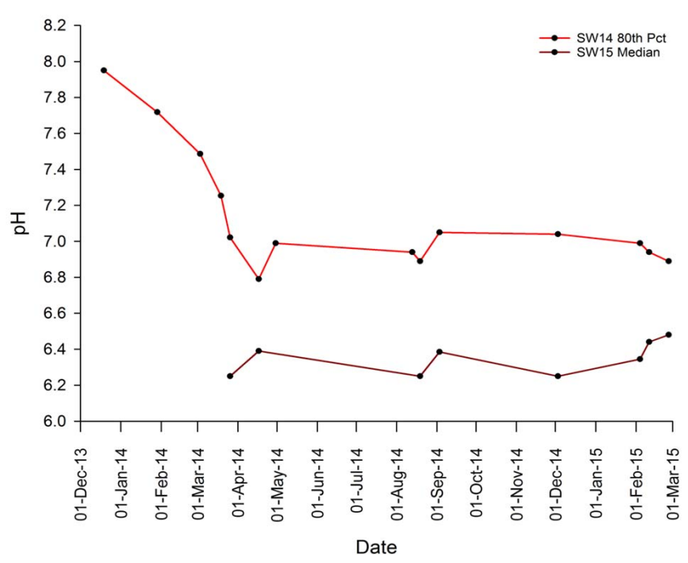
5. Hitchcocks Lane Creek Tributary

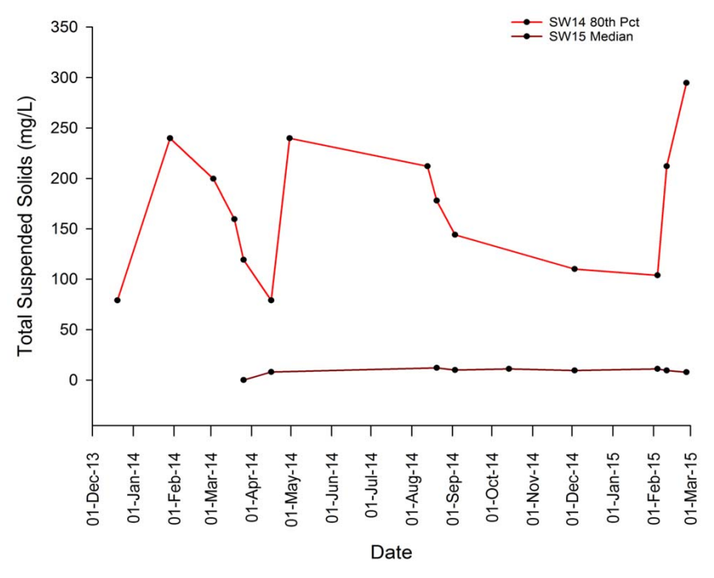


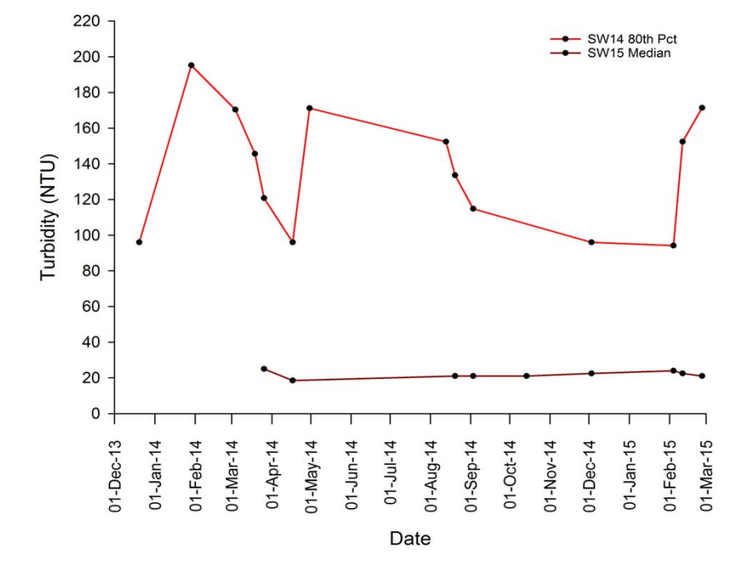




6. Hitchcocks Lane Creek







7. Unnamed Tributary